

Western San Bernardino County Distribution System Infrastructure Protection Program

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The Metropolitan Water District
of Southern California
700 North Alameda Street
Los Angeles, CA 90012

Metropolitan Report 1626

Appendix A

Draft O&M Manual

**Western San Bernardino County Operating Region
Distribution System Infrastructure Protection Program
Operations and Maintenance Manual**

The Metropolitan Water District of Southern California

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Los Angeles, California 90012

MAY 2020

DRAFT

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1 Introduction

The Metropolitan Water District of Southern California (Metropolitan) established the Distribution System Infrastructure Protection Program (DSIPP, or proposed program) in June 2012 to identify, prioritize, and execute site improvement projects throughout Metropolitan's water conveyance and distribution system. The work will be conducted in phases by geographic areas that will be identified as Operating Regions. Phase 1 includes the Orange County and Western San Bernardino County operating regions, Phase 2 includes the Riverside, San Diego, and Los Angeles county operating regions, and Phase 3 encompasses San Bernardino County's outlying areas (Figure 1, Overview of Metropolitan's Conveyance and Distribution System).

The DSIPP includes a detailed reliability assessment to identify Capital Investment Plan (CIP) and Operations and Maintenance (O&M) projects necessary to maintain access to the pipeline and facilities, repair erosion, replace and protect existing pipeline and appurtenances, and address security needs along Metropolitan's pipeline rights-of way. An O&M Manual identifying the types of maintenance activities necessary will be prepared for each operating region. Upon completion of the investigation, all necessary environmental approvals and permits will be obtained to implement O&M activities and some CIP projects that will address Metropolitan's water infrastructure needs over the next 10–15 years.

1.1 Purpose of the Plan

This O&M Manual (Manual) is intended to serve as a comprehensive guide to the maintenance of existing water conveyance and distribution infrastructure within the Western San Bernardino County Operating Region. The Manual provides the basis for the O&M component of the DSIPP and sets forth requirements for implementation of the proposed program in the field. Additionally, the Manual serves as a description of activities, avoidance measures, and reporting requirements for use in environmental analysis under the California Environmental Quality Act (CEQA) and to obtain permits and approvals under other state and federal laws. The Manual is expected to be treated as a "live" document that is reviewed annually and updated to incorporate changes or clarifications to the reporting requirements, new or changed measures and conditions, and/or new notification forms.

The Manual includes a complete description of Metropolitan's O&M activities, the location of the O&M activity sites, and the frequency with which O&M activities are conducted. The Manual also includes thresholds for work within biologically sensitive areas, including streambeds and wetlands; scheduling requirements to avoid direct impacts to nesting birds and other sensitive wildlife; and procedures for notifying the regulatory agencies.

1.2 Western San Bernardino Operating Region

1.2.1 Boundaries and Extent

The Western San Bernardino County Operating Region comprises Metropolitan's conveyance and distribution system pipelines and appurtenant structures, right-of-way, and patrol roads within Western San Bernardino County, California. The Western San Bernardino County Operating Region includes 74 miles of pipeline, 392 pipeline structures, and approximately 50 miles of patrol roads. As depicted in Figure 2 (Western San Bernardino County Operating Region Pipeline Locations) and shown in Table 1, the Western San Bernardino County Operating Region pipeline and patrol road system extends through San Bernardino County and 10 cities. The cities are as follows:

- Chino Hills
- Fontana
- Highland
- Montclair
- Ontario
- Rancho Cucamonga
- Redlands
- Rialto
- San Bernardino
- Upland

Metropolitan's right-of-way within the Western San Bernardino County Operating Region extends through multiple parcels. All currently identified CIP project locations in which work would occur are listed in Appendix B, CIP Project Locations, to the Western San Bernardino County DSIPP Program Environmental Impact Report (PEIR).

To support operation of the conveyance and distribution pipelines within the Western San Bernardino County Operating Region, Metropolitan also maintains a complex system of aboveground appurtenant pipeline structures and a system of patrol roads. The activities performed under the proposed program would occur at these structures and along the patrol roads, which are collectively referred to as "associated infrastructure" in this O&M Manual.

1.2.2 Distribution System

The following pipelines make up the Western San Bernardino Operating Region distribution system.

Inland Feeder

The Inland Feeder originates at the Department of Water Resources Devil Canyon facility. The purpose of this feeder is to transport State Water Project water from Devil Canyon to Diamond Valley Lake or Lake Matthews. The Inland Feeder is 12 feet in diameter and consists of 44 miles of alternating mortar-lined, buried steel pipelines and tunnels. It is a gravity flow, raw water pipeline (Metropolitan 2005).

Upper Feeder

The Upper Feeder delivers a blend of untreated water from the Colorado River Aqueduct and the State Water Project to the F. E. Weymouth Water Treatment Plant. The water is treated and conveyed through the distribution system to Metropolitan's member agencies. This feeder also supplies raw water to a number of service connections for groundwater storage and replenishment. At approximately 63 miles long, it is one of the longest feeders maintained by Metropolitan. It is also one of the oldest: construction of the Upper Feeder started in 1933, and it first delivered water to Pasadena in November 1941 (Metropolitan 2008).

Rialto Pipeline

The Rialto Pipeline went into service in 1975. The pipeline extends west from the Devil Canyon facility for approximately 29 miles. The 2,500-acre-foot Live Oak Reservoir, the San Dimas Control Structure, and the San Dimas Hydroelectric Power Plant are located at the western end of the Rialto Pipeline. The Rialto Pipeline is the sole source of water to the Etiwanda Pipeline. In addition, the Rialto Pipeline supplies untreated water to a number of service connections for both groundwater replenishment and domestic purposes prior to arriving at the Live Oak Reservoir. Water in the Rialto Pipeline can be delivered into the Live Oak Reservoir for storage or can bypass the reservoir. The pipeline continues west from the Live Oak Reservoir and interconnects with the La Verne Pipeline near the Glendora Tunnel (Jordan and Bicker, pers. comm. 2013; Metropolitan 1997).

Etiwanda Pipeline

The Etiwanda pipeline entered into service in 1993. This pipeline runs northeast to southwest for approximately 6.5 miles and connects the Rialto Pipeline with the Upper Feeder to provide the feeder with State Water Project water. Near the southwestern end of the Etiwanda Pipeline, there is a control structure, the 500-acre-foot Etiwanda Reservoir, and the Etiwanda Hydroelectric Power Plant (Metropolitan 1997).

Yorba Linda Feeder

The Yorba Linda Feeder began service in 1976 and provides the Robert B. Diemer Water Treatment Plant with raw, State Water Project water and/or Colorado River water. The pipeline originates at the F.E. Weymouth Water Treatment Plant and runs north-south for 18 miles, at which point it interconnects with the Robert B. Diemer Water Treatment Plant. The Yorba Linda Feeder pipeline ranges in size from 120 inches in diameter to 96 inches in diameter (Metropolitan 1997).

Table 1 summarizes information about the pipelines within Metropolitan's conveyance and distribution system that are included in the Western San Bernardino County Operating Region.

Table 1. Summary of Western San Bernardino County Operating Region Pipelines

Pipeline	Local Jurisdiction	Year Built	Length (Miles)	Flow		Inner Diameter (Inches)		Overview
				From	To	Min.	Max.	Description
Inland Feeder	Cities of San Bernardino, Highland, Redlands; unincorporated area in San Bernardino County	1960s–1990s	29	Department of Water Resources Devil Canyon facility	Diamond Valley Lake	144	168	The purpose for the Inland Feeder is to transport water from the State Water Project at Devil Canyon to Diamond Valley Lake or Lake Mathews. It provides system reliability and water quality by enabling Metropolitan to divert large volumes of water (when available) from Northern California and deposit it in surface storage reservoirs for use during dry periods or emergencies. It also blends water that is lower in salinity with water that is higher in salinity to improve water quality.
Etiwanda Pipeline	Cities of Fontana and Rancho Cucamonga	1993	6.5	Turnout structure on the Rialto Pipeline at Rialto Station 3667+14	Upper Feeder at Station 1081+03	144	144	The Etiwanda Pipeline connects the Rialto Pipeline with the Upper Feeder to provide the Upper Feeder with State Water Project water.
Rialto Pipeline	Cities of Upland, Rancho Cucamonga, Fontana, Rialto, San Bernardino; unincorporated area in San Bernardino County	1975	29	California Department of Water Resources Devil Canyon facility	San Dimas facility	96	135	The Rialto Pipeline transports East Branch California State Water Project water into Metropolitan's supply and distribution system. The Rialto Pipeline is the sole source of water to the Etiwanda Pipeline. The Rialto Pipeline supplies untreated water to a number of service connections for both groundwater replenishment and domestic purposes prior to arriving at the Live Oak Reservoir. The Rialto Pipeline can deliver water into the Live Oak Reservoir for storage or bypass the reservoir. The pipeline continues westerly from the Live Oak Reservoir and interconnects with the La Verne Pipeline near the Glendora Tunnel.

Table 1. Summary of Western San Bernardino County Operating Region Pipelines

Pipeline	Local Jurisdiction	Year Built	Length (Miles)	Flow		Inner Diameter (Inches)		Overview
				From	To	Min.	Max.	Description
Upper Feeder	Cities of Montclair, Ontario, Rancho Cucamonga, Fontana; unincorporated area in San Bernardino County and Jurupa Valley	1933–1941	63	Lake Mathews Forebay Outlet Tower	Eagle Rock Control Tower at Station 3319+08	84	140	The Upper Feeder delivers a blend of untreated water from the Colorado River Aqueduct and the State Water Project to the Weymouth Treatment Plant. This feeder also supplies water to a number of service connections for groundwater storage and replenishment.
Yorba Linda Feeder	City of Chino Hills	1975	18	La Verne Pipeline at Station 118+18 near the Upper Feeder Junction Structure	Robert B. Diemer Water Treatment Plant	96	121	The Yorba Linda Feeder can deliver water from the State Water Project or the Colorado River Aqueduct, or a blend of both waters, to the Robert B. Diemer Water Treatment Plant.

1.3 Description of Associated Facilities

In order to support operation of the pipelines described previously, Metropolitan also maintains the associated infrastructure. Many of the projects and activities performed under the proposed program would occur on these aboveground structures and along patrol roads.

1.3.1 Pipeline Appurtenances

There are several types of aboveground structures constructed along the pipeline system that are used to maintain adequate water pressure and flow in the pipes or to allow access to structures for maintenance and inspection. O&M activities are conducted to maintain access to these structures in order to perform inspections and maintenance to ensure that they continue to function properly. Vegetation and debris are currently removed from an area of approximately 10 feet around each aboveground structure to ensure unimpeded access by patrol crews. This maintenance area may be expanded to 20 feet where property restrictions and sensitive biological resources do not exist. Descriptions of the most common types of appurtenant structures maintained by Metropolitan are provided below (Jordan and Bicker, pers. comm. 2013).

- **Blowoff Structures:** Blowoff structures, which are provided at low points in a pipeline, allow the pipeline to be dewatered, by gravity, through an outlet into a watercourse or storm drain. Blowoff structure discharge outlets are at or slightly above existing grade and accessed via manhole or structure.
- **Pump Wells:** Pumping wells, which are provided at low points in a pipeline, allow pumps to be placed inside the pipeline to enable water to be discharged to the surface. Pump wells are accessed via a manhole.
- **Manholes:** Manholes are access points into a pipeline. Manhole structures are typically at or slightly above existing grade, and the access point into the pipeline is typically below grade from the manhole structure.
- **Vacuum Valves:** Air vents or air release and vacuum valves are provided at high points in a pipeline and near abrupt changes of grade to allow air to enter the pipeline when the water level lowers and allow air to escape the pipeline when the water level rises. Vacuum valves are located adjacent to, or inside, manholes.
- **Service Connections:** Service connections are the connection between the customer's piping and the water system's meter, service pipe, or constructed conveyance. Service connection piping is located below grade and connected directly to pipelines. Service connections may have a cabinet above grade that houses a meter indicating the amount of water provided through the service connection.
- **Pressure Control Structures:** Pressure control structures are designed to regulate flows and control downstream pressure in a pipeline. The majority of each structure is below grade. Access is at grade via the abovegrade portion of the structure.
- **Pump Stations:** Pump stations are designed to increase pressure or lift water to a higher elevation to allow flow through the conveyance system. Pump stations may be located above

grade or both above and below grade. Facilities may be fully enclosed at the surface or partially exposed. Access is at grade via the abovegrade portion of the structure.

- **Valves:** Valves are devices that regulate, direct, or control the flow of a liquid or gas by opening, closing, or partially obstructing various passageways. Valves can be located inside manholes, adjacent to manholes, or inside structures.

1.3.2 Patrol Roads

Patrol roads (paved and unpaved) within the Western San Bernardino County Operating Region are maintained to provide vehicle and equipment access to pipelines, appurtenant structures, and other water distribution infrastructure where access is otherwise not available from a public street. These roads are owned in fee, under easement, or under other established right-of-way. Generally, Metropolitan patrol roads are a maximum of 16 feet wide and include a 4-foot buffer on either side, for a total maximum width of 24 feet. In addition, the patrol roads typically include turnaround areas, consisting of an existing driveway or aboveground structure, approximately every 1,000 feet to facilitate access and maintenance activities. Figure 3 (Typical Metropolitan Operations and Maintenance Area) depicts a cross-section of the patrol roads and associated maintenance buffers.

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2 Description of Routine O&M Activities

Routine O&M activities are conducted on a regular and ongoing basis to maintain existing structures, patrol roads, and other water conveyance and distribution facilities. Routine O&M activities do not require engineering or involve the construction of new or expanded facilities. A summary of O&M activities, including frequency, duration, and equipment needs, is provided in Table 2.

Table 2. Summary of Routine O&M Activities

O&M Activity Code No.	Activity	Frequency	Typical Duration	Typical Equipment Needs
Patrol Road Maintenance				
1	Grading of patrol roads	Annually and as needed	Ongoing (55 days total to grade all patrol roads in Western San Bernardino County Operating Region)	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer
2	Vegetation maintenance along patrol roads	Annually, prior to grading of patrol roads, and as needed	Ongoing	Bobcat with mower, construction grade lawn mower, and water truck
3	Culvert maintenance	Annually or as needed	1 day per culvert	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, pumps, and handheld tools
4	Vegetation removal along patrol roads	As needed	Ongoing	Bobcat with mower, construction-grade lawn mower, water truck, and handheld tools
5	Maintenance of low water/Arizona crossings	As needed, typically following large storm events	1 day per crossing	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, and pumps
6	Erosion control	As needed, typically prior to and following large storm events	1–3 days per event	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and handheld tools; crane, if pipeline segments are placed

Table 2. Summary of Routine O&M Activities

O&M Activity Code No.	Activity	Frequency	Typical Duration	Typical Equipment Needs
<i>Patrol and Inspection</i>				
7	Patrolling and inspections	Weekly with light truck; twice per year with utility truck	Ongoing	Light truck or utility truck; water quality sample collection may be conducted during inspections and would include handheld tools to collect samples
<i>Routine Structure Maintenance, Repair, and Replacement</i>				
8	Cleaning of equipment and structures	Quarterly	Ongoing	Garden hoses, handheld tools, and Metropolitan-approved biodegradable cleaning solvents
9	Graffiti removal and coating of structures	As needed for graffiti removal; coating every 5 years	Ongoing	Light vehicles, utility truck, handheld tools such as coating brushes and rollers, hand sanders or pressure pot sprayer sand blaster
10	Vegetation maintenance around structures	Annually and as needed	Ongoing	Bobcat with mower, construction-grade lawn mower, water truck, handheld tools, and handheld sprayer for herbicide
11	Pipeline appurtenance maintenance, repair, and replacement (e.g., blowoff, pump wells, manholes, vacuum valves, service connections, pressure control structures, pump stations, and valves)	As needed	Ongoing	Handheld tools or mechanical equipment, such as a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, utility truck, and pumps
12	Pest control	Monthly or as needed	Ongoing	Handheld sprayers and bait stations
<i>Other</i>				
13	Shutdowns/dewatering	As needed	1–10 days	Crane, light towers, utility truck, trailers, generators, pumps, temporary piping, and erosion control materials
14	Emergency work	As needed	As needed depending upon nature of emergency	As needed depending upon nature of emergency

Sources: Metropolitan 2001, 2013.

Notes: O&M = Operations and Maintenance.

2.1 Patrol Road Maintenance

2.1.1 Grading of Patrol Roads

Activity Description and Work Area Limits

Existing Metropolitan patrol roads are typically graded to maintain an approximately 12- to 16-foot patrol road width, to repair erosion and storm damage, and to create a more level driving surface. Patrol road maintenance is critical in order to maintain access to the pipeline and associated facilities to perform inspections and other routine maintenance activities that keep the conveyance and distribution system in operable condition and prevent pipeline system failures. Access along the patrol roads is also critical in the event of an emergency. A grader is typically used to remove soil or rocks in the road and fill potholes with soil from the roadway or imported fill. A loader may be used to remove excess soil and rocks and a dump truck may be used to bring in imported fill if potholes must be filled. Grading is restricted to the 12- to 16-foot width of the existing patrol road. An area of approximately 4 feet on each side of the patrol road may also be incidentally disturbed, for a maximum disturbance width of 24 feet. Aboveground appurtenant pipeline structures are typically located every 1,000 feet along patrol roads and are used as vehicle/equipment turnarounds and for maneuvering.

Equipment Used

Equipment used for patrol road grading typically includes a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer.

Activity Frequency and Schedule

Patrol road grading is typically conducted following the rainy season. Some minor grading of the patrol roads may also be conducted prior to the rainy season where areas of existing erosion or potholes are noted. At a minimum, each patrol road must be graded one time per year to ensure uninterrupted access. In the Western San Bernardino County Operating Region, the work typically involves two motor graders used for a period of 3 months following the rainy season (February through April or May) on the approximately 50 miles of existing patrol roads. Road grading schedules are subject to change based on Metropolitan staff availability and other high-priority projects that may arise during the course of the year.

2.1.2 Vegetation Maintenance along Patrol Roads

Activity Description and Work Area Limits

Vegetation maintenance (mowing, trimming, and pesticide/herbicide treatment) along patrol roads provides uninterrupted vehicle access on existing roads and allows maintenance personnel to quickly and safely inspect and maintain existing pipeline appurtenances and other aboveground

infrastructure located adjacent to or within the patrol roads. These activities are typically conducted concurrently with the activities described in Section 2.3.3, Vegetation Maintenance around Facilities.

Vegetation maintenance is conducted along existing 12- to 16-foot-wide patrol roads and within an area of up to 4 feet wide on either side of the roads (a total maximum width of 20–24 feet, depending on the patrol road width).

Although not typical, in the event that herbicide is used by Metropolitan for vegetation control along patrol roads and around aboveground structures/facilities in other areas of western San Bernardino County, a herbicide from “Pesticides Approved for Application by Metropolitan Water District” (Metropolitan-Approved Pesticides List) will be used (see Appendix A). Herbicide recommendations are made by the Metropolitan landscape maintenance personnel and herbicide would be applied by licensed contractors.

Equipment Used

Equipment used for vegetation maintenance (trimming and mowing) along patrol roads and around larger facilities includes mechanical equipment, such as a Bobcat with mower, a construction-grade lawn mower, and a water truck. Equipment use for vegetation maintenance in smaller areas and for trimming of vegetation around smaller aboveground pipeline appurtenant structures typically includes handheld tools.

Activity Frequency and Schedule

Vegetation mowing and trimming along patrol roads and around aboveground structures/facilities occurs as needed but is typically performed annually prior to grading of the patrol roads, in January or February, following the rainy season. The frequency depends on the rate of vegetation growth.

Vegetation maintenance will be conducted, to the extent possible, outside the nesting bird season (February 1 through August 31) to avoid impacts to active nests and remain in compliance with the federal Migratory Bird Treaty Act and the California Fish and Game Code protecting nests and eggs. In the event that vegetation maintenance activities must be conducted during the nesting bird season, Metropolitan’s Environmental Planning Section (EPS) staff must be contacted by operations staff and a pre-construction nesting bird survey must be performed to ensure that no active nests are located within the work area and a 100-foot buffer around the work area.

2.1.3 Culvert Maintenance

Activity Description and Work Area Limits

Cleaning of culverts is performed to remove built-up sediment, debris, and vegetation in existing culverts (typically 12 to 24 inches in diameter) that occur within and adjacent to Metropolitan patrol roads. The purpose of the activity is to remove materials blocking flows and prevent flooding and erosion of the roads when culverts become clogged and water flows overtop the roads. In some cases, riprap is placed around the inlets and outlets to culverts to prevent erosion. Culvert

maintenance activities are limited to 40 feet surrounding the culvert crossing. Work is conducted from the patrol road and the use of equipment in the channel bottom is not typically required.

Equipment Used

Equipment used to perform culvert maintenance activities includes a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, and pumps, depending on the size of the culvert and the amount of sediment and vegetation to be removed. Minor removal of sediment or vegetation in smaller culverts may be conducted with handheld tools.

Activity Frequency and Schedule

Culvert maintenance typically occurs once per year or on an as-needed basis, depending on the rate of vegetation growth and sediment buildup. Sediment is usually removed following large storm events.

This activity will be conducted, to the extent possible, outside the nesting bird season (February 1 through August 31) to avoid impacts to active nests and remain in compliance with the federal Migratory Bird Treaty Act and California Fish and Game Code protecting nests and eggs. In the event that this activity must be conducted within the nesting bird season, EPS staff must be contacted by operations staff and a pre-construction nesting bird survey must be performed to ensure that no active nests are located within the work area and a 100-foot buffer around the work area.

2.1.4 Vegetation Removal along Patrol Roads

Activity Description and Work Area Limits

Vegetation removal along patrol roads involves the permanent removal of vegetation that is directly obstructing access within the 12- to 16-foot patrol road or that is within 4 feet of the edge of either side of the patrol road (a total maximum width of 20–24 feet, depending on the patrol road width). This activity typically involves the permanent removal of large trees or shrubs, grasses, or other vegetation. It is often necessary to remove vegetation that is growing too close to and may cause damage to pipeline facilities, that is damaging equipment and/or vehicles due to its proximity to the road, or that is preventing access by vehicles and/or by operations personnel to structures for inspections and maintenance activities.

Equipment Used

Equipment used for vegetation removal includes mechanical equipment, such as a Bobcat with mower, a construction-grade lawn mower, and a water truck, especially if the vegetation to be removed is located within a larger area or consists of a large tree or shrub. Vegetation removal in smaller areas may be conducted with handheld tools.

Activity Frequency and Schedule

Vegetation removal occurs as needed. The frequency of vegetation removal depends on the rate of vegetation growth or changes in trees or shrubs that obstruct patrol roads.

This activity will be conducted, to the extent possible, outside the nesting bird season (February 1 through August 31) to avoid impacts to active nests and remain in compliance with the federal Migratory Bird Treaty Act and California Fish and Game Code protecting nests and eggs. In the event that vegetation maintenance activities must be conducted within the nesting bird season, EPS staff must be contacted by operations staff and a pre-construction nesting bird survey must be performed to ensure that no active nests are located within the work area and a 100-foot buffer around the work area.

2.1.5 Maintenance of Arizona Crossings

Activity Description and Work Area Limits

The maintenance of low water/Arizona crossings involves sediment and debris removal from existing concrete or stabilized at-grade creek crossings along patrol roads to maintain vehicle and equipment access through a waterway. Although the equipment would be restricted to the existing low water/Arizona crossing during maintenance activities, movement of sediment and debris across the stabilized crossing may result in minor disturbance and material accumulation within a 2-foot-wide area on either side of the crossing.

The low water/Arizona crossings are considered segments of the existing patrol road system. Therefore, vegetation maintenance and removal would occur within 4 feet of either side of the crossing, as described in Section 2.1.2, Vegetation Maintenance along Patrol Roads, and Section 2.1.4, Vegetation Removal along Patrol Roads.

Equipment Used

Equipment used for maintenance of low water/Arizona crossings includes mechanical equipment such as a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, and pumps.

Activity Frequency and Schedule

Maintenance of low water/Arizona crossings occurs as needed whenever sediment or debris accumulates on the crossing. Sediment and debris would typically require removal following large storm events.

2.1.6 Erosion Control

Activity Description and Work Area Limits

Erosion control includes installation of temporary erosion control features along patrol roads, such as gravel/sandbags, certified weed-free wattles, silt fencing, and other best management practices (BMPs) to prevent erosion and sedimentation. Temporary erosion control methods are typically installed and removed or maintained as needed, typically prior to and following large storm events.

Additionally, more permanent erosion control features may include shoring of creek banks through minor earthwork and bank stabilization through the placement of K-rails, riprap, concrete, grout, and other aggregate materials to prevent erosion of patrol roads along streambeds. The placement of 0.75-inch or larger rock, treated-concrete base product, or aggregate base may occur on unpaved patrol roads to prevent washouts, potholes, and ruts. Replacement of these types of erosion controls is not required each year, but they are not considered permanent engineered solutions. To the extent feasible, bank stabilization is restricted to 500 linear feet and placement of up to 1 cubic yard of fill per linear foot within streambeds, per project or bank stabilization area.

Equipment Used

Equipment used to perform erosion control and bank stabilization activities includes mechanical equipment such as a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, and a dozer. The placement of heavy aggregate materials or K-rails to stabilize the bank or placement of pipeline segments may require use of a crane. Where bank erosion is minor, handheld tools may be used to fill areas of erosion in the banks with soil.

Activity Frequency and Schedule

Erosion control materials are installed on patrol roads and slopes as needed prior to and following storm events when erosion or the potential for erosion is observed. Erosion control activities are most likely to be required following large storm events.

2.2 Patrol and Inspection

Activity Description

Routine patrol activities are required to inspect the pipeline system. They are conducted to identify any maintenance required for patrol roads, pipelines, or appurtenant facilities and structures and to check for any security and/or right-of-way issues within the system. The inspections involve vehicle travel by Metropolitan operations staff along existing patrol roads to visually inspect each pipeline and identify any maintenance needs. Water quality sample collection and testing may be conducted during the inspections.

Equipment Used

Pipeline inspections involve the use of light trucks or utility vehicles. Water quality testing is conducted by Metropolitan operations staff using handheld tools to collect water samples and apply water quality testing chemicals.

Activity Frequency and Schedule

The pipeline system is patrolled on a weekly basis using light trucks for routine inspection of the patrol roads, pipelines, and aboveground facilities and appurtenant structures. Inspections and any necessary maintenance is also conducted twice per year using a utility vehicle. Water quality testing is conducted on a monthly basis.

2.3 Routine Structure Maintenance, Repair, and Replacement

2.3.1 Cleaning of Equipment and Structures

Activity Description and Work Area Limits

The cleaning of equipment and structures involves the washing and maintenance of equipment and facilities within the system to remove dirt, spider webs, and other debris. Equipment and structure cleaning is conducted by hand with water from a garden hose attached to the nearest water connection. Metropolitan-approved biodegradable solvents are used as needed. Following the washing of equipment and structures, the existing blowoff valves are exercised by opening them for a few minutes and all moving parts are then lubricated with grease.

Equipment Used

The cleaning of equipment and facilities is conducted by Metropolitan operations personnel using garden hoses, handheld tools, and Metropolitan-approved biodegradable cleaning solvents.

Activity Frequency and Schedule

The cleaning of equipment and facilities is conducted quarterly (four times per year).

2.3.2 Graffiti Removal and Coating of Structures

Activity Description and Work Area Limits

This activity involves painting and coating of aboveground and underground structures to remove graffiti, prevent corrosion, and maintain metal and concrete surfaces. If the building or structure is covered with stone cinder blocks, sandblasting may be conducted to remove graffiti and no coating is required. All metal substrate on substructure equipment is painted with two-part epoxy coating. On aboveground metal substrates, where ultraviolet (UV) protection is required, a volatile organic compound (VOC) polyurethane coating is used. Small amounts of red or dark-brown oil-based enamels or urethanes may be used on the valve operator wheels for protection and contrast. Concrete surfaces are typically painted with a water-based exterior latex enamel. All coatings, paint colors, and brands are approved by Metropolitan.

The graffiti removal and coating work for aboveground structures requires access by light vehicles within the existing 10- to 20-foot maintained area around the structures and is performed using handheld tools. Graffiti removal or coating of underground structures requires the use of similar handheld tools by a two-man team permitted to work in confined spaces. In order to gain access to the underground structures and depending on the location of the structures, traffic control or a city-approved traffic control plan may be required. Work on substructures involves testing for the presence of gases; pumping of water if the structure or access is flooded; inspection of substructure pipes, valves, and other equipment for corrosion; sandblasting or prepping for coating; and application of coating.

Equipment Used

Equipment used in graffiti removal and coating of structures includes light vehicles, a utility truck, and handheld tools, including coating brushes and rollers, hand sanders, or a pressure pot sprayer sand blaster. Sandblasters may be used on concrete or stone materials. Metropolitan-approved cleaning solvents (Pacific Coast 40/40 compliant cleaning solvent) are used to wipe surfaces by hand.

Activity Frequency and Schedule

Graffiti removal from structures is conducted as needed. All accessible aboveground and underground pipes, valves, and related equipment are periodically inspected and coated (typically every 5 years) to minimize the effects of corrosion.

2.3.3 Vegetation Maintenance around Structures

Activity Description and Work Area Limits

Vegetation maintenance activities around aboveground facilities and structures involve mowing, trimming, or removal of vegetation, including weed abatement, within an area between 10 and 20 feet surrounding facilities (depending on access/property restrictions and the presence of any adjacent sensitive biological resources) to maintain access and provide fire clearance.

Herbicides may be used within the 10- to 20-foot area surrounding facilities and structures to control vegetation growth and for the treatment of stumps of removed trees. The herbicides are applied by licensed contractors and must be included in the Metropolitan-Approved Pesticides List (see Appendix A).

Equipment Used

Equipment used for vegetation maintenance activities around aboveground facilities and structures includes mechanical equipment such as a Bobcat with mower, construction-grade lawn mower, and water truck. Vegetation removal in smaller areas may be conducted with handheld tools. Herbicide is applied using a handheld sprayer.

Activity Frequency and Schedule

Vegetation maintenance activities around aboveground facilities and structures typically occur on an annual basis following the rainy season, and concurrently with the activities described in Section 2.1.2, Vegetation Maintenance along Patrol Roads. Clearing and weed abatement may occur as needed depending on the rate of vegetation growth.

This activity will be conducted, to the extent possible, outside the nesting bird season (February 1 through August 31) to avoid impacts to active nests and remain in compliance with the federal Migratory Bird Treaty Act and California Fish and Game Code protecting nests and eggs. In the event that vegetation maintenance activities must be conducted within the nesting bird season, EPS staff must be contacted by operations staff and a pre-construction nesting bird survey must be performed to ensure that no active nests are located within the work area and a 100-foot buffer around the work area.

2.3.4 Pipeline Appurtenance Maintenance, Repair, and Replacement

Activity Description and Work Area Limits

This activity involves the maintenance, repair, replacement, or protection of accessory facilities, also referred to as “pipeline appurtenances.” Pipeline appurtenances are located in existing aboveground or underground structures that are accessible directly or through manholes. Although the work does not typically require excavation, minor trenching may be required for work such as installation or modification of equipment such as vent piping and electrical lines/equipment. The structures may be reoriented, shifted, or raised within their current site location to avoid damage, but this activity does not involve movement of structures outside the existing site. This activity may also include erosion control around structures and installation of fencing around structures or structure yards. Minor excavation work to access the structures may occur within the 10- to 20-foot maintained area around existing structures. Vegetation maintenance or removal within the 10- to 20-foot area around structures may be required for equipment setup and access if growth has occurred since previous vegetation maintenance events.

To the extent feasible, facilities and structures within or adjacent to creeks, streambeds, or wetlands are restricted to a footprint of 10,000 square feet (0.25 acres) within jurisdictional waters, per creek crossing or wetland area.

Equipment Used

Pipeline appurtenance maintenance includes the use of handheld tools or mechanical equipment, such as a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, utility truck, and pumps, depending on the activity.

Activity Frequency and Schedule

Pipeline appurtenance maintenance would occur as needed.

2.3.5 Pest Control

Activity Description and Work Area Limits

Pest control involves the application of pesticide and setting of bait stations within 10 to 20 feet of facilities and structures along the pipeline system, within the 12- to 16-foot-wide patrol roads, and within 4 feet of either side of patrol roads. Targeted pests include rats, mice, spiders, bees, and wasps. Pest control ensures the safety of Metropolitan personnel and avoids damage to electrical systems and other Metropolitan facilities.

Equipment Used

Pest control involves the use of handheld sprayer tools and hand placement of bait stations. The work is conducted by licensed Metropolitan contractors using a pesticide from the Metropolitan-Approved Pesticides List (see Appendix A).

Activity Frequency and Schedule

Pest control occurs as needed and is maintained on a monthly basis (i.e., bait stations).

2.4 Other

2.4.1 Shutdowns/Dewatering

Activity Description and Work Area Limits

This activity involves the shutdown of a pipeline or pipeline segment to allow access into the pipeline for inspections or maintenance. In order to shut down a pipeline, the pipeline must first be dewatered. Prior to releasing treated water, the water is dechlorinated, pH tested, and checked for oily residue.

The pipeline or pipeline segment is drained of water by gravity through blowoff structures or pumped out of pump well structures and discharged into an adjacent water body, catch basin, or storm drain. When water is discharged to a natural water body, sandbags, check dams, temporary piping, filter socks, or Visqueen plastic may be temporarily installed to dissipate and/or slow velocity of flows to prevent erosion. At many of the blowoffs, water is directed onto existing riprap to prevent erosion from occurring.

Equipment Used

Shutdowns and dewatering involve the use of a crane, light towers, utility truck, trailers, generators, pumps, temporary piping, and erosion control materials (sandbags, temporary piping, filter socks, and Visqueen plastic). Erosion control materials are installed using handheld tools.

Activity Frequency and Schedule

Shutdowns are conducted as needed, when inspection and/or maintenance of a pipeline is required by Metropolitan, or at the request of a member agency that requires inspection and maintenance of a pipeline.

2.4.2 Emergency Work

An emergency is defined as a sudden, unexpected occurrence involving a clear and imminent danger that requires immediate action to prevent or mitigate loss of or damage to life, health, property, or essential public services. Emergency work may include flood control, property damage by others, leaking or broken pipelines, pipeline ruptures, natural disasters, sediment cleanup and removal, or damage repair of any kind to avoid such a loss.

In the event of an emergency, work must be conducted quickly to avoid contamination of the potable water by the soil around the pipeline, prevent loss of life and property, and minimize interruption to Metropolitan's water supply, which serves approximately 19 million people within a six-county area. Metropolitan's response time to emergency events is critical. The emergency work impact footprint will be restricted to the minimum area necessary to address the potential for loss of or damage to life, health, property, or essential public services. Whenever possible, work will be conducted from existing patrol roads and locations where disturbance has previously occurred.

Notification to EPS will be made as soon as possible following the emergency event. Pre- and post-activity photographs of the work area will be taken, if possible, and submitted to EPS. EPS will notify/coordinate with regulatory and other agencies, as appropriate.

3 Description of Single-Occurrence O&M Activities

Single-occurrence O&M activities would typically be conducted on a one-time basis and would include repair, rehabilitation, or replacement of existing structures to support the continued operation and maintenance of existing pipelines and pipeline appurtenances and/or reestablish access and/or maintain existing patrol roads. Single-occurrence O&M activities are summarized in Table 3.

Table 3. Summary of Single-Occurrence O&M Activities

O&M Activity Code No.	Activity	Frequency	Typical Duration	Typical Equipment Needs
<i>Single-Occurrence O&M Activities</i>				
15	Patrol road structural repairs (low water crossings including Arizona crossings, culverts, bridges)	As needed	As needed depending upon type of structure	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and crane

Sources: Metropolitan 2001, 2013.

Notes: O&M = Operations and Maintenance.

3.1 Patrol Road Structural Repairs

Activity Description and Work Area Limits

Patrol road structural repairs include the placement of railcar bridges, installation of new culverts, or construction of Arizona crossings or other low water crossings such as articulated mat crossings to reestablish vehicle access on existing patrol roads.

Arizona crossings are permanent at-grade concrete crossings constructed to provide stabilized access through shallow creeks and streambeds. Because Arizona crossings are at grade, there is no interruption of the existing hydrologic regime and flows continue to pass over the crossing. Culverts are permanent reinforced-concrete pipe structures that are placed in the bottom of creeks with steeper banks to allow vehicle crossing without interrupting creek flow or changing the slope of the bank. Although construction is typically scheduled during the dry season, in the event that water is present during construction of Arizona crossings or culverts, flows are temporarily directed around the work area with silt fencing, sandbags, Visqueen plastic sheeting, or bypass piping.

The bridges used by Metropolitan may include railcar bridges, beams and plates, cast-in-place concrete, or other span bridges. Railcar bridges are flat steel railcars placed over a larger streambed and used as short span bridges. Cast-in-place concrete bridges are poured and constructed off site and then lifted onto the abutments using a crane. Both of these types of bridges span the waterway

so permanent structures in the streambed are limited to the placement of concrete abutments on each bank. Beams and plates may be used as a temporary alternative to railcar bridges and involve the placement of beams and metal plates over the creek crossing. Other span bridge types may be used by Metropolitan, if recommended for use by engineering.

To the extent feasible, the impact footprint of any low water crossing, Arizona crossing, culvert, or bridge would not exceed 10,000 square feet (0.25 acres) in jurisdictional waters, per creek/wetland crossing.

Equipment Used

Equipment used to perform road structural repairs includes mechanical equipment, such as a motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer. The placement of steel railcars or concrete cast-in-place span bridges requires the use of a crane.

Activity Frequency and Schedule

Road structural repairs are constructed where stabilized road crossings are needed to facilitate vehicle access across streambeds/drainages along the patrol roads. Engineering and hydrologic analysis is required to ensure that the crossings are sized appropriately.

4 O&M Activity Implementation

The activities implemented under the DSIPP are required to comply with state, federal, and local laws and policies, including CEQA, and various state and federal laws intended to protect riparian resources, nesting birds, sensitive wildlife and plant species and their habitats, and cultural resources. Work in areas with the potential to support these sensitive resources is subject to resource agency review and permit authorization. In order to facilitate reissuance of agency permits and approvals in the future, Metropolitan must document the avoidance and minimization measures implemented, any impacts to these resources, and the mitigation type and success. An annual report must be submitted to the U.S. Army Corps of Engineers, California Department of Fish and Wildlife (CDFW), Regional Water Quality Control Board (RWQCB), and U.S. Fish and Wildlife Service (USFWS) demonstrating permit compliance.

To achieve the required level of pre-activity review and documentation needed to meet resource agency and CEQA compliance, coordination between Metropolitan's EPS and operations staff is required prior to implementation of O&M activities in the Western San Bernardino County Operating Region. EPS will determine what pre-activity steps are required so the O&M activity remains compliant with all state, federal, and local laws and policies. Annual activity planning coordination will be conducted to project the activities necessary in the following year, schedule those activities around the spring nesting/blooming period (to the extent possible), and project mitigation needs. The following sections describe the activity review and implementation requirements, including for work in sensitive resource areas and emergency work, in additional detail.

4.1 Program Overview

Implementation of O&M activities under the proposed program generally involves the following steps:

1. Operations staff identifies necessary O&M activities (either through annual O&M scheduling or on a case-by-case basis).
2. Operations staff completes a pre-activity notification form and submits it to EPS staff.
3. EPS staff reviews the activity type, location, and equipment needs to determine whether sensitive resources may be impacted, find out whether any pre-activity surveys are required, apply required conditions and measures, and make any required agency notifications.
4. EPS staff approves the notification form and communicates to operations staff any avoidance or minimization measures or other requirements/conditions to be implemented during construction.
5. EPS staff provides authorization and the O&M activity is completed.
6. If there are sensitive resources within the work area, EPS staff will request that the operations staff complete the post-activity report form to document completion of the activity and submit it to EPS.
7. For activities where a post-activity report form is required, EPS staff will map the final impact footprint and apply any mitigation credits or measures necessary.

Additional details regarding the scheduling, pre- and post-activity notifications, and sensitive resource reviews are provided in this section and in Section 4.2. Implementation flowcharts detailing the program steps, information requirements, and decision points are provided in Appendix B. All project reviews begin with Exhibit 1 (Project Initiation), and may move to Exhibits 2 through 5, depending on the activity type and potential resources within the activity footprint.

4.1.1 O&M Scheduling

The majority of Metropolitan's routine O&M activities are conducted on an as-needed basis, when maintenance needs are observed during routine patrols. However, Metropolitan conducts patrol road grading (O&M Activity Code No. 1) and vegetation maintenance along patrol roads (O&M Activity Code No. 2) at a minimum of once per year on all patrol roads in western San Bernardino County to ensure uninterrupted access. These activities are typically conducted for a period of 3 months following the rainy season (February through April or May) on the approximately 50 miles of existing patrol roads. Similarly, construction of low water/Arizona crossings (O&M Activity Code No. 15) requires preparation of engineering plans, and culvert maintenance (O&M Activity Code No. 3) and Arizona crossing maintenance (O&M Activity Code No. 4) may be scheduled in advance.¹

Metropolitan operations and EPS staff will coordinate internally each fall/winter to identify the known maintenance activities and locations for the following year. Work within more undeveloped and natural settings should be prioritized and scheduled to avoid work in the nesting season. If all work cannot be completed outside the nesting season, prioritizing maintenance work in more natural areas first will allow work to be completed earlier in the nesting season, when fewer species of birds are actively nesting. Maintenance work within the more urban areas of the pipeline should be prioritized last, since the potential for nesting birds is reduced in those areas. The scheduling is expected to significantly reduce the potential for high costs associated with more intensive nesting bird surveys and biological monitoring, as well as reducing the number of work stoppages due to nesting birds.

4.1.2 Pre-Activity Notification

Prior to conducting maintenance activities, a pre-activity notification form must be completed and submitted to EPS staff at least 3 weeks before scheduling of the maintenance activity. Submittal of the pre-activity notification form is recommended as early as possible upon identification of the need for the proposed O&M activity. The form must include the following information:

- A brief description of the type and purpose of the maintenance activity
- The property owner
- Access points/route to project location
- A map of the work area or detailed location description (including the approximate area of the activity footprint)

¹ Except where an unanticipated storm event occurs and immediate action is required to maintain culverts and Arizona crossings.

- The equipment proposed to be used
- The schedule for and duration of the activity, including proposed start and completion dates

Once construction has commenced, EPS staff shall be contacted by operations staff prior to working outside the authorized activity footprint or if anything in the program description changes, including the construction materials, construction methods, or type of equipment. EPS staff must approve any changes to the activity before work begins. Any changes to the proposed activity, materials, footprint, schedule, or equipment must be approved by EPS before the activity begins and be noted in the post-activity report form (see Section 4.1.4). A copy of the pre-activity notification form is provided in Appendix C. This form is in draft format and may be revised as the proposed program moves forward and regulatory permits are issued.

4.1.3 EPS Activity Review

Metropolitan EPS staff will review the pre-activity notification form to ensure that the proposed activity complies with the CEQA applicant proposed measures (APMs), mitigation measures (MMs), Section 7 Biological Opinion, and the impact thresholds set forth in the DSIPP regulatory permits (if work will be conducted within potential state/federal waters). Activities proposed during the nesting bird season (February 1 through August 31) will be reviewed to determine whether potential nesting habitat (trees, shrubs, or other vegetation) occurs within 100 feet of the activity location that may warrant pre-activity nesting surveys. The riparian resources, sensitive species suitable habitat, and cultural resources mapping database prepared in support of the PEIR and resource agency permitting will be reviewed to determine the potential for impacts to sensitive resources and any required surveys or pre-notification to the agencies. Additional details regarding the EPS review, resource mapping databases, and mitigation measures for work in sensitive resource areas are provided in Section 4.2.

In the event that impacts to nesting birds or other sensitive resources may occur, EPS will coordinate with the lead engineer and/or operations staff to determine whether avoidance through activity rescheduling, modification of the work footprint, or use of alternative construction methods/materials is possible. If avoidance is not feasible, a brief description, timeline, and estimated cost for any pre-construction surveys, resource agency notifications, and/or compensatory mitigation will be provided by EPS. EPS review is completed when written approval and a list of any avoidance and minimization measures is attached to the pre-activity notification form and submitted back to the operations staff who submitted the request.

4.1.4 Post-Activity Report

EPS will alert operations staff if an activity involves work within riparian areas or native vegetation that requires submittal of a post-activity report form. The report is intended to document the completion of work, detail post-activity conditions, and verify the disturbance footprint. Because mitigation credits are based on actual disturbance of sensitive resources, this verification is intended to save costs on mitigation purchases when the actual footprint is smaller than the proposed footprint.

When EPS indicates that a post-activity report is required, the form must be submitted by operations staff to EPS within 7 days of completion of the work. The information submitted must include the following:

1. Pre-activity and post-activity photographs
2. GPS data or a map to scale of the final temporary and permanent activity footprint

EPS staff shall be contacted prior to working outside the authorized activity footprint or if any part of the proposed program description changes after EPS approval of the activity. Any changes to the activity proposed in the pre-activity notification form, including materials, footprint, schedule, or equipment, must be approved by EPS before the activity begins and be noted in the post-activity report. A copy of the post-activity report form is provided in Appendix D. This report form is in draft format and may be revised as this program moves forward and regulatory permits are issued.

4.2 Work in Sensitive Resource Areas

Biologically sensitive areas, including state and federal jurisdictional waters, USFWS-designated critical habitat, and areas of known threatened and endangered species have been identified within Metropolitan's right-of-way in the Western San Bernardino County Operating Region. Similarly, areas of high and medium sensitivity for archaeological and paleontological resources have been identified through literature review and field surveys conducted within the right-of-way. Work in sensitive resource areas is subject to state and federal laws, which require avoidance, minimization, and mitigation for any temporary or permanent impacts to these resources.

The routine and single-occurrence O&M activities proposed under the DSIPP were reviewed to determine the potential for impacts to riparian resources, nesting birds, sensitive species and habitat, and cultural resources. Several of the O&M activities (Activity Code Nos. 7, 8, 9, and 12) would be limited to patrol, inspection, cleaning, and maintenance of existing aboveground Metropolitan structures and therefore have no potential for impacts to sensitive resources. The remaining activities have the potential to result in impacts to sensitive resources depending on location, equipment type, and schedule.

In order to ensure that the appropriate pre-construction reviews and construction monitoring requirements are adhered to, and to document and track compliance with the measures and conditions set forth for O&M activities, pre-activity notifications to EPS for all O&M work are essential and will be required for all maintenance activities. Activities with the potential to result in impacts to sensitive resources will be subject to additional review. The review requirements by resource and activity code and type are provided in Table 4.

Metropolitan has developed a series of map databases as part of the DSIPP, which includes vegetation mapping, potential jurisdictional waters, and modeled suitable habitat for sensitive wildlife and plant species. These databases will be reviewed by EPS staff, in conjunction with the activity schedule and site photographs, when necessary, to determine the sensitivity of the proposed activity area. If no sensitive resources are located within the work footprint and work will be

conducted outside the nesting season, the review will result in approval of the activity. When sensitive resources have the potential to occur within the work footprint, avoidance measures, pre-construction surveys, construction monitoring, and agency notifications may be required or recommended. The map databases and review process for each sensitive resource type are described in further detail below.

Post-activity reporting will be required as requested by EPS, where there are sensitive resources within the work footprint and biological or cultural monitoring, mitigation, and post-construction impact mapping is needed. Appendices C and D contain the draft forms that will be used for internal pre-activity notification and post-activity reporting.

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Table 4. Survey Requirements by O&M Activity

O&M Activity Code No.	Activity	Frequency	Typical Equipment Needs	Survey Requirements			
				Riparian Delineation	Nesting Bird Survey	Sensitive Species and Habitat Survey	Cultural Resources Survey
1	Grading of patrol roads	Annually and as needed	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer	Yes	Yes	Yes	No
2	Vegetation maintenance along patrol roads	Annually, prior to grading of patrol roads, and as needed	Bobcat with mower, construction-grade lawn mower, and water truck	Yes	Yes	Yes	No
3	Culvert maintenance	Annually or as needed	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, pumps, and handheld tools	Yes	Yes	Yes	Yes (if heavy equipment will be used in previously undisturbed areas)
4	Vegetation removal along patrol roads	As needed	Bobcat with mower, construction-grade lawn mower, water truck, and handheld tools	Yes	Yes	Yes	No
5	Maintenance of Arizona crossings	As needed	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, and pumps	Yes	Yes	Yes	No
6	Erosion control	As needed	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and	Yes	Yes	Yes	No

Table 4. Survey Requirements by O&M Activity

O&M Activity Code No.	Activity	Frequency	Typical Equipment Needs	Survey Requirements			
				Riparian Delineation	Nesting Bird Survey	Sensitive Species and Habitat Survey	Cultural Resources Survey
			handheld tools; crane, if pipeline segments are placed				
7	Patrolling and pipeline inspections	Weekly with light truck; twice per year with utility truck	Light truck or utility truck; water quality sample collection may be conducted during inspections and would include handheld tools to collect samples	No	No	No	No
8	Cleaning of equipment and structures	Quarterly	Garden hoses, handheld tools, and Metropolitan-approved biodegradable cleaning solvents	No	No	No	No
9	Graffiti removal and coating of structures	As needed for graffiti removal; coating every 5 years	Light vehicles, utility truck, and handheld tools such as coating brushes and rollers, hand sanders, or pressure pot sprayer sand blaster	No	No	No	No
10	Vegetation maintenance around structures	Annually and as needed	Bobcat with mower, construction-grade lawn mower, water truck, handheld tools, and handheld sprayer for herbicide	Yes	Yes	Yes	No
11	Pipeline appurtenance maintenance, repair and replacement	As needed	Handheld tools or mechanical equipment, such as a motor grader, backhoe, excavator,	Yes	Yes	Yes	No

Table 4. Survey Requirements by O&M Activity

O&M Activity Code No.	Activity	Frequency	Typical Equipment Needs	Survey Requirements			
				<i>Riparian Delineation</i>	<i>Nesting Bird Survey</i>	<i>Sensitive Species and Habitat Survey</i>	<i>Cultural Resources Survey</i>
			loader, water truck, dump truck, scraper, dozer, light towers, generators, utility truck, and pumps				
12	Pest control	Monthly or as needed	Handheld sprayers and bait stations	No	No	No	No
13	Shutdowns/dewatering	As needed	Crane, light towers, utility truck, trailers, generators, pumps, temporary piping, and erosion control materials	Yes	Yes	Yes	No
14	Emergency work	As needed	As needed depending on nature of emergency	Yes	Yes	Yes	No
15	Patrol road structural repairs (low water crossings including Arizona crossings, culverts, bridges)	As needed	Motor grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and crane	Yes	Yes	Yes	Yes

4.2.1 Riparian Resources

There are numerous streams, wetlands, channels, areas supporting riparian habitat, and other water features throughout the Western San Bernardino County Operating Region, which may be within state and/or federal jurisdiction. Federal and state jurisdictional wetlands and waters are regulated under Sections 401 and 404 of the Clean Water Act, the Porter-Cologne Water Quality Protection Act, and Section 1602 of the California Fish and Game Code.

Potential jurisdictional riparian resources throughout the Western San Bernardino County Operating Region have been identified in a map database by including all riparian vegetation communities mapped by Dudek in 2016 and flowlines mapped by the U.S. Geological Survey in the National Hydrography Dataset (USGS 2019). All National Hydrography Dataset flowlines occurring within the program area were buffered by 10 feet on each side. Combined, these mapped resources identified approximately 156 acres of potential jurisdictional wetlands and waters throughout the entire program area. Formal jurisdictional delineations were then conducted by AECOM in 2015, and then updated by Dudek in 2016, 2017, and 2019, at 13 work area locations. Based on the field delineations conducted, 7.03 acres of federal and state jurisdictional waters occur within these work areas. Of the 7.03 acres delineated, 3.47 acres fall under federal and state jurisdictional purview (i.e., dual jurisdiction) and an additional 3.56 acres fall exclusively under state jurisdictional purview. These areas where a formal delineation has been conducted were added to the map database for potential jurisdictional waters.

All O&M activities proposed under the DSIPP (with the exception of O&M Activity Code Nos. 7, 8, 9, and 12) have the potential to impact riparian resources depending on the location of the activity. Therefore, all EPS reviews for O&M Activity Code Nos. 1 through 6, 10, 11, and 13 through 15 will include a review of the activity location in relation to potential jurisdictional waters in the map database described above. Activities located within or adjacent to mapped potential waters that have not been formally delineated will be reviewed in the field by a qualified biologist and the limits of state and federal jurisdictional waters will be mapped. EPS will coordinate with Metropolitan engineering and/or operations staff to avoid impacts to jurisdictional waters to the extent practicable. Avoidance is often achieved through minor revision to a grading footprint or relocating a staging location. All temporary and permanent impacts to waters that cannot be avoided shall comply with the notification and construction conditions of the following permits:

- U.S. Army Corps of Engineers – Clean Water Act Section 404 Authorization
- CDFW – California Fish and Game Code Section 1602 Streambed Alteration Agreement
- RWQCB – Clean Water Act Section 401 Water Quality Certification

Bioengineering alternatives have been identified for O&M Activity Code No. 6 (erosion control) and O&M Activity Code No. 15 (patrol road structural repairs), which may be appropriate in some cases, depending on the hydrologic regime, flood volumes, and the purpose of the activity. These alternatives involve the use of vegetation planting for slope stabilization and erosion control and using alternative construction materials rather than concrete. EPS review of these activity types will include documentation provided in

the pre-activity notification form that these alternatives have been considered and the reasons such alternatives were, or were not, ultimately selected by the engineering team.

Following completion of all construction activities within state and/or federal jurisdictional waters, a post-activity report will be submitted by operations staff to EPS staff. The report is intended to notify EPS of the activity start and completion dates, and includes biological monitoring summaries, including activity location information and photos. Based on this information, EPS will verify that mitigation requirements have been met and will finalize the post-activity report. EPS will coordinate the final mapping and calculation of the impact footprint and ensure that the post-construction footprint is stabilized and appropriate restoration and/or non-native species controls are in place. Each activity that results in impacts to jurisdictional waters will be reported to the resource agencies through the annual report. Applicant proposed measures and mitigation measures addressing riparian resources (APM-HYD-1 through APM-HYD-11 and MM-BIO-6) are summarized in Section 5.1 of this Manual.

4.2.2 Nesting Birds

The federal Migratory Bird Treaty Act and the California Fish and Game Code protect nesting birds and eggs from potential “take,” which may include removal of active nests or implementation of an activity and generation of noise that directly results in the abandonment of nests and eggs. In order to avoid the potential for impacts to active nests and eggs, O&M activities should be scheduled outside the nesting season (February 1 through August 31), especially for those activities that involve vegetation removal or trimming.

Activities such as patrol road grading and vegetation maintenance must be conducted on an annual basis and involve larger areas. To the extent practicable, O&M activities such as patrol road grading will be planned in advance for the upcoming year, as described in Section 4.1.1. Metropolitan typically schedules road grading and mowing following the wet season to ensure that patrol roads are passable and road erosion is addressed. This work takes approximately 90 days and is typically conducted between February 1 and April 1 each year, depending upon weather conditions. It is recommended that all road grading and vegetation mowing, trimming, and removal occur outside the nesting bird season (February 1 through August 31). However, if this is infeasible, it is recommended that O&M activities along certain pipelines and/or portions of pipelines be prioritized to avoid the potential for impacts to nesting birds to the extent practicable by working early in the nesting season when fewer species are actively breeding.

Nesting bird surveys are only required prior to the commencement of O&M activities conducted between February 1 and August 31 in which potential nesting habitat would be trimmed or removed and when work may occur within 100 feet of potential nesting vegetation. The pre-construction survey shall be conducted by a qualified biologist within 7 days prior to the start of work. If no nesting birds are observed, O&M activities may commence.

If an active nest is located, the site shall be marked a minimum of 100 feet in all directions, and the area within the 100-foot buffer area will not be disturbed until after the breeding season or until the nest becomes inactive. As an alternative, if nesting birds are identified during the pre-construction survey, a biological monitor may be present during removal of vegetation to make sure the nesting birds are not disturbed and to determine the appropriate avoidance area to protect the nesting birds. Factors affecting the distance include the species of bird, existing conditions and disturbance conditions (baseline), the tolerance of the birds to disturbance, the type and duration of disturbance activity, intervening topography and vegetation, and other factors. The biologist must record the results of the survey, document any nest buffers that were established, and provide a copy of the nesting bird memo to EPS. In the event that the nest occurs within the limits of state or federal jurisdictional waters, a copy of the memo will be included in the Annual Report to the resource agencies. The mitigation measure addressing nesting birds (MM-BIO-4) is provided in Section 5.2, Nesting Birds.

4.2.3 Sensitive Species and Habitat

A majority of the Western San Bernardino County Operating Region occurs within developed and urban areas of San Bernardino County. However, large areas of dedicated open space support natural upland and aquatic vegetation communities throughout the region.

Sensitive wildlife and plant species and associated natural habitats are protected under a variety of federal, state, and local protections. For the purposes of the DSIPP analysis, Dudek used the following special-status biological resource descriptions:

- **Plants** – species listed as threatened or endangered under the federal and state Endangered Species Acts; species listed as rare, special, or species of special concern as defined by CDFW; species with a California Rare Plant Rank of 1 or 2 as defined by the California Native Plant Society; and species covered or conditionally covered by a regional conservation plan
- **Wildlife** – species listed as threatened or endangered under the federal and state Endangered Species Acts; birds of conservation concern as defined by USFWS; species listed on the Watch List of birds as defined by the American Bird Conservancy and the National Audubon Society; species with a state designation, such as migratory nongame birds of management concern, California species of special concern, Watch List species, Special Animals List species, and fully protected species as defined by CDFW; and other designations, such as Western Bat Working Group species and species covered or conditionally covered by a regional conservation plan²
- **Vegetation communities** – natural communities designated as sensitive by CDFW, riparian habitat, and habitats covered by a regional conservation plan

² Conditionally covered species are subject to additional survey requirements and USFWS approval of specific mitigation plans for effects on these species.

Dudek conducted an extensive literature review process to compile a list of potentially occurring special-status plants and wildlife, sensitive vegetation communities, and aquatic resources within the Western San Bernardino County Operating Region. A total of 136 special-status plants and 70 special-status wildlife species were initially identified for evaluation as potentially occurring within the 9,106-acre Western San Bernardino County Operating Region study area.

Between September and December 2015, Dudek biologists conducted vegetation community and land cover mapping within the Western San Bernardino County Operating Region. Vegetation community and land cover mapping for the area was evaluated using a combination of aerial photograph interpretation and field verification for accuracy. Using the vegetation mapping, each of the 136 special-status plants and 70 special-status wildlife species was given an occurrence probability rating of “not expected,” “low,” “medium,” or “high” based on relative location to known occurrences, vegetation communities (habitat) present, elevation ranges, soils, and locations based on the CNDDDB and USFWS occurrence data. Habitat models were developed for 45 federally or state-listed special-status species (15 plants and 30 wildlife species) that were determined to have a moderate to high potential for occurrence within the proposed program area using geographic information systems (GIS) software by ArcGIS.

Field habitat assessments were then conducted on those species that were federally or state listed as threatened or endangered to verify and further refine the extent of each species' habitat within the proposed program area based on existing environmental and biological conditions. Habitat for two federally listed plant species, Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*) and slender-horned spineflower (*Dodecahema leptoceras*), and three federally listed wildlife species, coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus*), and San Bernardino kangaroo rat (*Dipodomys merriami parvus*), was evaluated in the field. Additionally, habitat for the federally listed endangered Delhi sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) was determined based on the mapping provided in the Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) 5-Year Review: Summary and Evaluation (USFWS 2008). Field evaluation of potential habitat for additional non-listed plant species included Hall's monardella (*Monardella macrantha* ssp. *hallii*), intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), many-stemmed dudleya (*Dudleya multicaulis*), mesa horkelia (*Horkelia cuneata* var. *puberula*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), white-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*), Brand's star phacelia (*Phacelia stellaris*), and California satintail (*Imperata brevifolia*). Field evaluation of potential habitat for additional non-listed wildlife species included Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Setophaga petechia*), two-striped gartersnake (*Thamnophis hammondi*), western yellow bat (*Lasiurus xanthinus*), Blainville's horned lizard (*Phrynosoma blainvillii*), burrowing owl (*Athene cunicularia*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), tricolored blackbird (*Agelaius tricolor*), and western spadefoot (*Spea hammondi*).

All O&M activities proposed under the DSIPP (with the exception of O&M Activity Code Nos. 7, 8, 9, and 12) have the potential to impact sensitive species and/or habitat depending on the location of the activity. Therefore, all EPS reviews for O&M Activity Code Nos. 1 through 6, 10, 11, and 13 through 15 will include a review of the activity location in relation to known species locations, mapped suitable habitat, and level of existing disturbances (i.e., roadsides or existing structure yards) in the map

database described above. Activities located within mapped potential habitat for sensitive species will be reviewed to determine whether protocol surveys have been conducted to document presence/absence of the species. In areas of mapped suitable habitat where no protocol surveys exist, a qualified biologist will conduct a habitat assessment. Based on the results of the habitat assessment, subsequent protocol surveys may be required. EPS will coordinate with engineering and/or operations staff to avoid impacts to species and/or suitable habitat to the extent practicable through scheduling outside the nesting season or revision to the grading footprint. Due to the seasonal requirement associated with many protocol surveys, to the extent feasible, Metropolitan will plan O&M activities in advance for the upcoming year, as described under Section 4.1.1, and regularly update the map database with survey results and species locations.

Based on the results of the pre-construction survey and any protocol surveys, Metropolitan may recommend and require biological monitoring. All temporary and permanent impacts to habitats and species will be mitigated in accordance with the Section 7 Biological Opinion and the measures adopted by Metropolitan under CEQA. Applicant proposed measures and mitigation measures addressing sensitive species and habitat (APM-BIO-1 through APM-BIO-6, APM-AQ-2, and MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-5) are summarized in Section 5.3.

4.2.4 Cultural Resources

Significant cultural resources, including archaeological resources (both prehistoric and historic) and fossils and other paleontological resources, are protected under the National Historic Preservation Act (16 USC 470 et seq.), CEQA, and California Public Resources Code, Sections 5097–5097.6. The potential for cultural resources and previously undiscovered subsurface resources exists throughout the Western San Bernardino County Operating Region.

An archaeological literature and records search was conducted in the Western San Bernardino County Operating Region, plus a 0.5-mile buffer area. The record search was conducted at the South Central Coastal Information Center at California State University, Fullerton. Based on the results of the records search, an intensive cultural resource pedestrian survey was conducted for 13 DSIPP work areas.

A paleontological resources review of published and unpublished literature and museum collections records was conducted at the Natural History Museum of Los Angeles County, the John D. Cooper Archaeology and Paleontology Center specimen catalog, and the University of California Museum of Paleontology's online collections database. Using the archaeological and paleontological data collected during the records searches and field reviews, a mapping database was prepared showing the locations of known sensitive resources and areas of high, medium, and low potential for archaeological and paleontological resources.

The 15 O&M activity types proposed under the proposed program were reviewed, and it was determined that only O&M Activity Code No. 3 (culvert maintenance) and O&M Activity Code No. 15 (patrol road structural repairs) may involve work that could result in impacts to cultural resources. Although patrol roads are regularly maintained, installation of Arizona crossings or culverts typically

involves excavation at depths greater than 3 feet in areas of native soils that are unlikely to have been previously trenched and may contain resources. Similarly, when sediment and vegetation is removed during culvert maintenance, resources may be uncovered that were washed downstream in the channel and caught at the culvert. The potential for damage to such resources is significantly reduced when hand tools are used for culvert maintenance; therefore, the recommendation for additional activity review is limited to culvert maintenance using heavy equipment. All other routine O&M activities would be limited to aboveground work or work within previously disturbed rights-of-way and would not require additional review, pre-construction surveys, or monitoring.

Following receipt of a pre-activity notification form, Metropolitan cultural resources staff or consultants will review the location of any proposed O&M Activity Code No. 3 sites or O&M Activity Code No. 15 work sites in relation to known archaeological resources and sensitive paleontological sediments mapped within the Metropolitan right-of-way. A Phase I pre-construction field survey will be conducted in areas of high or medium sensitivity (or as recommended by the cultural resources specialist) prior to construction. Based on the results of the pre-construction survey, the cultural resources specialist may recommend additional Phase II recovery of any resources found or cultural monitoring during grading, which would be required by Metropolitan. Although highly unlikely given the disturbed nature of the majority of Metropolitan's right-of-way, in the event that human remains are uncovered during grading or construction, all work will be stopped and the appropriate coroner and Native American contacts made. Applicant proposed measures and mitigation measures addressing cultural resources (APM-CR-1 and MM-CR-1 through MM-CR-7) are summarized in Section 5.4, Cultural Resources.

4.3 Emergency Work

Typical emergencies include conditions where there is a threat to life, public health, and safety, including an imminent and significant loss of public and private property. These emergencies can be caused by events of extreme rainfall or runoff, failure of infrastructure components, and/or breach or erosion of channel banks or patrol roads. Due to the unforeseen, urgent nature of emergency work, pre-activity notification to EPS may not be possible.

In emergency situations where work must occur within streambeds, wetlands, or other water features under the jurisdiction of state and/or federal regulatory agencies, EPS must provide written notification must be provided to the U.S. Army Corps of Engineers in accordance with Emergency Processing Procedures for Regional General Permit 63 (RGP 63) – Repair and Protection Activities in Emergency Situations. CDFW will be notified in accordance with the emergency provisions set forth in Section 1600 of the California Fish and Game Code. In order to determine whether work occurred in state or federal waters and to facilitate the processing of these emergency notifications to the regulatory agencies, notification of the emergency through submittal of the pre-activity notification form, must be provided by operations and/or engineering staff to EPS as soon as possible following the emergency event with the following additional information:

1. Pre-activity and post-activity photographs

2. A statement describing the nature of the emergency, the work footprint, and the damage to property, threat to life, or loss of essential public services that would have resulted without implementation of the emergency activities

Notification must be provided to EPS as soon as possible.

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5 O&M Best Management Practices

This section describes the BMPs that shall be implemented by Metropolitan during routine and single-occurrence O&M activities to avoid impacts to sensitive cultural or biological resources and reduce the potential for soil erosion, sedimentation, discharges of materials to stormwater or into water bodies, and spread of invasive plant species. These BMPs include both applicant proposed measures and mitigation measures adopted by Metropolitan under CEQA in the PEIR. Additional measures will be required by the resource agencies in the forthcoming regulatory permits.

5.1 Riparian Resources

5.1.1 Applicant Proposed Measures

APM-HYD-1 Implementation of a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan, as applicable. For projects or activities subject to the State Water Resources Control Board (SWRCB) Construction General Permit (i.e., where construction disturbances would exceed 1 acre), mobilization or construction shall not begin on the project/activity site until Metropolitan has submitted permit registration documents, including a SWPPP, to the SWRCB and obtained a waste discharge ID number.

APM-HYD-2 Grading of Patrol Roads. Patrol roads will be graded in a manner that minimizes the channelization and ponding of stormwater and maximizes the dispersion of runoff via sheet flow (rather than erosive, high-velocity flows). Metropolitan's Patrol Road Maintenance Guidelines, which are used by Metropolitan staff during road grading, call for creation of a cross-slope on the road bed of 0.25 inches per foot of road width toward the outside edge, with crowning of the road to be done only on double-lane roads. Where outsloping the road is not possible due to land contours, ditches shall be created along the side of the road to contain water and direct it away from the road. The bank of the ditch from the edge of the road to the bottom of the ditch shall be at an angle of no less than 3 inches per foot, and shall be a minimum of 1 foot wide and 1 foot deep. In high runoff areas, the ditch shall be larger. Modifications to these guidelines may be made based on specific site conditions. Grade dips shall be installed where necessary to direct water across the road. Arizona crossings shall be constructed with materials that will not degrade water quality (e.g., concrete, coarse rock, riprap, and/or gabions).

APM-HYD-3 Dewatering. If program activities require dewatering to provide a dry work area, dewatering systems will be used to remove and dispose of accumulated surface water and/or manage groundwater seepage. As needed, groundwater will be pumped into truck-mounted storage tanks and either discharged to land in accordance with Regional Water Quality Control Board (RWQCB) regulations, or transported to an authorized discharge location. Discharges of non-stormwater from a trench or excavation that contain sediment or other pollutants directly to a sanitary sewer, storm

drain, creek bed, or other receiving water shall be prohibited without first obtaining special authorization or permit from the RWQCB or local jurisdiction.

- APM-HYD-4 Avoidance of Spills and Leaks.** All equipment operating in and near a watercourse must be maintained in good working condition and free of leaks. No equipment maintenance or refueling shall occur in a channel or basin bottom. All maintenance crews working with heavy equipment shall be trained in spill containment and response procedures.
- APM-HYD-5 Equipment Servicing and Fueling.** All equipment will be serviced and fueled off site. Washing down heavy equipment on the job site shall be permitted only when limited to washing mud or dirt from equipment (engine cleaning or oily parts cleaning is not permitted), and when wash water would drain to an enclosed area where water could percolate or evaporate. Wash water shall not be allowed to enter city or county storm drain systems, and no soaps or chemicals shall be used for equipment washing on the job site.
- APM-HYD-6 Concrete Work.** For proposed CIP projects requiring concrete work, all concrete washouts shall be conducted either into excavations where the concrete was poured or within designated concrete washout stations, or shall be captured using a washout recycling system. Crews shall not be allowed to dispose of concrete directly onto the ground.
- APM-HYD-7 Maintenance of Existing Hydrology.** Stream crossing structures shall be designed to maintain water depths and water velocities comparable to those found in natural areas upstream and downstream of the crossing.
- APM-HYD-8 Avoidance of Channel Work during the Rainy Season.** Activities in earthen channels and in channels with soft bottoms and bank protection shall be avoided during the rainy season to the extent feasible to avoid work when water could be present in the drainage.
- APM-HYD-9 Materials in Waterways.** No brush, loose soils, or other construction materials/waste shall be deposited on or below the ordinary high-water mark of waterways (streams, creeks, canals, ditches). (This BMP does not apply to the use of packed earth or the planting of vegetation to repair and stabilize earthen channels.)
- APM-HYD-10 Temporary Stream Diversions.** Sandbags or other approved methods that avoid and minimize in-stream impacts and effects on wildlife shall be used if temporary stream diversions are required.
- APM-HYD-11 Herbicide Use.** Any pesticide or herbicide applications shall occur under the direction of a professional pesticide applicator with either a Qualified Applicator License or an Agricultural Pest Control Adviser License in California. Label instructions and all applicable laws and regulations are to be strictly followed in the application of pesticides and herbicides and in the disposal of excess materials and containers. Only those materials registered by the U.S. Environmental Protection Agency (EPA) for the specific purpose are

authorized for use, and they shall be used only when weather conditions will minimize drift and impacts on non-target sites. Before applying any pesticides or herbicides in parks or on federal or state land, Metropolitan shall obtain approval from the appropriate agency for all pesticides and herbicides proposed for use on these lands. Only pesticides on the Metropolitan “Approved Pesticide List” and registered with the EPA and the California Environmental Protection Agency will be used.

5.1.2 Mitigation Measures

MM-BIO-5 Compensation for Impacts to Jurisdictional Wetlands and Waters. Mitigation for temporary and permanent impacts to jurisdictional wetlands and waters shall consider and overlap with compensation for special-status species habitat (MM-BIO-2). The U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board may require additional compensation during the regulatory permitting process.

- **Temporary Impacts.** Mitigation for direct temporary impacts to jurisdictional wetlands and waters resulting from CIP projects, single-occurrence O&M activities, and routine O&M activities shall be implemented through on-site restoration. Areas temporarily impacted shall be returned to conditions similar to those that existed prior to grading and/or ground-disturbing activities. For impacted vegetated jurisdictional wetlands and waters, the proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.
- **Permanent Impacts.** Mitigation for permanent impacts to jurisdictional wetlands and waters resulting from CIP projects and single-occurrence O&M activities shall be implemented at a minimum 1:1 mitigation ratio through purchase of credits through an agency-approved mitigation bank, in-lieu fee program, or other agreement. If no agency-approved mitigation bank or in-lieu fee program is available, off-site mitigation lands shall be preserved through a conservation easement.

5.2 Sensitive Species and Habitat

5.2.1 Applicant Proposed Measures

APM-AQ-2 Fugitive Dust Control. Proposed program activities would adhere to South Coast Air Quality Management District Rule 403, which includes a variety of measures intended to reduce fugitive dust emissions. The following measures shall be implemented during

maintenance activities, as needed, to reduce the potential for fugitive dust emissions during grading, excavation, and construction activities:

- The areas disturbed at any one time by clearing, grading, earthmoving, or excavation operations shall be minimized to prevent excessive amounts of dust.
- Pre-grading/excavation activities shall include watering of the area to be graded or excavated before commencement of grading or excavation operations. Application of water should penetrate sufficiently to minimize fugitive dust during earthmoving, grading, and excavation activities, but shall not be applied in a manner that generates runoff from the active work area. In light of drought conditions, Metropolitan would consider alternative feasible methods of dust control that minimize the use of water.
- If reclaimed water is used for the purpose of dust control, such water shall be compliant with Title 22 standards applicable to use of recycled water for soil compaction, concrete mixing and dust control (22 CCR Division 4, Chapter 3, Article 3, Section 60307).
- All trucks shall be required to cover their loads as required by California Vehicle Code, Section 23114. All graded and excavated material, exposed soil areas, including unpaved parking and staging areas, and other active portions of the construction site, including unpaved roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and reclaimed water shall be used whenever possible.
- During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earthmoving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by proposed program activities and operations from being a nuisance or hazard, either on site or off site.
- Open material stockpiles shall be periodically watered or treated with appropriate dust suppressants, if needed.

APM-BIO-1 Pre-Activity Special-Status Plant Surveys. Within the portions of the CIP project and single-occurrence O&M activity sites that were not surveyed in 2017, or for project sites that do not commence construction by 2022, Metropolitan will complete pre-activity surveys for special-status plant species during the appropriate blooming period for species that have potential to occur. Surveys will be conducted by a qualified botanist within the areas that would be subject to direct or indirect impacts. Surveys will conform to the California Native Plant Society Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special Status Native Populations and Natural Communities (CDFW 2018), and the Endangered Species Recovery Program's General Rare Plant Survey Guidelines (USFWS 2002) or the most current accepted protocol. Plant species encountered during the field surveys will be identified to subspecies or variety, if applicable, to determine sensitivity status.

Populations and individuals of any special-status plant species found during pre-activity surveys will be mapped with GPS. Mapped populations of listed species will be avoided unless take authorization has been obtained from the respective resource agency. Non-listed special-status plants will be avoided during construction activities as practicable. Installation of protective fencing and erosion and sediment control measures, as appropriate, will be implemented to protect special-status plant populations found near CIP project and single-occurrence O&M activity sites.

- APM-BIO-2** **Flagging of Work Limits.** All CIP project and single-occurrence O&M activity work area limits within special-status species habitat, including staging areas, shall be well defined and marked (e.g., by caution tape or temporary fencing). All temporary fencing or other markers shall be clearly visible to construction personnel. Parking, stockpiling, or storage of equipment shall be permitted only within designated staging areas.
- APM-BIO-3** **Cleaning of Mowing Equipment.** Mowing equipment shall be thoroughly cleaned before use so it is free of seeds from noxious weeds and does not introduce such weeds to new areas.
- APM-BIO-4** **Invasive Plant Removal Protocols.** Invasive plant species shall be removed in a manner that prevents propagation. All cut/removed invasive vegetation shall be taken to a dump as destruction load. Maintenance personnel shall avoid letting cut stems or seedpods be washed downstream or left behind to propagate.

5.2.2 Mitigation Measures

- MM-BIO-1** **Nesting Bird Surveys.** For all proposed program activities, grading or vegetation clearing, cutting, and removal shall be scheduled to occur during the non-breeding season for birds (September 1 through January 31). If grading or vegetation clearing, cutting, or removal are required during the breeding season (February 1 through August 31), then a qualified biologist shall survey all potential nesting vegetation within 100 feet of the grading limits for nesting birds prior to grading activities, as property access allows. The purpose of the surveys shall be to determine if active nests of special-status or other protected birds are present within the vicinity of the work area. The survey shall be conducted within 7 days prior to the start of work. If no nesting birds are observed, project activities may commence. If an active nest is located, the site shall be marked, and an appropriate buffer established, based on site conditions, nesting species, and construction activity. The buffer area shall not be disturbed until after birds have fledged. The qualified biologist, in conjunction with Metropolitan's Environmental Planning staff, will determine when construction activities may resume in the area. In the event that a threatened or endangered species is located within the survey area and avoidance is not feasible, consultation with the U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife shall be required.

MM-BIO-2 Compensation for Impacts to Federally and State-Listed Species Habitat. Direct temporary and permanent impacts to suitable habitat for federally or state-listed species within proposed CIP project and single-occurrence O&M activity areas shall be mitigated through on-site or off-site measures. Mitigation for temporary and permanent impacts to listed species habitat shall consider, and may overlap with, jurisdictional waters and wetlands (MM-BIO-5).

- **Temporary Impacts.** Mitigation for direct temporary impacts to suitable habitat for federally or state-listed species shall be implemented through on-site rehabilitation at a 1:1 mitigation ratio. Areas temporarily impacted shall be returned to similar conditions to those that existed prior to grading and/or ground-disturbing activities. For proposed CIP projects and single-occurrence O&M activity temporary impact areas outside routinely maintained areas, the proposed rehabilitation of impact areas may include, at a minimum, a feasible implementation structure, salvage/seeding details, invasive species eradication methods, a monitoring schedule, performance standards of success, estimated costs, and identification of responsible entities.
- **Permanent Impacts.** Metropolitan shall purchase land or fund a mitigation bank or in-lieu fee program to compensate for all permanent loss of suitable habitat for federally or state-listed species (including critical habitat), if available, at a 1:1 ratio. Direct impacts to federally listed species' occupied habitat shall be addressed through either the Section 7 or Section 10(a)(1)(B) process under the federal Endangered Species Act (ESA) of 1973, as amended. Additionally, direct impacts to federally designated critical habitat that cannot be avoided shall be addressed through either the ESA Section 7 or Section 10(a)(1)(B) process. Direct impacts to state-listed species shall be addressed through the California Fish and Game Code Section 2081(b) incidental take permit process. The two processes may require additional mitigation beyond what is being proposed under this CEQA analysis.

MM-BIO-3 Pre-Construction Biological Surveys. Prior to the start of ground-disturbing construction or vegetation removal associated with Capital Investment Plan (CIP) projects and single-occurrence Operations and Maintenance (O&M) activities, pre-construction surveys for special-status plant or wildlife species shall be conducted in areas of suitable habitat within 300 feet of ground-disturbing activities, as property access allows. If special-status plant or wildlife species are located during the focused surveys, then their locations shall be mapped and monitored for avoidance (MM-BIO-4).

MM-BIO-4 Biological Monitoring. Should special-status plants or wildlife be identified during MM-BIO-3 or APM-BIO-1, a qualified biologist shall monitor ground-disturbing activities within areas where special-status plant and wildlife species, sensitive vegetation communities, or jurisdictional waters/wetlands are present during CIP projects and single-occurrence O&M activities. The qualified biologist shall look for special-status species that may be located within or immediately adjacent to work areas. If special-status species are found, the biological monitor shall identify their location for avoidance or flush/move them out of harm's way to avoid direct impacts to these

species. The qualified biologist, in coordination with The Metropolitan Water District of Southern California (Metropolitan), shall determine when monitoring shall cease.

5.3 Nesting Birds

5.3.1 Applicant Proposed Measures

None are applicable.

5.3.2 Mitigation Measures

MM-BIO-1 Nesting Bird Surveys (see Section 5.2.2).

5.4 Cultural Resources

5.4.1 Applicant Proposed Measures

APM-CR-1 Treatment of Human Remains. If human remains are discovered during construction, no further disturbance shall occur until the county coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the county coroner determines the remains are Native American, the Native American Heritage Commission (NAHC) shall be contacted within a reasonable time. Subsequently, NAHC shall identify the most likely descendant (MLD). The MLD shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in California Public Resources Code Section 5097.98.

5.4.2 Mitigation Measures

MM-CR-1 Avoidance of Impacts to Cultural Resources. Metropolitan shall minimize or avoid impacts to potentially significant cultural resources discovered unexpectedly during construction by developing and implementing the following:

- All work shall halt within 50 feet of the discovery site and the discovery shall be protected in place.
- Metropolitan, in consultation with the qualified cultural resources specialist, shall designate an area surrounding the area as a restricted area.
- A qualified cultural resources specialist shall evaluate the significance of the discovery.
- A qualified cultural resources specialist shall develop appropriate treatment measures for the discovery in consultation with Metropolitan and other appropriate agencies.

- Work shall be prohibited in the restricted area until Metropolitan provides written authorization.

MM-CR-2 Paleontological Resource Impact Mitigation Program. Prior to the start of ground-disturbing activities in previously undisturbed areas with high paleontological sensitivity, a qualified professional paleontologist meeting the Society of Vertebrate Paleontology's (2010) standards ("project paleontologist") shall be retained to provide project-level analysis. The project paleontologist shall prepare and implement a paleontological resource impact mitigation program (PRIMP) for areas that will include excavation into native soils with high or undetermined geologic sensitivity. The PRIMP shall provide management strategies based on the assigned sensitivity rankings as well as the proposed depths of ground disturbance.

As part of the PRIMP, where new ground disturbance would occur at 4 feet or more below ground surface, full-time monitoring may be required in program work areas determined to have a high or undetermined paleontological sensitivity (i.e., Puente Formation, early Holocene or older axial-channel and alluvial-fan deposits, fault-bounded conglomerate and sandstone), or spot check monitoring in proposed program work areas determined to have low paleontological sensitivity (i.e., Holocene age surficial deposits).

In addition, the PRIMP shall require that the project paleontologist conduct a Worker's Environmental Awareness Program (WEAP) training for all field personnel regarding the types of fossils that could be found in the work areas and the procedures to follow should paleontological resources be encountered. Specifically, the training shall provide a description of the fossil resources that may be encountered in the work areas, outline steps to follow in the event that a fossil discovery is made, and provide contact information for the project paleontologist and on-site monitor(s). The training shall be developed by the project paleontologist and may be conducted concurrent with other environmental training (e.g., biological, cultural, and natural resources awareness training, safety training).

MM-CR-3 Preparation, Curation, and Reporting of Vertebrate Fossils. All unique identifiable vertebrate fossil remains that are collected during the course of the proposed program will be prepared in a properly equipped paleontology laboratory to a point ready for curation. Preparation will include the careful removal of excess matrix from fossil materials and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossil specimens will be identified to the lowest taxonomic level possible, cataloged, analyzed, and delivered to an accredited museum repository for permanent curation and storage. Fossil specimens will be submitted for permanent curation in a museum repository approved by Metropolitan, such as the San Bernardino County Museum or Western Science Center. The cost of curation is assessed by the repository and is the responsibility of Metropolitan.

At the conclusion of laboratory work and museum curation, a final report will be prepared describing the results of the paleontological inventory and evaluation. The report will include an overview of the proposed program work area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If fossils will be donated for permanent curation, a copy of the report will be submitted to the curation institution along with the fossil assemblage.

MM-CR-4 Phase I Cultural Resource and/or Paleontological Survey. For areas not already surveyed, a pre-activity review should be performed for future ground-disturbing activities associated with Operations and Maintenance (O&M) activities (O&M Activity Code Nos. 3 and 15). For each location where these activities will take place, the proposed activity footprint will first be examined by Metropolitan staff to determine if the proposed ground-disturbing activities will be confined to the area of previous disturbance or if there is a potential for additional ground disturbance within intact native sediments. If it is determined that the proposed activities have the potential to impact undisturbed native sediments, then a Phase I cultural resource and/or a paleontological survey will be required. The purpose of the field surveys will be to visually inspect the ground surface for evidence of archaeological remains and for exposed fossils or traces thereof and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface. All archaeological resources observed during the course of fieldwork shall be adequately recorded at the time of discovery following standard documentation procedures. All fossil occurrences observed during the course of fieldwork, significant or not, shall be adequately documented and recorded at the time of discovery.

MM-CR-5 Protective Measures for Archaeological Resources. For future ground-disturbing O&M activities (O&M Activity Code Nos. 3 and 15) in the vicinity of an archaeological resource, protective measures shall be implemented for significant archaeological sites in close proximity to a proposed program work area. If the pre-activity review (MM-CR-4) identifies a known archaeological site within 50 feet of a Distribution System Infrastructure Protection Program (DSIPP) work area, the following protective measures are required as warranted:

- Exclusion fencing and flagging shall be established around any significant or potentially significant archaeological site located within 50 feet of a DSIPP work area.
- A qualified archaeologist shall monitor all ground-disturbing activities in all DSIPP work areas located within 50 feet of a significant or potentially significant archaeological site.

MM-CR-6 Phase II Cultural Resources Evaluation. For future ground-disturbing O&M activities (O&M Activity Code Nos. 3 and 15) in areas where archaeological resources cannot be avoided by implementation of MM-CR 5, development of a Phase II cultural resources evaluation program would be required to be implemented by a qualified archaeologist.

The evaluation program will include the development of an appropriate research design and methodological approach to evaluate the archaeological resources that have the potential to be impacted during proposed program-related activities. The findings of the cultural resources evaluation program shall be presented in a technical report to be submitted to Metropolitan (and the federal lead agency, if applicable) for review and approval.

MM-CR-7 Phase III Data Recovery Plan. For those archaeological resources determined to be eligible for listing in the California Register of Historical Resources and/or the National Register of Historic Places, a Phase III data recovery plan shall be prepared by a qualified archaeologist prior to the onset of excavations. The plan shall detail the field, laboratory, and archival methods that shall be used during the data recovery program; the curation of archaeological materials at an appropriate facility for future research; and provisions for a report detailing the findings and significance of the archaeological resources. The plan shall be submitted to Metropolitan for review and approval prior to the commencement of data recovery investigations. For prehistoric archaeological sites, a Native American monitor shall be present during the Phase III fieldwork efforts. Results of the Phase III data recovery plan shall be presented in a technical report submitted to Metropolitan for review and approval prior to the commencement of ground-disturbing activities. A final version of the report shall be submitted to the regional California Historic Resources Information System repository.

6 References

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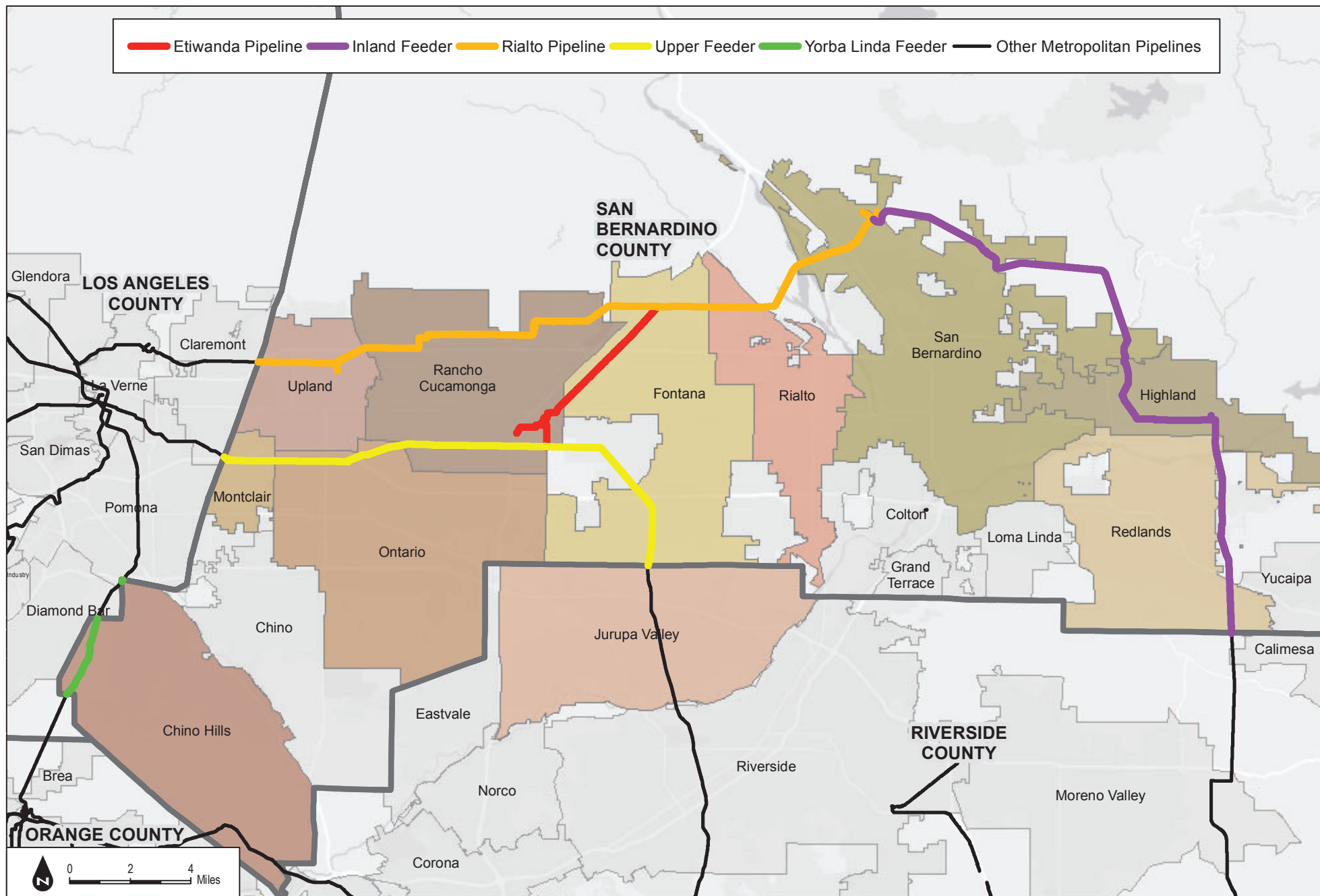
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SOURCE: Nat Geo 2020

FIGURE 1
Overview of Metropolitan's Conveyance and Distribution System

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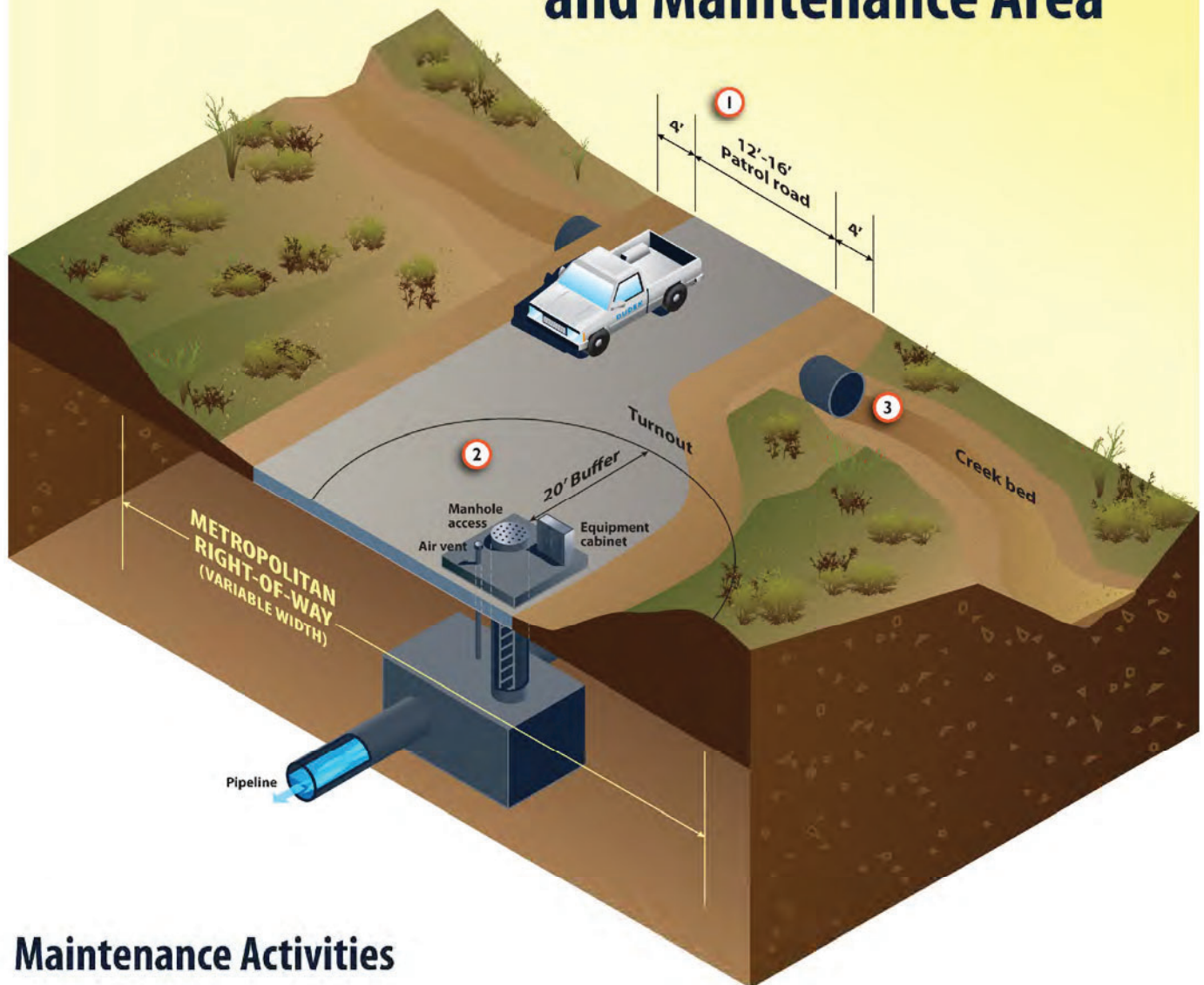


SOURCE: ESRI World Canvas 2020

FIGURE 2
Western San Bernardino County Operating Region Pipeline Locations

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Typical Metropolitan Operations and Maintenance Area



Maintenance Activities

1 Patrol Road

- Weekly patrols
- Grading
- Erosion control
- Vegetation maintenance
- Turnouts/driveways approximately every 1000 feet
- Maintain 4-foot shoulder on both sides of road
- Pest control

2 Structures

- Weekly patrols
- Graffiti removal
- Clean equipment/structures
- Vegetation maintenance within 20-foot buffer around above ground appurtenances
- Structure replacement/maintenance
- Erosion control
- Pest control

3 Culverts and Arizona Crossings

- Maintain free of sediment and vegetation
- Regrading/repaving as necessary

SOURCE: MWD

FIGURE 3

Typical Metropolitan Operations and Maintenance Area

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Appendix A

Metropolitan-Approved Pesticides List

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PESTICIDES APPROVED FOR APPLICATION BY METROPOLITAN WATER DISTRICT:

as of February 18, 2020

INSECTICIDES:

EPA Reg #

Advion Insect Granule	100-1483
Amdro Fire Ant Bait	73342-1
Conserve SC	62719-291
M-Pede	53219-6
Neemazad 0.25EC	11688-5
Orthene TT&O	59639-26-ZA
P.I. Pyrethrin Contact Insecticide	499-444
Scourge 4%+12 ULV	432-716
Tempo 20WP	3125-377
Vectobac 12AS	275-66
Wasp Freeze	499-362

RODENTICIDES:

Contrac Rodenticide	12455-69
Fumitoxin	72959-1
Weevil-cide	70506-13
Wilco Gopher Bait, Type 2	12-361-37100I
Wilco Ground Squirrel Bait	36029-20
Wilco Zinc Ag Bait	36029-10
ZP Rodent Bait	12455-18
ZP Rodent Oat Bait AG	12455-102

MOLLUSCICIDES:

Sluggo	67702-3-54705
--------	---------------

FUNGICIDES:

Fore Flowable	707-156
Subdue 2E Fungicide	100-619
Subdue GR Granular Fungicide	100-794
Triforine EC	64746-1-AA-59639

HERBICIDES:

EPA Reg

Aquamaster	524-343
Barricade 65WG	100-834
Cleantraxx	62719-702
Fusilade II	10182-393
Esplanade 200SC	432-1516
Forfeit 280	34704-1080
Gallery 75 Dry Flowable	62719-145
Garlon 4 Herbicide	62719-40
Goal T&O Herbicide	707-174
Habitat Herbicide	241-426
Landmark XP	352-645
Manage Turf Herbicide	524-465
Milestone Specialty Herbicide	62719-519
Oust XP	352-601
Pendulum WDG	241-340
Portfolio 4F	279-3295-2935
Ronstar G	264-445
Roundup Custom	524-343
Roundup Pro Concentrate	524-529
Roundup ProMax	524-579
Scythe	53219-7
Speed Zone Turf Herbicide	2217-833
Surflan AS Specialty	62719-113
Telar XP	352-654
Trimec Turf	2217-517

PLANT GROWTH REGULATORS:

Atrimmec	35977-1-2217
Embark 2S	7182-7

SPRAY ADJUVANTS:

Activator 90	CA Reg 34704-50034
CMR Silicone Surfactant	CA Reg 1050775-50025-AA
Magnify	CA Reg 17545-50018
Pro-Spreader Activator	CA Reg 1050775-50022-AA
Blazon	n/a
R-56	CA Reg 2935-50185

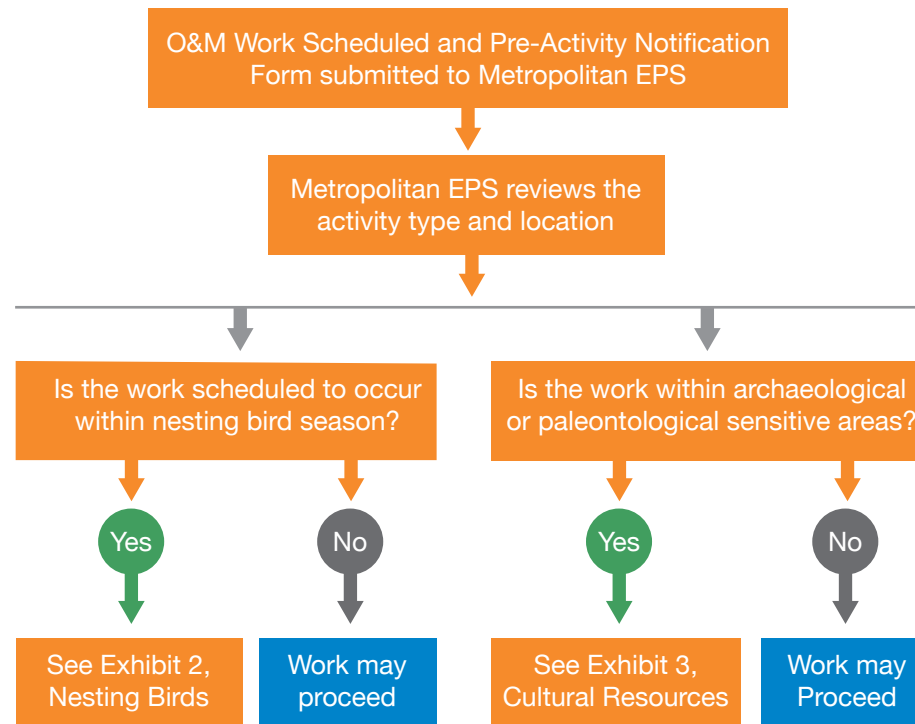
MATERIALS FOR STRUCTURAL CONTRACTOR USE ONLY:

Borid	9444-129
Catalyst	2724-450
Drione	4816-353
Gentrol Point Source	2724-469
Precor 1%	2724-352-50809
Tempo 20 WP	3125-377
Tempo 20 WP Power Pak	3125-396

Appendix B

Implementation Flowcharts

DRAFT



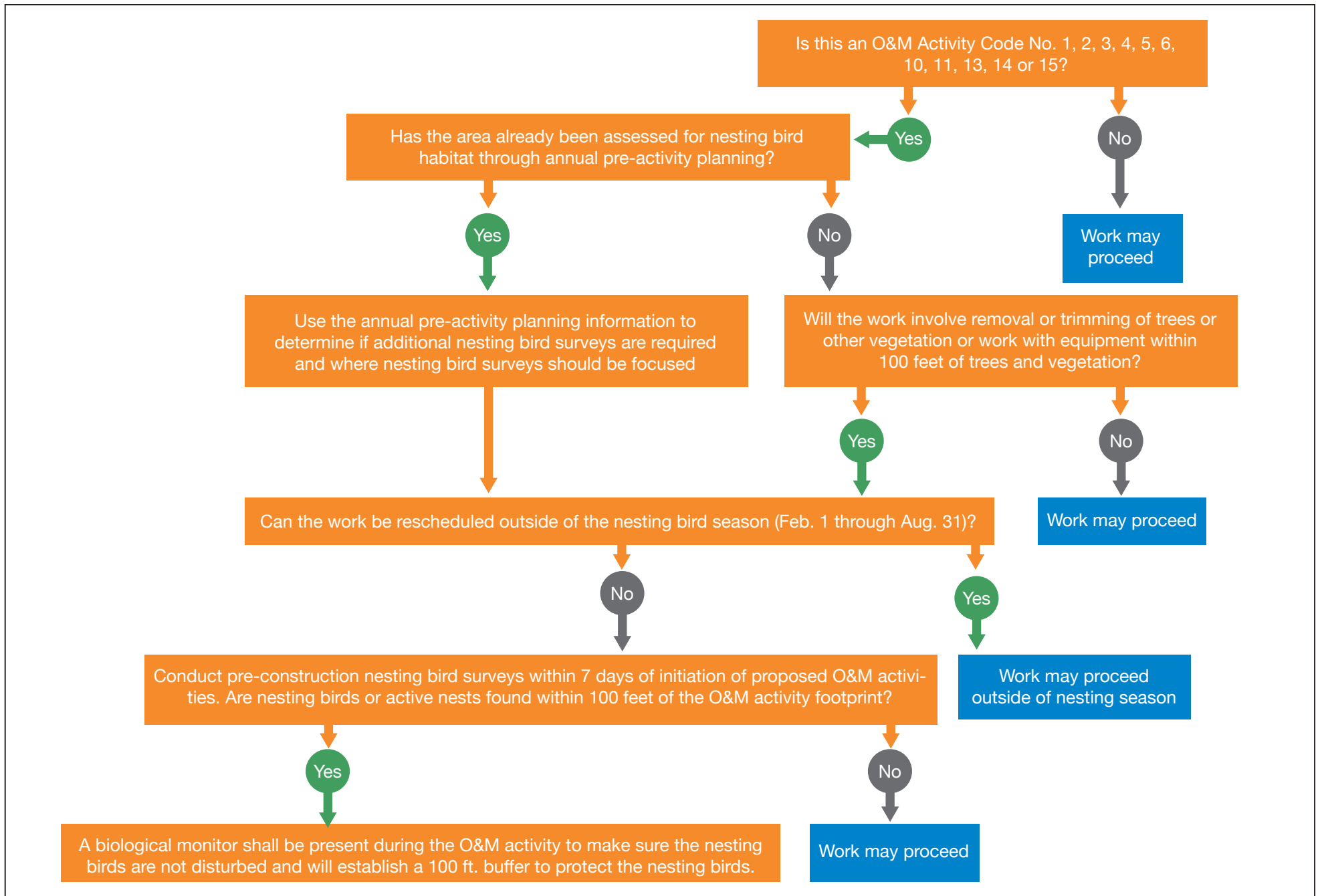


EXHIBIT 2
Nesting Birds

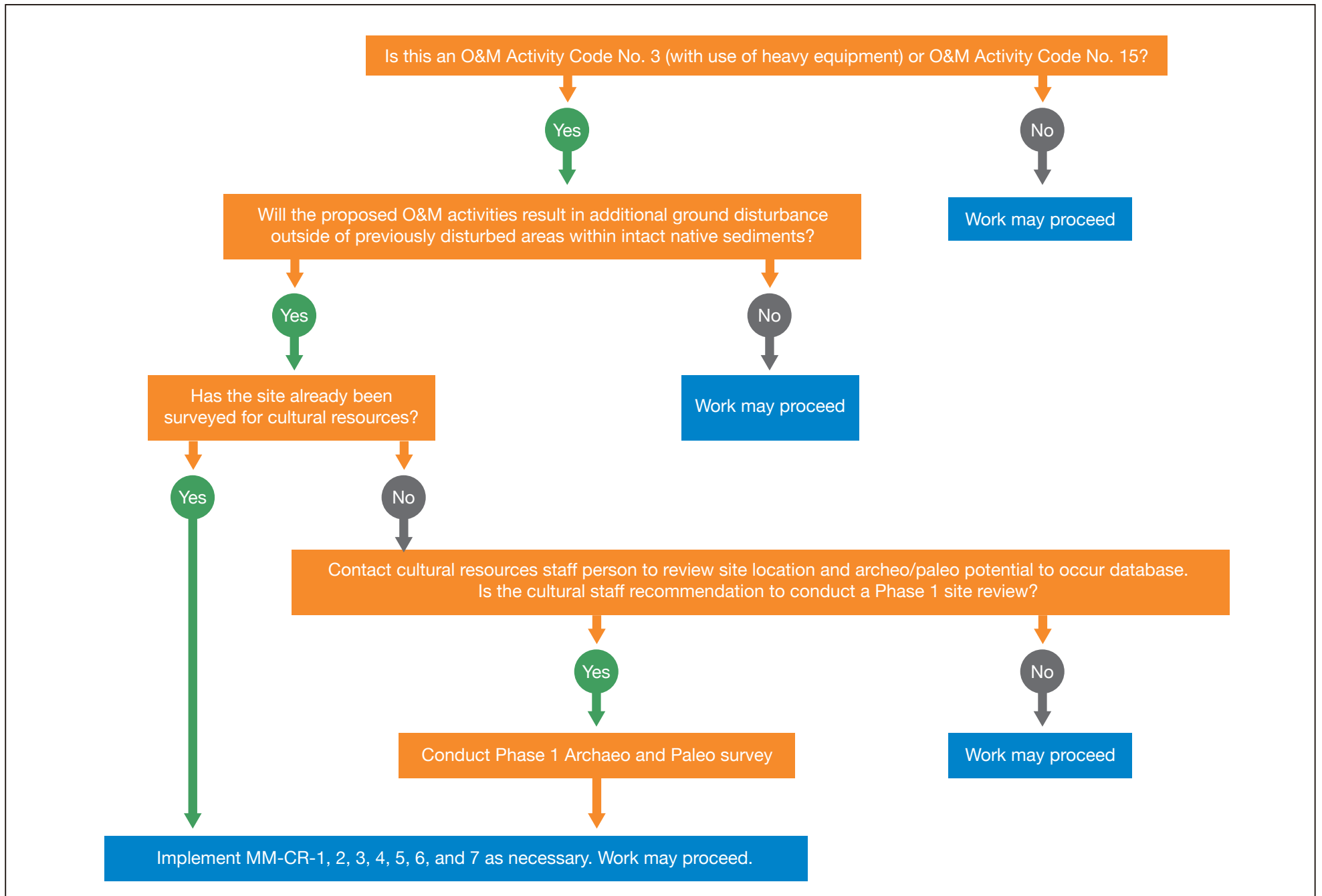


EXHIBIT 3

Cultural Resources

Appendix C

Pre-Activity Notification Form

DRAFT

ENVIRONMENTAL PLANNING - WSO SERVICE REQUEST

Report No.

POINT-OF-CONTACT / REQUESTOR

ID No. Full Name Group Location/Office

Section Unit MetNet No.

PROJECT INFORMATION

Project Title Facility/Pipeline Location

Desired Start Date Complete Date Beginning Pipeline Station Ending Pipeline Station

Project Description (including spoil locations, equipment laydown, access points, etc.)

ACCESS

Project Site Access ☐ MWD Road ☐ Public / Private Road ☐ No Existing Access

CHECK IF PROJECT INVOLVES (check all that apply):

(#) refers to RWIPP O&M work categories

- | | | |
|---|--|---|
| <input type="checkbox"/> Arizona Crossing Maintenance (5) | <input type="checkbox"/> Pest Control (12) | <input type="checkbox"/> Vegetation Removal (using hand tools) |
| <input type="checkbox"/> Cleaning of Equip. or Structures (8) | <input type="checkbox"/> Riprap Repair / Installation | <input type="checkbox"/> Vegetation Removal (heavy machinery) |
| <input type="checkbox"/> Culvert Maintenance (3) | <input type="checkbox"/> Shutdown/Dewatering Raw Water (13) | <input type="checkbox"/> Vegetation Removal Along Patrol Rds (4) |
| <input type="checkbox"/> Emergency Work (14) | <input type="checkbox"/> Shutdown/Dewatering Treated Water(13) | <input type="checkbox"/> Work within a Waterbody (e.g., stream, wetland, lake, storm channel, wash; flowing or dry) |
| <input type="checkbox"/> Erosion Control (6) | <input type="checkbox"/> Structure Maint., Repair, or Replacement (11) | <input type="checkbox"/> Other |
| <input type="checkbox"/> Excavation or Grading | <input type="checkbox"/> Structure Modification / Demolition / Removal | |
| <input type="checkbox"/> Grading of Patrol Roads (1) | <input type="checkbox"/> Traffic Diversion / Obstruction | |
| <input type="checkbox"/> Graffiti Removal / Coating of Structures (9) | | |
| <input type="checkbox"/> Material Disposal / Stockpile | <input type="checkbox"/> Vegetation Maint. Along Patrol Roads (2) | |
| <input type="checkbox"/> Patrolling and Inspections (7) | <input type="checkbox"/> Vegetation Maint. Around Structures (10) | |

PROJECT EQUIPMENT

Equipment Required Size / Model Quantity

PROJECT TEAM

Construction / Maintenance Supervisor

Work Force (check all that apply)

☐ Construction Services ☐ Contractor ☐ Distribution System Personnel ☐ Plant Personnel

PROJECT ATTACHMENTS (check all the apply)

☐ Digital Photos (required attachment) ☐ Existing Permits (e.g., discharge, encroachment) ☐ Plans / Specifications

☐ Maps / Drawings (required attachment) ☐ Other

SIGNATURES_____
Requestor_____
Date_____
WSO Team Manager / Point of Contact_____
Date

ENVIRONMENTAL PLANNING USE ONLY

ENVIRONMENTAL CLEARANCE REQUIREMENTS - (To be provided by EPT; N/A to be entered if not required or not applicable)

1. **SCHEDULE:** The following restrictions apply to the project's schedule:
2. **PERMIT REQUIREMENTS:** The following permits must be complied with:
3. **NOTIFICATIONS:** The following notifications are required as a condition of environmental clearance:
 - (a) Immediately, if project conditions change or if any of these environmental clearance requirements cannot be implemented;
 - (b) Within [one week] of project commencement; and
 - (c) Within [one week] of project completion.
4. **OTHER REQUIREMENTS (Project specific requirements such as):**
 - (a) to ensure a avoidance of significant environmental impacts;
 - (b) minor modifications to the project description as agreed between WSO and EPT
5. **CEQA Determination:**

- ☐ Additional information requested by Environmental Planning (see attached) _____
- ☐ New Permit Required ☐ Yes ☐ No ☐ Undetermined _____
- ☐ Existing Permit _____
- ☐ Environmental Planning has determined that environmental clearance may be delayed _____

CLEARANCE☐ Yes ☐ No_____
Environmental Planning Clearance_____
Date_____
Job No.

Appendix D

Post-Activity Report Form

DRAFT

ENVIRONMENTAL PLANNING/POST-ACTIVITY NOTIFICATION FORM

WSO TEAM MANAGER / POINT-OF-CONTACT

ID No. _____ Full Name _____ Group _____ Location/Office _____

Section _____ Unit _____ MetNet No. _____

PROJECT INFORMATION

Project Title _____ Location _____ Activity Dates _____
Start Date _____ Completion Date _____

POST ACTIVITY ATTACHMENTS:

☐ Pre- and post-activity Digital Photos (required attachment)

☐ Maps and Drawings of final activity footprint (required attachment)

☐ Cultural or Biological Monitor Summary Report

☐ Other _____

ENVIRONMENTAL PLANNING USE ONLY

POST ACTIVITY REQUIREMENTS - (To be completed by EPT; N/A to be entered if not required or not applicable)

ENVIRONMENTAL RESOURCES:

☐ Work within Nesting Season

☐ Work within a Waterbody (e.g. stream, wetland, lake, storm channel, wash; flowing or dry)

☐ Work within habitat for sensitive species. Species or habitat type: _____

☐ Work within area of potential sensitive cultural resources.

Mitigation Measures Applied (attached biological/cultural monitor summary report, if applicable)

Project Footprint Conditions (e.g., regraded, erosion control applied, restoration oversight needed)

PROJECT TEAM

Construction / Maintenance Supervisor **Work Force (check all that apply)** _____

☐ Construction Services

☐ Contractor

☐ Distribution System Personnel

☐ Plant Personnel

SIGNATURES

_____	_____	_____
Preparer of Post Activity Report	Date	MetNet
_____	_____	_____
WSO Team Manager / Point of Contact	Date	MetNet

1. DOCUMENT ACTIVITY COMPLETION: Log completion of activity for Annual Report.

2. MITIGATION: Determine if mitigation credits purchase or implementation of mitigation plan is required.

3. NOTIFICATIONS: Make any final notificaitons to the resource agencies, Parks Department, or other entities.

4. OTHER REQUIREMENTS (Compliance with other project specific requirements)

☐Additional information requested by Environmental Planning (see attached)

☐Additional information received from WSO

☐GPS Data or Mapping of Final Footprint Needed

Appendix B

CIP Project Locations

Table 1. Western San Bernardino County DSIPP CIP Project Locations

Pipeline and Station	CIP Activity Code No.	CIP Work Type	Purpose of Improvements	Work Description	Construction/Access Methods	Estimated Construction Duration
Inland Feeder 19+55	3	Slope Stabilization	The existing concrete panels are damaged from runoff and saturated soils. Additionally, vegetation has grown around blow-off outlet pipes. The purpose of the improvements is to stabilize and repair the channel embankment to protect the blow-off structure and prevent erosion.	<ul style="list-style-type: none">Remove existing damaged concrete panels within Metropolitan’s easement (approximately 100 feet on either side of structure) and replace with grouted riprap.Place gravel around surface of structure (approximately 500 square feet).Remove vegetation around blow-off outlet drainpipes.	<ul style="list-style-type: none">Staging Area: The staging area for this site is approximately 4,440 square feet. The staging area has dimensions of approximately 60 feet by 80 feet. This area is within an undisturbed portion of Metropolitan’s permanent easement right-of-way. This staging is accessible to the project site by an existing dirt road within Metropolitan’s easement.Access Paths: Access to the proposed excavation locations will utilize existing dirt roads to the maximum extent possible. New dirt roads will not be created for site access. All vehicle travel between the existing dirt road and the project site will use the same pathway. The disturbed path width is approximately 20 feet. The total length of disturbed pathways required for the project is 800 feet.	5 weeks
Inland Feeder 266+15 (also includes 267+81 and 271+24)	1, 2	Patrol Road Improvements; Erosion Control	There is no existing vehicle access to the pumpwell structure at Sta. 266+15 and sediment flows into structure through the air vent opening. The access roads and turnarounds to the structures at Sta. 267+81 and Sta. 271+24 have deteriorated and need to be reestablished and strengthened to maintain access and reduce future maintenance.	<ul style="list-style-type: none">Install dirt access roads and turnarounds with support grids at three existing Metropolitan structures.Grade for proper drainage away from structures.At Sta. 266+15 – Install articulated concrete block mat (allows vegetation to grow through), and a small concrete curb adjacent to paved roadway to prevent drainage into the vent at manhole structure.	<ul style="list-style-type: none">Staging Area: The staging area for this site is approximately 7,000 square feet. The staging area has dimensions of approximately 27 feet by 250 feet. The staging area is located within Metropolitan’s permanent easement right-of-way, east of Sta. 267+81. This staging area and project site can be accessed by a dirt road off Arrowhead Springs Road.Access Paths: Access to the proposed work locations will utilize existing dirt roads to the maximum extent possible. New dirt roads will also be created for site access. The total length of disturbed pathways required for the project is 500 feet.	5 weeks
Inland Feeder 288+90	2	Erosion Control	Significant runoff is causing erosion and sediment buildup around the air release and vacuum valve structure at Sta. 288+90. The runoff water needs to be properly diverted into East Twin Creek, without affecting an existing USGS structure. The improvements will prevent future erosion and protect the structure.	<ul style="list-style-type: none">Regrade around structure at Sta. 288+90 and construct new V-ditch gutters along paved roadway to collect and route runoff away from existing structures and into new energy dissipation riprap at East Twin Creek.Replace approximately 10-foot by 16-foot section of asphalt road with a concrete swale to convey flow towards new drainage riprap.Extend existing V-ditch to new energy dissipation riprap at East Twin Creek at Sta. 290+15.	<ul style="list-style-type: none">Staging Area: The staging area is 1,250 square feet. The staging area is 50 feet by 25 feet, located on the paved pad at Sta. 290+15. This staging area is accessible to the project site by an existing paved road.Access Paths: Access to the proposed work locations will utilize the existing paved roadways. No new access roads will be created for site access. All vehicle travel between the existing road and the project site will use the same pathway. Since all access will be from the existing paved road, no additional disturbance is expected for this site.	7 weeks
Inland Feeder 299+42 (revised from Station 290+15)	2, 3	Slope Stabilization; Erosion Control	Runoff from the existing V-ditch gutter system along the paved roadway creates erosion at three discharge points, which is causing erosion and gullies along the adjacent hillsides. Purpose of work is to repair the erosional areas and reconfigure road V-ditches and drainage system to prevent future erosion.	<ul style="list-style-type: none">Install new 18-inch storm drain within the paved roadway to collect runoff from three V-ditches and reroute to new energy dissipation structure near East Twin Creek, west of Sta. 292+00.Fill in erosional gullies and undercut areas at three existing V-ditch discharge locations	<ul style="list-style-type: none">Staging Area: The staging area is a 5,000-square-foot area on an existing gravel pad at Sta. 300+00. The staging area is 100 feet by 50 feet. This staging is accessible to the project by an existing paved road.Access Paths: Access to the project site will utilize the existing paved roadways. New dirt roads will not be created for site access. Because all access is expected to be on the paved existing roadway, the disturbed path area is anticipated to be zero.	14 weeks

Table 1. Western San Bernardino County DSIPP CIP Project Locations

Pipeline and Station	CIP Activity Code No.	CIP Work Type	Purpose of Improvements	Work Description	Construction/Access Methods	Estimated Construction Duration
Inland Feeder 573+94	2	Erosion Control	The existing perimeter fencing has holes and does not provide adequate security. Additionally, an erosional feature has developed adjacent to the existing access roadway (to the north). Purpose of the improvement is to provide adequate security to the structure and prevent erosion.	<ul style="list-style-type: none">Replace existing perimeter chain-link fence with new welded wire fabric fence and install additional security fencing around pipeline portal structure. Install new V-ditch gutter and connect to existing storm drain system.	<ul style="list-style-type: none">Staging Area: The staging area is a 7,500-square-foot area located on an existing gravel pad at Sta. 574+00. The staging area is 75 feet by 100 feet.Access Paths: Access to the proposed work site will utilize the existing paved roads. New dirt roads will not be created for site access. All vehicle travel between the existing paved roads and the project site will use the same pathway. There is anticipated to be no new disturbed path for site access at this project location.	8 weeks
Inland Feeder 592+31	1, 2, 3	Patrol Road Improvements; Slope Stabilization; Erosion Control	The existing dirt access road to the structure has eroded from stormwater runoff, with rills running parallel to the existing V-ditch gutters. Additionally, there is excessive erosion and small gullies around the air release and vacuum valve structure at Sta. 592+31.	<ul style="list-style-type: none">Regrade and repair 700 feet of existing dirt access road and turnaround area.Reinforce and protect slope west of the structure.	<ul style="list-style-type: none">Staging Area: The staging area is a 3,750-square-foot area located at an unvegetated dirt area adjacent to dirt access roads. The staging area is 75 feet by 50 feet. This staging area is accessible to the project site by an existing dirt road.Access Paths: Access to the structure will utilize a paved frontage road and existing dirt roads. New dirt roads will not be created for site access. All vehicle travel between the existing dirt road and the project site will use the same pathway. There is anticipated to be no new disturbed path for site access at this project location.	8 weeks
Inland Feeder 660+00	1, 2	Patrol Road Improvements; Erosion Control	There is no vehicle access to the existing air release and vacuum valve structure. Purpose of work is to establish access to the structure where none currently exists.	<ul style="list-style-type: none">Install new, approximately 16-foot-wide by 30-foot-long access road and 20-foot-radius turnaround with gravel support grids at structure.	<ul style="list-style-type: none">Staging Area: The staging area is a 750-square-foot area of unvegetated dirt adjacent to the levee berm. The staging area is 50 feet by 15 feet. This area is part of the existing dirt access road.Access Paths: Access to the proposed excavation locations will utilize existing dirt levee roads. A 30-foot-long access road will also be graded for permanent access to the structure. All vehicle travel between the existing dirt roads and the project site will use the same pathway.	2 weeks
Inland Feeder 733+15	1, 2	Patrol Road Improvements; Erosion Control	There is no existing vehicle access to the existing air release and vacuum valve structure. Additionally, soil material and construction waste has been dumped within Metropolitan's easement. The purpose of this improvement is to provide vehicle access, remove dumped debris from Metropolitan's easement, and secure the site.	<ul style="list-style-type: none">Construct access ramp from highway (Boulder Avenue) to structure at Sta. 733+15 with gravel turnaround.Remove and dispose of stockpiled soil and debris around the structure.Replace security fencing.	<ul style="list-style-type: none">Staging Area: The staging area is a 1,500-square-foot area that is adjacent to the structure at Station 733+15. The staging area is 30 feet by 50 feet. To access this staging area, a dirt road will need to be graded, as there currently is no vehicle access to this site.Access Paths: Access to the project site will be from the adjacent highway and via a new dirt road, which will become the permanent access road.	8 weeks
Inland Feeder 813+00	1, 2	Patrol Road Improvements; Erosion Control	Repair erosion and sediment buildup around the structure.	<ul style="list-style-type: none">Remove sediment around site to the base of the existing bollards and spread on Metropolitan property to fill in erosion areas.Regrade structure turnaround area.	<ul style="list-style-type: none">Staging Area: The staging area is a 3,000-square-foot area located on the dirt access road east of the structure and within the unvegetated structure turnaround area. The staging area is 60 feet by 50 feetAccess Paths: Access to the site will utilize an existing 7,400-foot-long dirt access road. New dirt roads will not be created for site access. All vehicle travel to the project site will use the same pathway.	2 weeks

Table 1. Western San Bernardino County DSIPP CIP Project Locations

Pipeline and Station	CIP Activity Code No.	CIP Work Type	Purpose of Improvements	Work Description	Construction/Access Methods	Estimated Construction Duration
Inland Feeder 822+10, 824+20	1, 2	Patrol Road Improvements; Erosion Control	Accumulation of sediment has built up around both structures. Additionally, both structures need to be adequately protected from high flow conditions at Plunge Creek.	<ul style="list-style-type: none">Remove settlement around site to the base of the existing bollards and spread on Metropolitan property to fill in erosion areas.Create berms to protect structures from stormflows.Regrade roadway within Metropolitan easement.	<ul style="list-style-type: none">Staging Area: The staging area is a 500-square-foot area located on the unvegetated dirt surface adjacent to the structure at Sta. 822+10. The staging area 25 feet by 20 feet.Access Paths: Access to the project areas will utilize existing dirt roads. New dirt roads will not be created for site access. Access to Sta. 822+10 will be via a 5,000-foot-long dirt access road west of Plunge Creek. Access to Sta. 824+20 will be from an existing 5,100-foot-long access road located east of Plunge Creek.	8 weeks
Inland Feeder 1079+50	1, 2	Patrol Road Improvements; Erosion Control; Security Fence	No existing access to the blind flange structure. Improvement is to provide access where none currently exists.	<ul style="list-style-type: none">Install a gate in the existing chain-link fence to allow access.	<ul style="list-style-type: none">Staging Area: The staging area is a 400-square-foot area located in the turnaround area of the structure and adjacent agricultural land. The staging area 20 feet by 20 feet.Access Paths: Access is via an existing paved roadway (Highland Avenue).	1 week
Rialto Pipeline 3571+01	1, 2, 3	Patrol Road Improvements; Erosion Control; Slope Stabilization	Vehicle access to the existing service connection structure from the west side of San Sevaine Creek no longer exists (eroded roadway at channel crossing). In addition, the access roadway within the flood control channel has been eroded, particularly at three drainage crossings. The existing fencing around the service connection is corroded and does not provide adequate vehicle access. The purpose of the improvements is to re-establish western access to the structure, repair the existing patrol road, and provide better security around the service connection.	<ul style="list-style-type: none">Regrade existing dirt access road.Install articulated block mats at three drainage crossings to maintain access to structures.Enlarge fenced area around service connection to allow a vehicles to park next to the service connection.Install gravel turnaround within a larger fenced area at the service connection.	<ul style="list-style-type: none">Staging Area: The staging area includes multiple work areas: east levee, west levee, and at Sta. 3571+01. The most western staging area for the site has a footprint of 625 square feet and is located on disturbed and graded dirt surface of the west levee. The central staging area is located near the service connection is approximately 250 square feet and is located on an undisturbed, but sparsely vegetated, area adjacent to the service connection. The eastern staging area has a footprint of 900 square feet and is located on the east levee embankment. All the staging areas are located within Metropolitan's fee property. The project total staging area at this site will have a footprint of 1,775 square feet.Access Paths: Access to the work area is via approximately 2,400 feet of existing dirt levee roads and Metropolitan patrol road. Access will not require any new road construction.	10 weeks
Upper Feeder 1073+90	2	Erosion Control	This site does not have adequate security to prevent trespassing or vandalism from Napa Street to the blow-off structure or blind flange structure. Purpose is to improve security to protect the structure.	<ul style="list-style-type: none">Remove bollards and install new fencing with gate around structures.Construct a mountable curb for improved vehicular access.Place gravel around structures.	<ul style="list-style-type: none">Staging Area: The project staging area is 400 square feet, and is located on a concrete pad and sparsely vegetated area adjacent to the structures. The staging area 10 feet by 40 feet.Access Paths: Access to the work area is via a paved roadway off Napa Street. Access paths will not require any new road construction or impact to undisturbed land.	3 weeks

Source: Metropolitan 2019.
Notes: DSIPP = Distribution System Infrastructure Protection Program; CIP = Capital Investment Plan; Metropolitan = The Metropolitan Water District of Southern California; USGS = U.S. Geological Survey.

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Appendix C

Initial Study/NOP

Appendix C-1

Initial Study for the Western San Bernardino County
Distribution System Infrastructure Protection Program

INITIAL STUDY
for the
Western San Bernardino County
Distribution System Infrastructure Protection Program

Prepared for:

The Metropolitan Water District
of Southern California
PO Box 54153
Los Angeles, California 90054-0153
Contact: Ms. Jennifer Harriger

NOVEMBER 2014

Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program

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- A Proposed Western San Bernardino County DSIPP Activity Locations

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
BMP	best management practice
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CIP	Capital Investment Plan
CO	carbon monoxide
DSIPP	Distribution System Infrastructure Protection Program
EIR	Environmental Impact Report
GHG	greenhouse gas
GIS	geographic information system
Metropolitan	The Metropolitan Water District of Southern California
MSHCP	Multiple Species Habitat Conservation Plan
NCCP	Natural Community Conservation Plan
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
O ₃	ozone
O&M	Operations and Maintenance
PEIR	program environmental impact report
PM _{2.5}	particulate matter (fine)
PM ₁₀	particulate matter (coarse)
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SR-	State Route
SWP	State Water Project
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound

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1 INTRODUCTION

1.1 Overview of the Proposed Program

The Metropolitan Water District of Southern California (Metropolitan) is proposing the preparation and implementation of an Operations and Maintenance (O&M) Manual and the design, construction, operation, and maintenance of Capital Investment Plan (CIP) projects for the conveyance and distribution system within its Western San Bernardino County Operating Region (proposed program). The proposed program is part of Metropolitan's Distribution System Infrastructure Protection Program (DSIPP), which identifies, prioritizes, and implements needed surface infrastructure protection projects for Metropolitan's conveyance and distribution system. The scope of the program includes those projects along pipeline routes, at aboveground structures, and along patrol roads that were identified from visual inspection of the surface or accessed from manholes at the surface. The proposed program does not include projects related to the rehabilitation or replacement of subsurface pipelines.

For this program, Metropolitan divided its service area into operating regions, based on geographic areas and roughly following county lines. The DSIPP is being implemented in phases by operating region: Phase 1 includes the operating regions of Orange and Western San Bernardino counties; Phase 2 includes the operating regions of Riverside, San Diego, and Los Angeles counties; and Phase 3 encompasses San Bernardino County's outlying areas. This Initial Study addresses the Western San Bernardino County Operating Region (see Figure 1, Regional Location Map), which includes the western San Bernardino County area and a small portion of northwestern Riverside County. Metropolitan's operating regions are generally located within the boundaries of each county, but may also include pipeline segments that extend slightly beyond the county boundaries.

In order to ensure continued water supply reliability, Metropolitan is proposing to implement a comprehensive program to (1) prepare and implement an O&M Manual and (2) design, construct, operate, and maintain CIP infrastructure projects that addresses surface infrastructure protection needs. Under the DSIPP, programmatic California Environmental Quality Act (CEQA) documentation will be prepared for O&M activities and CIP projects and long-term programmatic regional permits will be obtained for work within regulated waters to streamline the CEQA and permitting process and execute activities on a regular and timely basis.

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There are two components to the proposed program: O&M activities and CIP infrastructure projects. The two components of the proposed program are described below:

- **O&M Activities:** O&M activities within the Western San Bernardino County Operating Region are currently ongoing; the O&M Manual would develop a formalized plan that would provide a systematic and scheduled approach to these maintenance activities and would serve as a comprehensive guide for the maintenance of existing water conveyance and distribution infrastructure. The O&M Manual would describe routine and single-occurrence maintenance activities and provide a schedule for routine inspection and maintenance of patrol roads and pipeline appurtenant structures. Routine and single-occurrence O&M activities are described below.
 - Routine O&M activities are preventive in nature and include, on a regular basis, standard practices that detect and correct minor issues that may eventually lead to damage or loss of surface infrastructure. Types of routine O&M activities include regular patrols and visual inspections of patrol roads and aboveground appurtenant structures; maintenance of patrol roads (i.e., minor grading, vegetation maintenance, and Arizona crossing and culvert maintenance); routine facility maintenance, repair, and replacement (i.e., cleaning of equipment and structures, graffiti removal, coating of structures, vegetation maintenance, repair/installation of security fencing/signage); pipeline shutdowns and dewatering; and emergency procedures. The O&M component of the proposed program would address all routine, ongoing O&M activities for currently constructed structures, as well as the long-term O&M for structures proposed under the CIP component of this program.
 - Single-occurrence O&M activities are conducted on a one-time basis and typically require design engineering. Examples of single-occurrence O&M activities include installation of Arizona crossings, culverts, or bridges. Following construction of the structures, long-term maintenance would occur as described in the O&M Manual under routine O&M.
- **CIP Projects:** CIP projects generally consist of activities that involve the repair, upgrade, and/or relocation of existing structures, or the installation of new permanent structures to address access or infrastructure problems that threaten system reliability. Examples of proposed CIP infrastructure include patrol road upgrades (e.g., paving), installation of engineered erosion-control structures (e.g., grouted riprap or channel lining), slope stabilization measures, and replacement, repair, or relocation of aboveground appurtenant structures. Typically, CIP projects require engineering design, are more expensive to construct, and would be conducted on a one-time basis.



SOURCE: ArcGIS Online Basemap

Western San Bernardino County Distribution System Infrastructure Protection Program

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The proposed preparation and implementation of the O&M Manual and the proposed design, construction, and operation of the CIP infrastructure projects considered together are referred to as the proposed program.

1.2 Background/Program Need

The majority of Metropolitan's conveyance and distribution system was constructed from the 1930s through the 1970s. The system, which includes pipelines, associated appurtenant structures, and patrol roads, requires continual monitoring and maintenance to ensure a reliable water supply and to minimize the potential for emergency situations. Rehabilitation, replacement, and repair of existing structures as well as maintenance of patrol roads are necessary to maintain reliable infrastructure. In many areas throughout Metropolitan's service area, patrol roads may become or have already become impassable due to erosion and/or excessive vegetation growth. In localized areas, erosional features, drainage problems, and/or periodic flooding have caused pipelines and appurtenant aboveground structures to become inaccessible, exposed, or otherwise vulnerable to damage. These issues, in addition to increasing environmental requirements and the regulatory time frames for obtaining permits and approvals for work within sensitive biological areas, have constrained Metropolitan's ability to perform critical maintenance activities in a timely and efficient manner.

In June 2012, Metropolitan established the DSIPP, a comprehensive assessment program that identifies, prioritizes, and executes needed surface infrastructure protection activities for Metropolitan's conveyance and distribution system. Under the DSIPP, programmatic CEQA documentation will be prepared for all proposed O&M activities and identified CIP projects for each operating region. In addition, long-term programmatic regional permits will be obtained for each region to authorize activities that occur within waters regulated under Sections 404 and 401 of the Clean Water Act and Section 1602 of the California Fish and Game Code. The goal of this programmatic regional approach is to streamline environmental clearances and enable Metropolitan to implement proposed critical O&M activities and CIP projects in a timely manner.

1.3 Purpose of This Initial Study

This Initial Study was prepared in compliance with CEQA of 1970 (as amended), codified in California Public Resources Code Sections 21000 et seq., and the CEQA Guidelines, codified in the California Code of Regulations (CCR), Title 14, Section 15000 et seq. The purpose of an initial study is to provide a preliminary analysis of a proposed project to determine whether a negative declaration, a mitigated negative declaration, or an environmental impact report should be prepared. Since Metropolitan, as the CEQA lead agency, identified the need for a program

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environmental impact report (PEIR), this Initial Study is being prepared to refine the scope of the PEIR, identify resource areas that will be eliminated from further analysis, and to solicit agency and public input on the scope of the PEIR.

The CEQA Guidelines, Title 14, Section 15168 define a PEIR as a document that may be prepared on a series of actions that can be characterized as one large project and are related either (1) geographically; (2) as logical parts in the chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways. Because PEIRs typically identify categories of projects and mitigation measures, but site-specific plans may not be available, additional review to determine project-specific CEQA compliance may be required.

The proposed program includes preparation and implementation of an O&M Manual and the proposed design, construction, and operation of CIP infrastructure projects, both of which are addressed under Metropolitan's DSIPP for the Western San Bernardino County Operating Region. As a result, this Initial Study provides a two-part analysis of the proposed program. First, routine and single-occurrence O&M activities that have not yet been identified, that may be performed anywhere within the Western San Bernardino County Operating Region, and that will be addressed in the O&M Plan will be analyzed at a programmatic level. Prior to initiating O&M activities, Metropolitan's Environmental Planning Team will be notified by O&M staff and the O&M activity will be reviewed to determine whether additional CEQA compliance is necessary. Secondly, for single-occurrence O&M and CIP activities that have been identified under the DSIPP and for which preliminary design plans have been prepared, project-level analysis will be conducted. No additional CEQA compliance for these activities is expected to be required.

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2 EXISTING FACILITIES AND SETTING

2.1 Overview of The Metropolitan Water District of Southern California

Metropolitan is one of the nation's largest providers of treated drinking water. On average, Metropolitan moves more than 1.5 billion gallons of water through its distribution system each day, delivering supplies to 26 member agencies. Those agencies, in turn, sell that water to more than 300 subagencies or directly to consumers. In all, approximately 18.4 million southern Californians rely on Metropolitan for some or all of the water they use in their homes and businesses. Metropolitan's service area encompasses a six-county area of 5,200 square miles in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Including the Colorado River Aqueduct, the water delivery/distribution system comprises approximately 1,000 miles of pipeline, tunnels, and canals, as well as patrol roads, transmission lines, 5 treatment plants, 9 reservoirs, 16 hydroelectric plants, and numerous pressure control structures, pumps and valves, buildings, shops, and other structures.

Metropolitan imports its water from two sources: the Colorado River Aqueduct and the State Water Project (SWP). The SWP brings water supplies south from the Sacramento–San Joaquin Delta, while the Colorado River Aqueduct moves water to the west from Lake Havasu. The Colorado River Aqueduct stretches 242 miles across the desert and mountains of the Mojave Desert, and the SWP courses 444 miles through the central part of the state over the Tehachapi Mountains and flows into the Southern California coastal plain (Metropolitan 2012).

Metropolitan built and owns the Colorado River Aqueduct, so its responsibility for the system commences at the Whitsett Intake Pumping Plant on the Colorado River, 15 miles southeast of Lake Havasu City. From there, canals, siphons, pipelines, and four pumping plants move the water west to Metropolitan's terminal reservoir, Lake Mathews. Metropolitan's regional distribution system connects to Lake Mathews, as well as at Lake Perris and Castaic Lake, which are terminal reservoirs for the east and west branches of the state-owned and operated SWP (Metropolitan 2012).

2.2 Western San Bernardino County Operating Region

The Western San Bernardino County Operating Region comprises Metropolitan's conveyance and distribution system pipelines and appurtenant structures, right-of-way (ROW), and associated patrol roads within Western San Bernardino County, California. The Western San Bernardino County Operating Region includes 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and

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vacuum valves. The pipelines included in this phase of the proposed program include the Inland Feeder, Upper Feeder, Rialto Pipeline, Etiwanda Pipeline, and Yorba Linda Feeder. Only portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region, with the exception of a section of the Upper Feeder, from Station 680+00 to 728+50. This section of the Upper Feeder is in Riverside County and is included in the Western San Bernardino County Operating Region. The locations of the pipelines within the Western San Bernardino County Operating Region are shown on Figure 2, Western San Bernardino County Operating Region Pipeline Locations, and described in Table 1, Western San Bernardino County Operating Region Pipelines.

**Table 1
Western San Bernardino County Operating Region Pipelines**

Pipeline	Local Jurisdiction
Inland Feeder	Cities of San Bernardino, Highland, and Redlands; unincorporated San Bernardino County
Upper Feeder	Cities of Montclair, Ontario, Rancho Cucamonga, Fontana, and Jurupa Valley; unincorporated San Bernardino and Riverside counties
Rialto Pipeline	Cities of San Bernardino, Rialto, Fontana, Rancho Cucamonga, and Upland; unincorporated San Bernardino County
Etiwanda Pipeline	Cities of Rancho Cucamonga and Fontana
Yorba Linda Feeder	City of Chino Hills

In order to support operation of the conveyance and distribution pipelines shown on Figure 2, Metropolitan also maintains a complex system of aboveground appurtenant pipeline structures and a system of patrol roads. These features are included as part of the proposed program and are collectively referred to as associated infrastructure in this Initial Study.

Metropolitan Conveyance and Distribution System

— Etiwanda Pipeline
 — Inland Feeder
 — Rialto Pipeline
 — Upper Feeder
 — Yorba Linda Feeder
 — Other Metropolitan Pipelines

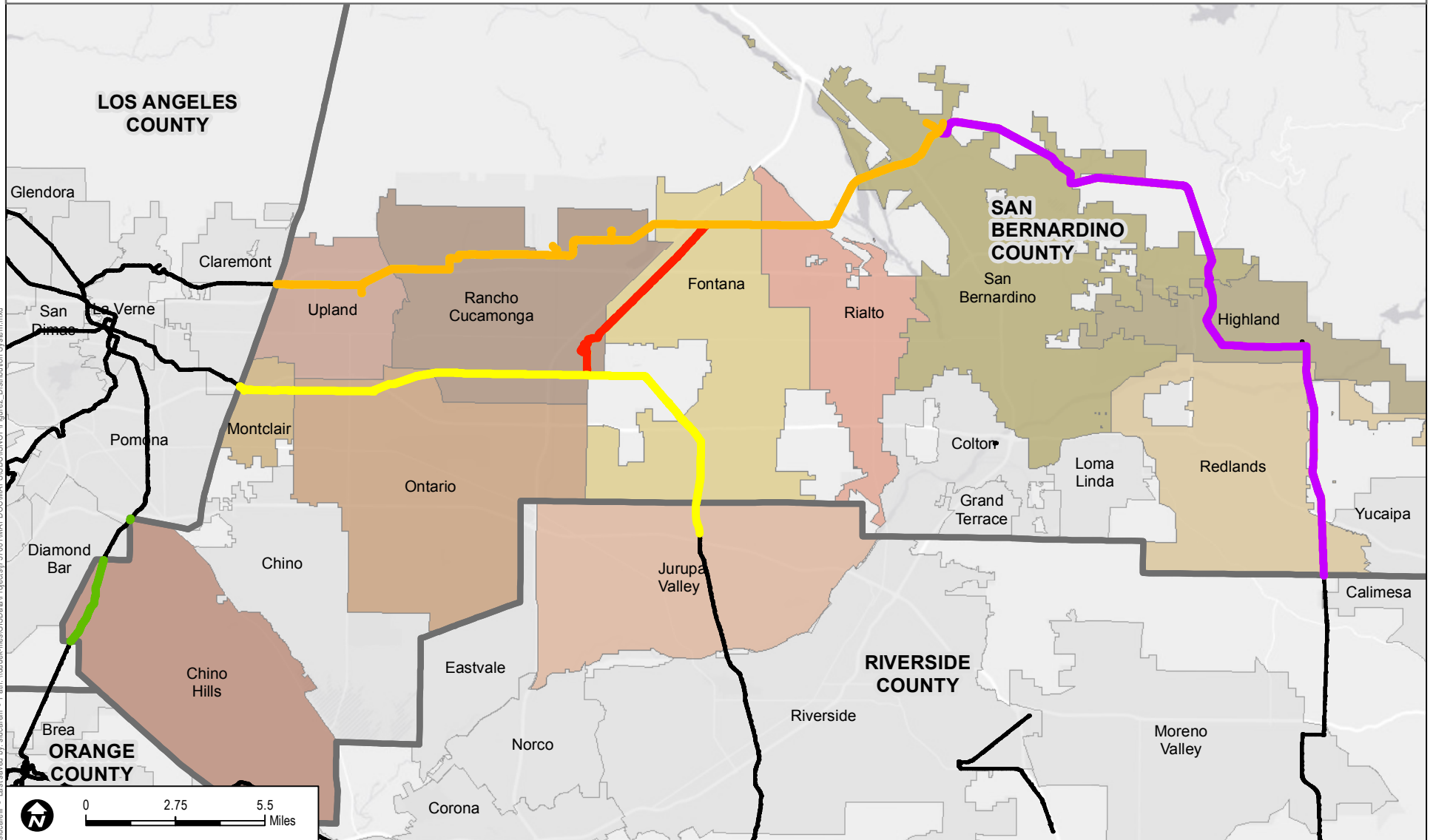


FIGURE 2

Western San Bernardino County Operating Region Pipeline Locations

SOURCE: ArcGIS Online Basemap

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Western San Bernardino County Distribution System Infrastructure Protection Program

Date: 11/14/2014 - Created by: slucarelli - Last saved by: slucarelli - Path: \\d:\del-files\GISData\Projects\57601\MAPODC\MAPSSBC\ISGNOP\Figure2_Distribution System.mxd

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3 PROGRAM DESCRIPTION

The proposed program includes the preparation and implementation of an O&M Manual and the design, construction, and operation of proposed CIP infrastructure projects within the Western San Bernardino County Operating Region. The implementation of the O&M Manual would enable a range of routine and future single-occurrence O&M activities that are not yet identified to occur within Metropolitan's Western San Bernardino County Operating Region on a systematic, scheduled basis.

The proposed maintenance locations identified in Metropolitan's DSIPP assessment report for the Western San Bernardino County Operating Region are presented in Appendix A. Although O&M activities may occur anywhere along the project alignment as needed in the future, an immediate need for maintenance activities or proposed CIP projects has been identified at those locations listed in Appendix A and work will be conducted in Years 2017 and 2018. The recommended maintenance or repair activity and detailed plans for proposed single-occurrence O&M activities and CIP projects will be provided in the forthcoming Draft EIR. Each record in Appendix A includes the following information:

- **Feeder Name:** Identifies the pipeline along which the activity would occur.
- **ID:** Station IDs refer to locations at 100-foot increments along the pipelines, with the station numbers increasing in the direction of the flow of water. For example, Station 542+00 is 54,200 feet from the beginning of the pipeline. Each proposed activity in the table is identified by the closest pipeline station. This means that the activity would occur at or in the immediate vicinity of the station.
- **APN:** Each station number is matched to an Assessor's Parcel Number (APN).

3.1 Proposed Program Objectives

The proposed program objectives are as follows:

- Maintain access to pipeline and appurtenant structures to conduct necessary maintenance to ensure reliability of the water supply conveyance and distribution system.
- Address surface infrastructure issues that threaten the reliability and/or security of the conveyance and distribution system and water supply to Metropolitan's service area by implementing proposed infrastructure protection activities.
- Provide a systematic and scheduled approach to ongoing routine maintenance activities.

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- Obtain a regional permit that provides long-term permitting approval and streamlines environmental clearance processes for maintenance activities in regulated waters.
- Streamline environmental clearances and enable Metropolitan to implement proposed critical O&M activities and CIP projects in a timely manner, especially for those activities in environmentally sensitive or regulated areas.

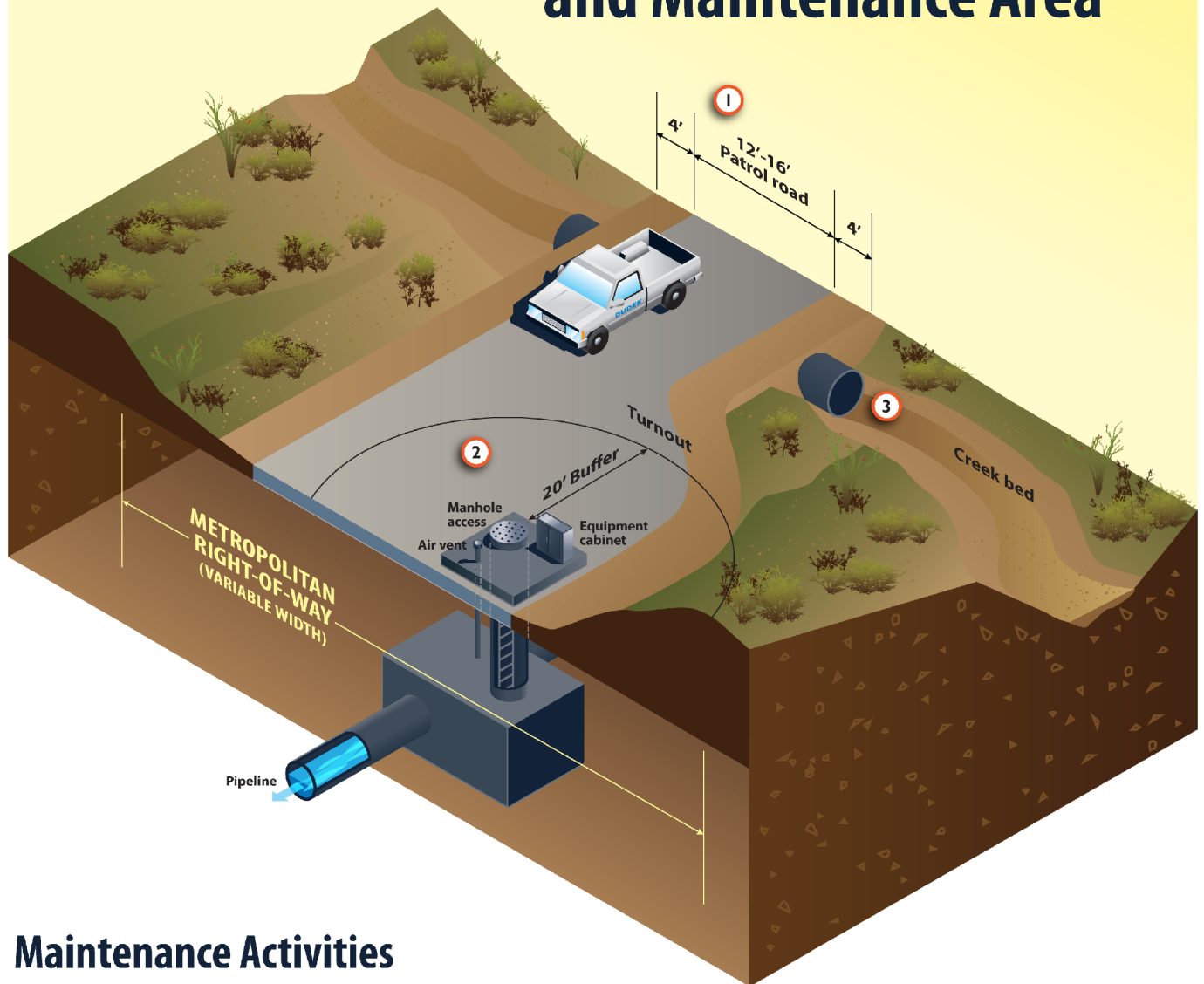
3.2 Proposed Program Study Area

The study area for the proposed program includes all areas within Metropolitan's existing ROW and patrol roads (Figures 1 and 2) where O&M activities and CIP projects would occur in the Western San Bernardino County Operating Region. To ensure an appropriate geographic scope of analysis, the following areas within the Western San Bernardino County Operating Region were included in a geographic information system (GIS) geodatabase that delineates the entire study area:

- All Metropolitan fee properties and easements
- All Metropolitan patrol roads (maximum 16 feet in width) with a 4-foot buffer applied to either side of the approximate centerline of the roads, for a total width of 24 feet
- Activity-specific areas/polygons delineating the footprint of proposed CIP infrastructure and the general locations of proposed O&M activities identified as part of the DSIPP.

The study area was established to assist in the analysis of the proposed program's effects on environmental resources. Maps including information such as the proposed CIP project and O&M activity locations, CIP infrastructure footprints, and engineering details will be provided in the PEIR. A conceptual illustration of typical O&M areas and buffers is included as Figure 3, Typical Metropolitan Operations and Maintenance Area.

Typical Metropolitan Operations and Maintenance Area



Maintenance Activities

1 Patrol Road

- Weekly patrols
- Grading
- Erosion control
- Vegetation maintenance
- Turnouts/driveways approximately every 1000 feet
- Maintain 4-foot shoulder on both sides of road
- Pest control

2 Structures

- Weekly patrols
- Graffiti removal
- Clean equipment/structures
- Vegetation maintenance within 20-foot buffer around above ground appurtenances
- Structure replacement/maintenance
- Erosion control
- Pest control

3 Culverts and Arizona Crossings

- Maintain free of sediment and vegetation
- Regrading/repaving as necessary

FIGURE 3

Typical Metropolitan Operations and Maintenance Area

SOURCE: MWD

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

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3.3 Proposed O&M Activities

Metropolitan's O&M activities are conducted on a regular and ongoing basis and are intended to maintain existing structures, patrol roads, and other appurtenant pipeline structures. These activities are currently ongoing within the Western San Bernardino County Operating Region; the O&M Manual would develop a formalized plan that would provide a systematic and scheduled approach to these maintenance activities and would serve as a comprehensive guide for the maintenance of existing water conveyance and distribution infrastructure. For the purposes of this CEQA analysis, O&M activities are divided into two categories: routine O&M activities and single-occurrence O&M activities. Routine O&M activities do not require extensive engineering or involve the construction of new facilities. These activities include patrols and visual inspections; patrol road maintenance; maintenance/cleanout of drainage features; facility maintenance, repair, and replacement; vegetation management/maintenance; and other activities such as pipeline shutdowns/dewatering and emergency work.

Single-occurrence O&M activities would typically be conducted on a one-time basis and would include repair, rehabilitation, or replacement of existing structures to support the continued operation and maintenance of existing pipelines and appurtenant pipeline structures and/or reestablish access and/or maintain existing patrol roads. In the Western San Bernardino County Operating Region, single-occurrence O&M activities are primarily limited to patrol road structural repairs, such as installation of Arizona crossings, culverts, and bridges.

All O&M activities within the Western San Bernardino County Operating Region would be described in the Western San Bernardino County Operating Region O&M Manual. The O&M Manual would describe the range of O&M activities that are performed on a regular basis to ensure the continued safety and reliability of water deliveries to Metropolitan's member agencies. For each type of O&M activity, the O&M Manual would provide the following:

- General description of work performed
- Description of vehicle and equipment needs
- Description of activity timing and/or frequency.

In addition, the O&M Manual would include a description of notification and reporting requirements for work within federal and/or state jurisdictional streambeds and wetlands, U.S. Fish and Wildlife Service (USFWS)-designated critical habitat, or within the vicinity of special-status wildlife species or nesting birds. It would also include a list of standard best management practices (BMPs) implemented to avoid soil erosion, sedimentation, discharges of materials to stormwater or into water bodies, and the spread of invasive plant species.

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The draft O&M Manual will be circulated for public review with the PEIR. Table 2, Summary of DSIPP Western San Bernardino County Operating Region O&M Activities, describes the activities that would be covered in the O&M Manual, including activity timing, frequency, and duration, as well as equipment needs.

Table 2
Summary of DSIPP Western San Bernardino County Operating Region O&M Activities

ID#	Activity	Frequency	Typical Duration	Typical Equipment Needs
<i>Patrol Road Maintenance</i>				
1	Grading of patrol roads	Annually and as needed	Ongoing (90 days total to grade all patrol roads in Western San Bernardino County Operating Region)	Grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer
2	Vegetation maintenance along patrol roads	Annually, prior to grading of patrol roads, and as needed	Ongoing	Bobcat with mower, construction grade lawn mower, water truck, handheld tools, and boom mower
3	Culvert maintenance	Annually	1 day per culvert	Grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and handheld tools
4	Vegetation removal along patrol roads	As needed	Ongoing	Bobcat with mower, construction-grade lawn mower, water truck, and handheld tools
5	Maintenance of Arizona crossings	As needed, typically following large storm events	1 day per crossing	Grader, backhoe, excavator, loader, water truck, dump truck, scraper, and dozer
6	Erosion control	As needed, typically prior to and following large storm events	1 to 3 days per event	Grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and handheld tools—crane if aggregate materials are placed
<i>Patrol and Inspection</i>				
7	Patrolling and pipeline inspections	Weekly with light truck, twice per year with utility truck	Ongoing	Light truck or utility truck
<i>Routine Structure Maintenance, Repair, and Replacement</i>				
8	Cleaning of equipment and structures	Quarterly	Ongoing	Garden hoses, handheld tools and Metropolitan-approved, biodegradable cleaning solvents
9	Graffiti removal and coating of structures	As needed for graffiti removal, coating every 5 years	Ongoing	Light vehicles, utility truck, handheld tools, gas/diesel compressor, grinder, sand blaster, and spray guns
10	Vegetation maintenance around structures	Annually and as needed	Ongoing	Bobcat with mower, construction grade lawn mower, water truck, handheld tools, and boom mower

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Table 2 (Continued)

11	Pipeline appurtenance maintenance, repair and replacement (e.g., blowoffs, pump wells, manholes, vacuum valves, service connections, pressure control structures, pump stations, and valves)	As needed	Ongoing	Handheld tools or mechanical equipment, such as a grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, light towers, generators, and pumps
12	Pest control	Monthly or as needed	Ongoing	Handheld sprayers and bait stations
<i>Other</i>				
13	Shutdowns/dewatering	As needed	1 to 10 days	Trailers, generators, pumps, and erosion control materials
14	Emergency work	As needed	As needed depending upon nature of emergency	As needed depending upon nature of emergency
<i>Single-Occurrence O&M Activities</i>				
15	Patrol road structural repairs (Arizona crossings, culverts, bridges)	As needed	As needed depending upon type of structure	Grader, backhoe, excavator, loader, water truck, dump truck, scraper, dozer, and a crane

3.4 Proposed CIP Projects

The proposed CIP projects generally consist of substantial repair, upgrade, and/or relocation of existing structures, or the installation of new permanent structures to address access or infrastructure problems that threaten system reliability. A list of the APNs where proposed CIP projects may occur is included in Appendix A. Detailed location maps, conceptual footprints, and engineering details will be provided in the PEIR. It should be noted that the proposed activity descriptions for CIP project types only include design and construction of the infrastructure; O&M activities following construction would be covered under the O&M component of this program description. The four types of proposed CIP project types are listed in Sections 3.4.1 through 3.4.4.

3.4.1 Patrol Road Paving and Paving around Structures

Metropolitan maintains paved and unpaved patrol roads within the Western San Bernardino County Operating Region. All patrol roads are graded on an annual basis as part of routine O&M activities to reduce erosion and ensure that the roads are passable. Some patrol roads are subject to repeated and significant erosion control issues or become impassable due to ruts, potholes, and gullies caused by erosion. In certain locations, unpaved roads or previously paved and deteriorating roads would be paved to reduce the frequency and magnitude of maintenance issues (CIP Project Code No. 1).

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Additionally, in areas where existing patrol roads are narrow, road widening to Metropolitan's existing maximum road width (16-foot-wide patrol road, with 4-foot windrows on either side, for a total of 24 feet in width) may occur. Paving/road-widening activities would include grading; removal of old, damaged paving; vegetation removal; placement and compacting of base material; and placement of the asphalt or concrete paving materials.

Depending upon the surrounding uses or drainage patterns at an aboveground appurtenant pipeline structure, frequent erosion or soil stabilization issues may result in damage to these structures. Paving would be installed around these structures to reduce the potential for damage and reduce the need for future routine vegetation maintenance, erosion control, and replacement of structures. The paving is currently restricted to the existing 10-foot structure maintenance area and would consist of reinforced concrete paving or concrete, but will be maintained to 20 feet in the future assuming no biological or property ownership restrictions.

3.4.2 Engineered Erosion Control

Engineered erosion control (CIP Project Code No. 2) would consist of the installation of new permanent structures or repair of existing structures, such as culverts, corrugated metal pipes, flared inlets, and/or upstream wing walls / head walls, necessary to safely direct stormwater flows or creek flows across or along patrol roads or around pipeline appurtenances. The discharge points where stormwater is directed into a water body may be stabilized with concrete riprap pads. This type of CIP infrastructure is intended to prevent excess sediment deposition and accelerated erosion by conveying creek flows and/or stormwater flows without impeding or accelerating the flows.

Slopes adjacent to Metropolitan's structures or Metropolitan structures adjacent to water features, which are subject to erosion and could fail as a result of the erosion, may be stabilized with retaining walls, secant walls, or concrete structure protection. These types of erosion control issues are typically identified along roadways where significant erosion continues to undermine the road. Erosion may also be an issue in the vicinity of creeks that convey large quantities of flow. These locations typically require annual repair work that may be significantly minimized through the construction of drainage improvements or stabilization structures.

In addition, Metropolitan operates pipelines that cross beneath creeks, drainages, or other areas of concentrated flows. The natural cover over the pipelines scours over time and eventually there is potential for pipeline exposure. Additional erosion and scour once the pipeline is exposed can result in corrosion and pipe failure. Where pipe exposure or lack of significant cover has been identified, Metropolitan would provide additional soil cover (where erosion is slower), construct grade control structures (i.e., riprap, concrete, sheet piles, lumber, or other materials placed

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across a stream, gully or drainage to decrease the slope and velocity of water and prevent further erosion or vertical scour), or protect the pipeline in place with a concrete covering.

3.4.3 Slope Stabilization

Slope stabilization activities (CIP Project Code No. 3) are proposed where instability presents an appreciable risk to the safety and continuity of the Metropolitan pipeline system or appurtenant structures. In several areas, Metropolitan has noted small to medium-sized gullies that have over time been progressively getting larger through a combination of waterfall erosion (at the head of the gully from cascading water) and landslide erosion along gully banks. In other locations, the occurrence of previous slides or slope failures indicates that the areas may be vulnerable in the future. The slope repair design may include regrading and compacting of the slope, rock slope protection, soil cement, anchors, tiebacks, stepped retaining walls, or a combination of methods.

3.4.4 Facility/Appurtenance Repair, Replacement, or Relocation

Metropolitan conducts minor reorientation or shifting of appurtenant structure components and parts within the same location footprint as part of routine O&M. What differentiates facility and appurtenance replacement or relocation (CIP Project Code No. 4) from O&M Activity Code No. 11 (structure maintenance, repair, and replacement) is that in some locations, structures are threatened or undermined by erosion or gullies, or subject to significant flooding, that cannot be addressed or is too costly to address through paving or engineered erosion control. These structures require relocation outside of the existing appurtenant structure site. In these cases, earthwork may be required and clearing and construction of a new appurtenant structure site would be necessary to support the installation of the structures.

3.5 Permits and Approvals

Federal, state, and local agencies may rely on information in the PEIR to inform them in their decision making regarding issuance of specific permits related to infrastructure construction or operation. Table 3, Agency Coordination, lists the federal, state, and local permits and authorizations required for the proposed program prior to construction, as well as the agencies that Metropolitan will likely need to coordinate with regarding this program.

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Table 3
Agency Coordination

Agency	Jurisdiction	Permit Regulatory Requirement
<i>Federal</i>		
Advisory Council on Historic Preservation	National Historic Preservation Act	<ul style="list-style-type: none"> National Historic Preservation Act, Section 106 Consultation (if required as part of the Section 404 Clean Water Act permit review)
U.S. Fish and Wildlife Service	Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Acts, Fish and Wildlife Coordination Act	<ul style="list-style-type: none"> Section 7 Consultation
U.S. Army Corps of Engineers, Los Angeles District	Clean Water Act	<ul style="list-style-type: none"> Clean Water Act Section 404 Nationwide Permit, Regional General Permit, or Individual Permit
<i>State</i>		
California Department of Fish and Wildlife, Inland Deserts Region (Region 6)	Manage fish, wildlife, plant resources, and habitats; California Endangered Species Act, California Native Plant Protection Act, California Fish and Game Code Section 1601	<ul style="list-style-type: none"> Streambed Alteration 1602 Permit
California Department of Transportation	California Streets and Highways Code 660–711.21 CCR 1411.1-1411.6	<ul style="list-style-type: none"> Encroachment Permits Traffic Control Plans
California State Office of Historic Preservation	Potential to affect cultural or paleontological resources	<ul style="list-style-type: none"> National Historic Preservation Act, Section 106 Consultation
Regional Water Quality Control Board, Region 8 (Santa Ana)	Clean Water Act, Sections 401 and 402; Porter-Cologne Water Quality Control Act; California Water Code Division 7, Water Quality	<ul style="list-style-type: none"> 401 Water Quality Certification Stormwater Construction General Permit 2009-0009-DWQ National Pollution Discharge Elimination System Permit.
<i>Local</i>		
County of San Bernardino, County of Riverside, and Local Jurisdictions	Local/city roads and ROWs	<ul style="list-style-type: none"> Road Encroachment Permits Coordination
San Bernardino County Fire Department	San Bernardino County Fire Department	<ul style="list-style-type: none"> Coordination
South Coast Air Quality Management District	South Coast Air Quality Management Control District	<ul style="list-style-type: none"> Authority to Construct and Permit to Operate

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4 INITIAL STUDY AND ENVIRONMENTAL CHECKLIST

The following Initial Study, Environmental Checklist, and evaluation of potential environmental effects were completed in accordance with Section 15063(d)(3) of the CEQA Guidelines to determine whether the proposed program modifications would have any potentially significant effect on the physical environment.

An explanation is provided for all determinations, including the citation of sources listed in Section 5.1, References Cited. A “potentially significant impact” does not mean that the impact in question is significant; rather, it means that the impact requires further analysis in the Draft PEIR to determine the significance level of the impact. A “no impact,” “less-than-significant impact,” or “less-than-significant impact with mitigation incorporated” determination indicates that the proposed project modifications would not have a significant effect on the physical environment for that specific environmental category. Those environmental resource areas that would not be potentially significantly impacted by the proposed project will not be discussed in the Draft PEIR, unless otherwise noted in the Notice of Preparation and Initial Study/Environmental Checklist.

- 1. Project title:**
Western San Bernardino County Distribution System Infrastructure Protection Program (DSIPP)
- 2. Lead agency name and address:**
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012
- 3. Contact person and phone number:**
Ms. Jennifer Harriger
The Metropolitan Water District of Southern California
213.217.7658
- 4. Project location:**
San Bernardino County and portions of Riverside County, California. Please refer to Appendix A for a list of the property Assessor’s Parcel Numbers associated with proposed activity locations.

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5. **Project sponsor's name and address:**
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012
6. **General plan designation:**
Various for the multiple locations
7. **Zoning:**
Various for the multiple locations
8. **Description of project. (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary):**
See program description (Section 3) in this Initial Study.
9. **Surrounding land uses and setting (Briefly describe the project's surroundings):**
Various for the multiple locations.
10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**
See Table 3 in Section 3.5 in this Initial Study.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

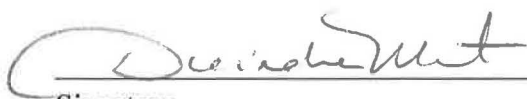
- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input checked="" type="checkbox"/> Geology and Soils |
| <input checked="" type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards and Hazardous Materials | <input checked="" type="checkbox"/> Hydrology and Water Quality |
| <input checked="" type="checkbox"/> Land Use and Planning | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Noise |
| <input type="checkbox"/> Population and Housing | <input checked="" type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input checked="" type="checkbox"/> Transportation and Traffic | <input checked="" type="checkbox"/> Utilities and Service Systems | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

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DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.


Signature

11-20-14
Date

Deirdre West, Environmental Planning Team Manager,
The Metropolitan Water District of Southern California
Printed Name

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EVALUATION OF ENVIRONMENTAL IMPACTS:

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. If the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less-Than-Significant Impact,” then a “Negative Declaration: Less Than Significant With Mitigation Incorporated” would apply. The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses,” as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
 - a. **Earlier Analysis Used.** Identify and state where they are available for review.
 - b. **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

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- c. **Mitigation Measures.** For effects that are “Less Than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
- 9. The explanation of each issue should identify:
 - a. The significance criteria or threshold, if any, used to evaluate each question; and
 - b. The mitigation measure identified, if any, to reduce the impact to less than significant.

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4.1 Aesthetics

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
I. AESTHETICS				
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project have a substantial adverse effect on a scenic vista?

O&M and CIP

Less-Than-Significant Impact. The County of San Bernardino (County) General Plan does not specifically designate scenic vista points; however, the County seeks to preserve and protect cultural resources, including parks, areas of regional significance, and scenic, cultural and historic sites that contribute to a distinctive visual experience (County of San Bernardino 2007a). The County of Riverside General Plan, Jurupa Area Plan identifies unique features, which includes the Santa Ana River, Jurupa Mountains/Pyrite Canyon, and Pedley Hills (County of Riverside 2014a). The proposed O&M activities and CIP projects would result in visual changes that are minor in magnitude and would be located within the context of existing facilities characteristic of Metropolitan's ROW, such as patrol roads and pipeline appurtenances. Proposed O&M activities, such as road grading or minor vegetation maintenance, would primarily maintain the existing patrol roads and pipeline appurtenant structures, with very little to no visual change. The presence of construction equipment to perform O&M work would be short term and temporary. Construction activities associated with some of the proposed CIP projects, such as those involving slope repair and rehabilitation or stream-crossing structures, would require grading activities, vegetation management, and use of construction-related vehicles and equipment that could appear visually cluttered or uncharacteristic of the broader visual context. However, such activities would be temporary, are commonly associated with maintenance and improvement activities along utility ROWs, and would not affect an officially recognized scenic vista. In addition, many of these activities would not occur in

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areas frequented by the public. The impacts of the proposed program on scenic vistas are less than significant, and this topic will not be further evaluated in the PEIR.

- b. Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

O&M and CIP

No Impact. The proposed program study area is not located within the vicinity of a State Scenic Highway, as designated by the California Department of Transportation (Caltrans). The closest State Scenic Highway to the proposed program study area is a 4-mile stretch of State Route 91 (SR-91) extending from the intersection of SR-55 with SR-91 to the eastern limits of the city of Anaheim (Caltrans 2014). The Yorba Linda Feeder (Station 704+71), the closest location within the Western San Bernardino County Operating Region to the designated State Scenic Highway, is located approximately 8 miles northeast of the SR-55 and SR-91 junction.

At a distance of 8 miles, neither O&M activities nor CIP projects proposed under the DSIPP would physically affect features within the State Scenic Highway corridor, such as trees, rock outcroppings, and historic buildings. However, scenic resources also include the views experienced by motorists along the scenic highway. Neither the proposed O&M activities nor the CIP infrastructure would be perceptible to motorists because resulting visual changes, if any, would be low profile and out of view due to distance, intervening topography, and the general level of development in the area. Routine O&M activities in general, even if they occurred closer to the highway and were visible, would not have adverse effects because they would be temporary and typical of activities that already routinely occur along utility ROWs. For these reasons, the proposed program would have no impact on scenic resources, and this topic will not be further evaluated in the PEIR.

- c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

O&M

Less-Than-Significant Impact. Because the proposed O&M activities would involve the continuation of maintenance and repair of existing facilities and because the Metropolitan ROW, where located in open space, is often inaccessible to the public, the degree of visual change that would be perceptible is negligible. The pipeline appurtenant structures are not large or visually significant and any grading or vegetation management to occur

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during O&M activities would result in only minor, incremental visual changes that would be characteristic of activities that already occur along Metropolitan's patrol roads and facilities. Similarly, the visual presence of vehicles and personnel during maintenance activities would be temporary, and represents a continuation of existing routine activities. For these reasons, the impact of proposed O&M activities on the character or quality of the site and its surroundings would be less than significant and, for O&M, this topic will not be further evaluated in the PEIR.

CIP

Potentially Significant Impact. Proposed CIP projects would require new construction of permanent structures, which could have an impact on the visual quality of the program site and its surroundings. Because proposed CIP projects would generally improve, reinforce, or replace existing facilities, such as patrol roads and pipeline appurtenant structures, and are within Metropolitan's existing ROW, impacts on the visual character of program sites or their surroundings are likely to be minor and go unnoticed by the general public. However, effects on visual character ultimately depend on each CIP project's visual context, its visibility from public locations, and the magnitude of visual changes that might be perceived. Because more detail in the layout, design, and visual context of proposed CIP projects is required to determine the magnitude of visual effects, impacts of proposed CIP projects on the visual character of the site and its surroundings are considered potentially significant and will be further evaluated in the PEIR.

- d. *Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

O&M and CIP

Less-Than-Significant Impact. No new permanent lighting would be installed as part of the proposed program. Therefore, potential effects with respect to lighting would be limited to circumstances where temporary, portable lighting would be needed to complete construction work at night. Construction, operation, and maintenance activities are typically conducted during daytime hours; however, use of temporary, portable light sources may sometimes be necessary during routine pipeline shutdowns. Additionally, such lighting would only be required in locations where street lighting is not present or adequate (e.g., rural/open space areas). Because these circumstances would be the exception rather than the rule, and would be temporary if needed, the impact would be minimal. As standard practice, Metropolitan uses hooded, downward-directed lights to illuminate work areas and to minimize light trespass onto adjacent properties. Because

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the proposed program does not include permanent lighting and because the need for nighttime light is episodic, limited in extent and duration, and would involve use of downward-directed lights, the impact would be less than significant, and this topic will not be further evaluated in the PEIR.

4.2 Agriculture and Forestry Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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- a. *Would the project 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?*

O&M and CIP

Less-Than-Significant Impact. The California Department of Conservation (CDOC) Farmland Mapping and Monitoring Program mapped Prime Farmland, Unique Farmland, and Farmland of Statewide Importance throughout the Western San Bernardino County Operating Region for San Bernardino and Riverside counties (CDOC 2011a, 2011b). Several proposed O&M activities and CIP project sites in the Western San Bernardino County Operating Region occur within grazing land; however, only two identified proposed O&M activity locations, which are along the Inland Feeder (Stations 1054+10 and 1056+70), occur within Prime Farmland according to the CDOC Farmland Mapping and Monitoring Program for San Bernardino and Riverside counties (CDOC 2011a, 2011b). No proposed CIP projects are located within Prime Farmland and no identified O&M activity or CIP sites are located within Unique Farmland or Farmland of Statewide Importance (see Table 4, Proposed O&M Activities and CIP Projects on Farmland). Proposed O&M activities would not convert farmland to non-agricultural uses. All work associated with O&M activities would occur primarily within Metropolitan's existing ROW, around existing patrol roads and pipeline infrastructure, and all appropriate measures would be taken to minimize or avoid any potential disturbances to adjacent farmland from both identified and future unknown O&M activities. Proposed O&M activities would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; therefore, impacts would be less than significant and this issue will not be further evaluated in the PEIR.

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Table 4
Proposed O&M Activities and CIP Projects on Farmland

Type of Activity	Prime Farmland	Grazing Land
O&M Activities	Inland Feeder (Stations 1054+10, 1056+70)	Inland Feeder (Stations 586+45, 596+20, 755+00, 763+00, 824+20, 831+00, 841+00, 851+00, 902+50) Rialto Pipeline (Stations 3389+50, 3492+97, 3504+96, 3711+91, 3736+11, 3945+00) Yorba Linda Feeder (Stations 560+32, 560+44, 573+42, 595+97, 615+93, 635+96, 655+94, 677+79, 704+71)
CIP Projects	None	Inland Feeder (Stations 591+40, 745+00, 802+94.00, 813+00, 822+10, 881+00, 889+00, 891+10, 914+10, 940+80, 945+10, 950+10, 1079+50, 791+00) Rialto Pipeline (Stations 3504+96, 3571+01, 3901+02, 3907+96, 3915+10) Upper Feeder (Stations 680+00.00, 687+00, 698+84, 711+70, 721+25, 721+77, 728+50, 707+09) Yorba Linda Feeder (Stations 688+15)

Sources: Project Locations (Metropolitan), CDOC 2011a and 2011b.

- b. *Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?***

O&M and CIP

No Impact. Based on a review of the CDOC Williamson Act Enrollment Maps for the County of San Bernardino (CDOC 2012/2013) and the County of Riverside (CDOC 2008/2009), there are some Williamson Act parcels located across the alignment of the Inland Feeder; however, the California Government Code, Section 51238(a)(1), states that the construction, alteration, and maintenance of water facilities are compatible uses within an agricultural preserve, unless the governing body makes a finding to the contrary. Therefore, impacts involving a conflict with existing zoning for agricultural use or a Williamson Act contract would not occur, and this issue will not be further evaluated in the PEIR.

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- c. *Would the project 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))?*

O&M and CIP

No Impact. The Inland Feeder extends through the San Bernardino National Forest; however, the portion of this alignment which extends through the San Bernardino National Forest is in tunnels (Arrowhead East and West tunnels), and there are no pipelines or associated surface infrastructure in the designated forest land. Therefore, no O&M activities or CIP projects would occur in the San Bernardino National Forest. The closest identified proposed O&M activity locations and CIP projects to the San Bernardino National Forest are Inland Feeder Stations 22+10 and 19+55, respectively (CPADP 2014). Both of these locations are approximately 0.2 mile away from the boundary of the forest. None of the proposed O&M activities or CIP projects would occur within the boundaries of the San Bernardino National Forest, and proposed activities would not result in a conflict with existing zoning for forestland, timberland, or timberland production. The proposed program would have no impact on forest land or timberland, and this issue will not be further evaluated in the PEIR.

- d. *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

O&M and CIP

No Impact. As discussed in Section 4.2(c), the Inland Feeder alignment extends through the San Bernardino National Forest; however, the alignment is in a tunnel through the forest and there are no pipelines or surface infrastructure to maintain and no O&M activities or CIP projects are proposed within designated forest land. Therefore, proposed O&M activities and CIP projects would not result in the loss of forest land or the conversion of forest land to non-forest use. The proposed program would have no impact on forest land, and this issue will not be further evaluated in the PEIR.

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- e. Would the project 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 forestland to non-forest use?*

O&M and CIP

Less-Than-Significant Impact. As discussed in Section 4.2(c), the Inland Feeder alignment extends through the San Bernardino National Forest; however, the alignment is in a tunnel through the forest and there are no pipelines or surface infrastructure to maintain. Therefore, no O&M activities or CIP projects are proposed within designated forest land. As discussed in Section 4.2(a), two proposed O&M activity locations are located within designated farmlands; however, the permanent conversion of these lands into non-agricultural uses as a result of proposed O&M activities is not anticipated. All work associated with proposed O&M activities would occur around existing pipeline infrastructure, and all appropriate measures would be taken to minimize or avoid any potential disturbances to farmland. According to California Government Code, Section 51238(a)(1), the construction, alteration, and maintenance of water facilities are compatible uses within an agricultural preserve, unless the governing body makes a finding to the contrary; therefore, impacts involving a conflict with existing zoning for agricultural use or a Williamson Act contract would not occur. Impacts to farmlands are considered less than significant, and this issue will not be further evaluated in the PEIR.

4.3 Air Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
e. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- a. Would the project conflict with or obstruct implementation of the applicable air quality plan?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP project locations within the Western San Bernardino County Operating Region are within the South Coast Air Basin and fall under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Air Quality Management Plan, prepared by the SCAQMD, incorporates planning projections to devise a plan to meet federal and state air quality requirements (SCAQMD 2013). Proposed O&M activities would cause a temporary increase in air pollutants due to patrol road maintenance/grading, structure maintenance, and the patrol and inspection of Metropolitan structures. Construction of proposed CIP projects would cause a temporary increase in air pollutants due to activities associated with and construction equipment used for patrol road repairs and paving, installation of structures for erosion control, slope stabilization projects, and earthwork and construction associated with appurtenant structure replacement and relocation. There would also be a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from maintenance on the sites, as well as construction equipment and vehicles associated with proposed O&M activities and CIP projects. Herbicides and pesticides, lubricants, solvents, enamels, and paint used during proposed O&M activities would also temporarily emit pollutants, which could potentially violate the SCAQMD Air Quality Management Plan thresholds. Consistency of the proposed program with the Air Quality Management Plan will be further evaluated in the PEIR.

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- b. *Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects within the Western San Bernardino County Operating Region could violate an air quality standard or contribute substantially to an air quality violation that would result in a temporary addition of pollutants to the local airshed. Emissions could be caused by soil disturbance, dust, combustion pollutants, construction equipment, and vehicles, as well as by herbicides and pesticides, lubricants, solvents, enamels, and paint associated with proposed O&M activities. Oxides of nitrogen (NO_x) and carbon monoxide (CO) emissions would primarily result from the use of maintenance, construction, and patrol vehicles. Fugitive dust emissions would primarily result from trenching, grading, vegetation maintenance, and clearing activities. Other pollutants would result from the use of chemicals for cleaning, graffiti removal, coating, and painting associated with O&M activities. Emissions could vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Further analysis of this issue is required; therefore, this impact is considered potentially significant and this topic will be evaluated further in the PEIR.

- c. *Would the project 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects within the Western San Bernardino County Operating Region could result in a cumulatively considerable net increase of criteria pollutants that are in non-attainment under a federal or state standard. Criteria pollutants in non-attainment in the South Coast Air Basin include ozone (O₃) and particulate matter (PM₁₀ and PM_{2.5}) (SCAQMD 2013). O₃ could be created through the chemical reactions of O₃ precursors, including NO_x and volatile organic compounds (VOCs) emitted from maintenance vehicles, equipment, coatings, and paints used for O&M activities, resulting in a cumulative net increase of the pollutant. In addition, maintenance and construction vehicles and other equipment used for patrol road repairs and paving, as well as facility and appurtenance replacement and relocation associated with proposed CIP projects, could result in the emission of O₃

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precursors. Particulate matter emitted from the grading of patrol roads, culvert maintenance, vegetation removal, trenching, and other road and facility maintenance activities associated with O&M activities could contribute to temporary impacts. Implementation of proposed CIP projects could contribute to temporary impacts due to the emission of particulate matter from grading, paving, and clearing. Further analysis is required in order to determine the potential for proposed O&M activities and CIP projects to result in a considerable net increase of these criteria pollutants; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

d. *Would the project expose sensitive receptors to substantial pollutant concentrations?*

O&M and CIP

Potentially Significant Impact. Sensitive receptors are those facilities used by a population group that is more susceptible to the effects of air pollutants. These groups include the elderly, children, those with serious medical conditions, or any other group considered sensitive to the harmful effects of air pollutants. Sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive receptors could be located within the vicinity of proposed O&M activities and CIP projects. Pollutants would be emitted from the proposed activity sites due to soil disturbance, dust emissions, and combustion pollutants from maintenance equipment and vehicles for proposed O&M activities and CIP projects. Herbicides and pesticides, lubricants, solvents, enamels, and paint used for proposed O&M activities could also contribute to substantial pollutant concentrations. Proposed activity locations in the Western San Bernardino County Operating Region are close to residences, schools, medical facilities, and parks. Further study is required regarding the predicted amount of emitted pollutants and whether this amount could be considered a substantial pollutant concentration proximate to sensitive receptors; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

e. *Would the project create objectionable odors affecting a substantial number of people?*

O&M and CIP

Less-Than-Significant Impact. It is possible that odors could be released during proposed O&M activities and CIP project construction. Paints and enamels used for graffiti removal; coating, lubricants, and solvents used to clean Metropolitan structures during proposed O&M activities; and paving and construction equipment used for implementation

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of CIP projects could release objectionable odors. Chemicals used for maintenance and cleaning, however, are used in small quantities that can be transported on a utility vehicle, and would not be used in concentrations substantial enough to significantly impact areas surrounding the proposed program sites. The potential release of odors associated with construction equipment and maintenance and cleaning materials would be minor, temporary, and unlikely to impact a substantial number of people; therefore, impacts would be less than significant, and this issue will not be evaluated further in the PEIR.

4.4 Biological Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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- a. *Would the project 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 Game¹ or U.S. Fish and Wildlife Service?*

O&M and CIP

Potentially Significant Impact. Biologically sensitive areas, including USFWS-designated critical habitat and areas of known threatened and endangered species, exist within the Western San Bernardino County Operating Region. Proposed O&M activities and CIP projects could occur in areas where special-status plants and special-status wildlife occur.

Proposed O&M activities would include vegetation maintenance, patrol road grading, and erosion control. Vegetation maintenance involves the removal of vegetation that directly obstructs access around pipeline structures and along patrol roads, as well as activities such as mowing, trimming, and the permanent removal of trees or large shrubs, grasses, or other vegetation. Proposed CIP projects would include work within creek beds, streambed stabilization (e.g., soil stabilization/sediment control or grade control), and erosion control measures, which could impact sensitive habitat and/or wildlife species. The PEIR would examine the potential for impacts to USFWS-designated critical habitat and special-status species known to occur in or near proposed O&M activity and CIP project locations. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

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

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects throughout the Western San Bernardino County Operating Region would occur in and near wildlife habitat areas, riparian habitat, or other sensitive natural communities and could have potentially significant impacts. Proposed O&M activities would include vegetation

¹ As of January 1, 2013, the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). In this document, references to agency guidance or documents prior to 2013 use CDFG and references after the official name change use CDFW. Quoted material (e.g., from Appendix G of the CEQA Guidelines) is reproduced as published.

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maintenance, grading, and erosion control. Vegetation maintenance involves the removal of vegetation that is directly obstructing access around pipeline structures and along patrol roads, as well as activities such as mowing, trimming, and the permanent removal of trees or large shrubs, grasses, or other vegetation.

Any proposed O&M activity or CIP project that would have the potential to disturb sensitive natural communities would be required to comply with the federal Migratory Bird Treaty Act and California Department of Fish and Wildlife (CDFW) regulations protecting nests and eggs. Proposed O&M activities and CIP projects could have potentially significant impacts on wildlife habitat, riparian habitat, and other sensitive natural communities during current or future program activities. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

- c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities in the Western San Bernardino County Operating Region would include vegetation maintenance; reinforcement of creek banks through minor earthwork; and placement of riprap, concrete, gabions, and other aggregate materials to prevent erosion of patrol roads along streambeds. Proposed CIP projects in the Western San Bernardino County Operating Region would include streambed stabilization (e.g., soil stabilization/sediment control or grade control), drainage improvements, and erosion control. These types of proposed O&M activities and CIP projects could have potentially significant impacts on federally protected wetlands as defined by Section 404 of the Clean Water Act. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

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- d. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects in the Western San Bernardino County Operating Region could temporarily interfere with established wildlife corridors. These types of activities would occur in streams or creeks, along patrol roads, and on existing trails, all of which have the potential to be migratory wildlife corridors. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

- e. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects in the Western San Bernardino County Operating Region could occur in areas where there are local policies to protect biological resources, such as a tree preservation policy or ordinance and could conflict with these policies and ordinances. The PEIR would examine the consistency with local policies and ordinances protecting biological resources. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

- f. *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

O&M and CIP

Potentially Significant Impact. A portion of the Western San Bernardino County Operating Region is located within the Western Riverside County Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (MSHCP/NCCP) area. The County of Riverside, in conjunction with CDFW, USFWS, local jurisdictions, and Caltrans, adopted the Western Riverside County MSHCP/NCCP in June 2004 (CDFW 2014). The Upper Feeder, where proposed O&M activities and CIP projects would occur, is located within this MSHCP/NCCP area.

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The PEIR will examine the potential for significant impacts associated with implementation of proposed O&M activities and CIP projects within the Western Riverside County MSHCP/NCCP boundaries and compliance with the plan. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

4.5 Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
V. CULTURAL RESOURCES				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. *Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines?*

O&M and CIP

Potentially Significant Impact. Historical resources in the County of San Bernardino are identified as roads, trails, bridges, and buildings; historic engineering features; Native American villages, temporary camp sites, rock shelters, milling stations, lithic scatters, quarry sites, pottery scatters, cemeteries, cremation sites, petroglyphs, and pictographs; and other site types. There are at least 2,000 structures within the county that are on the various historic properties lists (County of San Bernardino 2007a). The County of Riverside General Plan, Multipurpose Open Space Element, describes examples of cultural resources, such as pioneer homes, buildings, or old wagon roads; structures with unique architecture or designed by a notable architect; prehistoric Native American village sites; pioneering ethnic settlements; historic or prehistoric artifacts or objects; rock inscriptions; human burial sites, battlefields, railroad water towers, prehistoric trails, early mines or important historic industrial sites (County of Riverside 2014a).

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Most proposed O&M activities and CIP projects would occur within already disturbed areas on or along existing distribution system infrastructure; however, it is possible that some proposed CIP projects would require a significant amount of ground disturbance, which could potentially disrupt or damage historical resources. While it is not anticipated that any proposed O&M activities or CIP projects would create a substantial adverse impact to historical resources, if historical resources are encountered during program implementation, impacts could be potentially significant. Therefore, potential impacts to historical resources associated with the implementation of proposed program activities will be evaluated further in the PEIR.

- b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?*

O&M and CIP

Potentially Significant Impact. Currently, more than 11,000 prehistoric and historic archaeological sites are documented within San Bernardino County (County of San Bernardino 2007a). The County of Riverside General Plan does not identify specific archaeological sites within the county; however, it is recognized that numerous archaeological resources are located throughout the county (County of Riverside 2014a). Some O&M activities and CIP projects may be proposed within areas of archaeological sensitivity. Most proposed O&M activities and CIP projects would occur within already disturbed areas on or along existing distribution system infrastructure; however, it is possible that some proposed CIP activities would require a significant amount of ground disturbance, which could potentially disrupt or damage archaeological resources. While it is not anticipated that any proposed O&M activities or CIP projects would create a substantial adverse impact to archaeological resources, in the event that intact archaeological materials are unearthed during construction, impacts could be potentially significant. Therefore, potential impacts to archaeological resources from the implementation of proposed program activities will be evaluated further in the PEIR.

- c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

O&M and CIP

Potentially Significant Impact. San Bernardino County has more than 3,000 paleontological localities recorded in the Regional Paleontologic Locality Inventory. Many of these known localities occur on private land, which is subject to development;

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others occur on federal lands and their resources are protected by federal agencies, such as the Bureau of Land Management and the U.S. Forest Service (County of San Bernardino 2007a). The Riverside County Land Information System identifies several areas of high paleontological sensitivity within the northwest region of the county (County of Riverside 2014b). O&M activities and CIP projects may be proposed within areas of paleontological sensitivity. Most proposed O&M activities and CIP projects would occur within already disturbed areas on or along existing distribution system infrastructure; however, construction activities associated with proposed CIP projects have the greatest potential to encounter unknown paleontological resources. Most paleontological resources are not exposed at the surface, and fossils are usually found during earthmoving activities when geologic features are exposed. Since the exact locations and depths of sensitive paleontological resources are unknown, disturbance of intact paleontological resources during construction could result in a potentially significant impact. While it is not anticipated that any proposed O&M activities or CIP projects would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, in the event that these resources or features are unearthed during construction, impacts could be potentially significant. Therefore, potential impacts to paleontological resources from the implementation of proposed program activities will be evaluated further in the PEIR.

- d. *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

O&M and CIP

Potentially Significant Impact. Most proposed O&M activities and CIP project locations would be within already disturbed areas on or along existing distribution system infrastructure. No formal cemeteries are known to have occupied any land where O&M activities and CIP projects are proposed. Due to the vast extent of the operating area and given that proposed activity locations are within sensitive archaeological and paleontological areas, the potential to disturb human remains still exists. In the event that human remains are discovered during program implementation, human remains would require handling in accordance with California Public Resources Code, Section 5097.98. If human remains are unearthed during implementation of proposed O&M activities or CIP projects, impacts would be potentially significant. Potential impacts to human remains from implementation of proposed program activities will be evaluated further in the PEIR.

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4.6 Geology and Soils

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VI. GEOLOGY AND SOILS				
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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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- a. *Would the project 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?*

O&M and CIP

Less-Than-Significant Impact. The Western San Bernardino County Operating Region, like much of Southern California, is in an area with elevated seismic risks. The primary active fault zones with Holocene (i.e., within the past 11,700 years) displacement in the region include the San Andreas, the San Jacinto, and the Elsinore fault zones. Any of these fault zones, ancillary faults, or currently unmapped (e.g., blind) faults have the potential to generate a damaging earthquake. In addition, there are a number of locations with loose sediments and shallow groundwater, which make the ground susceptible to liquefaction. Steeply sloped areas of the county may also experience earthquake-induced landslides under specific conditions.

Regardless of the location, extent, and magnitude of seismic hazards present within the Western San Bernardino County Operating Region, the proposed program does not increase public exposure to such risks. This is because neither proposed O&M activities nor CIP projects involve structures for human occupancy, increase public access to hazardous areas, or involve any other activity that could exacerbate the severity of existing geologic and seismic risks. On the contrary, certain program elements, such as repair of slopes and/or embankments, actually provide enhanced protection to surface infrastructure against such risks. The majority of proposed program activities would occur along Metropolitan's existing pipelines and patrol roads, which are generally in remote locations and inaccessible to the public. Proposed CIP projects and single-occurrence O&M activities would be designed by qualified individuals using industry standard practices. Infrastructure would be inspected and repaired, if necessary, in the event it experiences damage in an earthquake. The impacts of the proposed program with respect to public safety (i.e.,

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loss, injury, or death) and/or property damage would be negligible; therefore, the impact would be less than significant, and this issue will not be further evaluated in the PEIR.

b. Would the project result in substantial soil erosion or the loss of topsoil?

O&M and CIP

Less-Than-Significant Impact. Stormwater runoff along patrol roads and intermittent flows within ephemeral creeks are locally resulting in scour, erosion, and gulying sufficient in magnitude to hinder passage of Metropolitan maintenance vehicles and threaten the integrity of Metropolitan's pipelines, appurtenant structures, and patrol roads. The proposed program would be implemented to repair this erosion and protect existing infrastructure. Among the O&M activities proposed are routine inspections to detect and repair erosion issues as they appear, installation of erosion control features as needed, and grading of access roads to address existing erosion problem areas. The proposed CIP projects include actions to minimize the potential for erosion to adversely affect Metropolitan's facilities, such as repairing/restoring existing rills and gullies through natural or engineered means, as well as constructing drainage improvements or stabilization structures to avoid excessive volume and velocity of stormwater runoff. These activities are limited to Metropolitan's existing facilities, are generally confined to previously disturbed areas, and will decrease the potential for existing erosion problems to continue or worsen in the future. The long-term impacts with respect to substantial soil erosion or the loss of topsoil would be less than significant, and this issue will not be further evaluated in the PEIR.

The potential for construction-related activities associated with proposed CIP projects and single-occurrence O&M activities, such as earthmoving activities and soil compaction caused by heavy-duty construction vehicles, to temporarily increase the rate of erosion and adversely affect sediment loads in stormwater runoff is addressed in Section 4.9, Hydrology and Water Quality, and will be evaluated further in the PEIR.

c. Would the project 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?

O&M and CIP

Potentially Significant Impact. As previously discussed, proposed O&M activities and CIP projects would be located within areas that are susceptible to landslides, lateral

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spreading, and liquefaction. Subsidence can be induced by both natural and human phenomena and can result from withdrawal of subsurface water or sediment. The potential for failure from subsidence is highest in areas where the groundwater table is high, relatively soft and recent alluvial deposits exist, and creek banks are relatively high. Proposed O&M activities and CIP projects would not include withdrawal of subsurface water or sediment, and infrastructure would be designed and constructed in accordance with applicable federal, state, local, and Metropolitan requirements.

For the same reasons discussed under Section 4.6(a), impacts from routine O&M activities would not be significant because the activities do not involve installation of new structures and do not worsen existing conditions with respect to unstable soils. Construction of proposed single-occurrence O&M and CIP projects could include grading, minor excavations, and other activities that, if improperly performed in an unstable area, could increase local slope instabilities, if present. The severity of the impact ultimately depends on where and how these improvements are performed and requires more detailed information on the design and layout of proposed CIP projects that is not yet available. Further analysis of this topic is required, and this issue will be evaluated further in the PEIR.

- d. *Would the project 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?*

O&M and CIP

Less-Than-Significant Impact. Table 18-1-B of the Uniform Building Code (1994) defines the expansive potential of a soil by its “expansion index,” which if greater than 20, typically requires special foundation design consideration under the Uniform Building Code (ICBO 1994). The expansive potential of soils is typically related to the type and amount of clay minerals in a soil, along with the moisture content of the soil and how often it changes (i.e., wet/dry cycles). Determination of the expansion index of a soil (as defined in Table 18-1-B of the Uniform Building Code) requires a site-specific soil testing. However, soil surveys provide estimates of the expansive potential of soils, which is generally related to clay content. Therefore, expansive soils can be widely dispersed and are found in hillsides areas as well as low-lying areas in alluvial basins, which mean the programmatic impact area likely includes expansive soils.

This criterion does not apply to routine O&M activities because Metropolitan’s existing surface infrastructure would simply be maintained and would not require or involve the construction of new or expanded facilities. The type of facilities that would be installed

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for proposed single-occurrence O&M and CIP projects, such as paving, Arizona crossings, culverts, grouted riprap, and concrete ditches, are not habitable structures and would not expose the public to substantial risks to life or property if they were damaged by expansive soils. Standard engineering practices, such as use of clean fill, compaction of sub-base soils, and other methods, would be used to ensure that proposed facilities do not experience damage or failure due to expansive soil. For these reasons, the impact of the program to life or property from expansive soils would not be significant, and this topic will not be evaluated further in the PEIR.

- e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not involve any septic tanks or alternative wastewater disposal systems. There would be no impact, and this topic will not be further evaluated in the PEIR.

4.7 Greenhouse Gas Emissions

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

O&M and CIP

Potentially Significant Impact. Global climate change is the result of cumulative greenhouse gas (GHG) emissions (CAPCOA 2008). Impacts associated with GHG emissions should be analyzed in the context of a cumulative impact, rather than a project-

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level impact, as recommended by the California Natural Resources Agency (CNRA 2009a). Similarly, the *Final Statement of Reasons for Regulatory Action for Amendments to the CEQA Guidelines* confirms that an EIR or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009b).

Proposed O&M activities and CIP projects would result in GHG emissions that are primarily associated with use of off-road construction equipment and on-road construction vehicles (e.g., haul trucks and vendor/delivery trucks), as well as worker vehicles. Further analysis is required to determine the magnitude of these emissions, and their cumulative impact to GHG levels. Therefore, impacts are considered potentially significant, and this topic will be evaluated further in the PEIR.

- b. *Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?***

O&M and CIP

Potentially Significant Impact. There are several federal and state regulatory measures aimed at the identification and reduction of GHG emissions. Proposed O&M activities and CIP projects would result in GHG emissions that are primarily associated with use of off-road construction equipment and on-road construction vehicles (e.g., haul trucks and vendor/delivery trucks), as well as worker vehicles. Further investigation is required to determine the magnitude of these emissions, and whether the proposed program activities would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, impacts are considered potentially significant, and this topic will be evaluated further in the PEIR.

4.8 Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on a site that 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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

O&M and CIP

Less-Than-Significant Impact. Small quantities of hazardous materials (i.e., able to be transported on a utility truck), such as solvents, lubricants, enamels, paint, fuel, pesticides, and herbicides, would be used during facility and equipment maintenance, cleaning, graffiti removal, coating, and vegetation maintenance, as well as in the construction of proposed single-occurrence O&M and CIP projects. These substances have always been used in the process of routine maintenance and repair activities conducted by Metropolitan along its conveyance and distribution system in accordance with all applicable federal, state, and local laws. All coatings, paint colors, and brands are approved by Metropolitan; pesticides and/or herbicide products are applied according to

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their material safety data sheets and product labels; and all applicable Occupational Safety and Health Administration regulations are adhered to. Metropolitan would not be transporting, using, or disposing of hazardous materials in large quantities during implementation of the proposed O&M activities and CIP projects. No new facilities would be constructed that would require long-term use or storage of hazardous materials on the site. Pesticide and herbicide applications and other hazardous materials are used only where needed and primarily in areas not frequented by the public (i.e., within Metropolitan's ROW).

The use, transport, and disposal of hazardous materials would therefore result in a less-than-significant impact and will not be evaluated further in the PEIR. Note that the potential effects of hazardous materials on water quality (as opposed to public or environmental hazards) are discussed in Section 4.9, Hydrology and Water Quality, and will be further evaluated in the PEIR.

- b. Would the project 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?***

O&M and CIP

Less-Than-Significant Impact. As discussed in Section 4.8(a), the proposed O&M activities and CIP projects would involve the use and transport of small quantities of hazardous materials such as solvents, lubricants, enamels, paint, fuel, pesticides, and herbicides, but would do so in accordance with applicable federal, state, and local laws. Hazardous materials are used only where needed and primarily in areas not frequented by the public (i.e., within Metropolitan's ROW). None of the proposed activities would involve the permanent use or storage of hazardous materials. It is unlikely that these small quantities of hazardous materials associated with the proposed program could create a significant hazard to the public or the environment through a release of hazardous materials. Impacts are considered less than significant, and this topic will not be evaluated further in the PEIR.

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- c. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

O&M and CIP

Less-Than-Significant Impact. No acutely hazardous materials are associated with the proposed program. As described in Section 4.8(a), the proposed program would involve the use, transport, and disposal of very small quantities of hazardous materials, such as solvents, lubricants, enamels, paint, fuel, pesticides, and herbicides. The use of hazardous materials would be limited to Metropolitan's ROW, primarily in areas not frequented by the public. The proposed program activities would not cause hazardous emissions that would affect an existing or proposed school, including those within a quarter mile of Metropolitan's ROW. Impacts are considered less than significant, and this topic will not be evaluated further in the PEIR.

- d. *Would the project be located on a site that 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?*

O&M and CIP

Potentially Significant Impact. The following hazardous materials site lists are compiled pursuant to Section 65962.5 of the Government Code:

- Hazardous waste and substances sites from the Department of Toxic Substances Control's EnviroStor database
- List of leaking underground storage tank sites from the State Water Resources Control Board GeoTracker database
- List of solid waste disposal sites identified by the State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit
- List of active Cease and Desist Orders and Cleanup and Abatement Orders from the State Water Resources Control Board
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, as identified by the Department of Toxic Substances Control.

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Further analysis of this topic is required to determine whether Metropolitan's pipelines/ROW are within an identified hazardous materials site; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

- 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?*

O&M and CIP

Less-Than-Significant Impact. The Inland Feeder is located within 2 miles of Redlands Municipal Airport and San Bernardino International Airport, and the Upper Feeder is located within 2 miles of Ontario International Airport (DOT 2013); therefore, proposed O&M activities and CIP projects would occur within this area. However, program activities would be unlikely to result in a safety hazard for those working or residing in the area. Proposed O&M activities and CIP projects would not result in the construction of facilities or structures that could visually or physically obstruct flight paths or roads leading to Redlands Municipal Airport, San Bernardino International Airport, or Ontario International Airport, and maintenance activities already occur routinely without issue. Metropolitan employees are not likely to be exposed to noise or dangers associated with nearby air traffic because work in these areas would be temporary and short term, reducing the likelihood that employees would be significantly impacted by these dangers. Impacts are considered less than significant, and this issue will not be further discussed in the PEIR.

- f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

O&M and CIP

Less-Than-Significant Impact. The Rialto Pipeline is located within 2 miles of Cable Airport, which is located in the City of Upland; therefore, proposed O&M activities would occur within this area (DOT 2013). These activities include graffiti removal and coating of structures, vegetation maintenance around structures, and pipeline appurtenance maintenance, repair, and replacement. However, program activities would be unlikely to result in a safety hazard for those working or residing in the area. Proposed O&M activities and CIP projects would not result in the construction of facilities or structures that could visually or physically obstruct flight paths or roads leading to Cable Airport, and maintenance activities already occur routinely without issue. Metropolitan employees are not likely to be exposed to noise or dangers associated with nearby air traffic because work in these areas would be temporary and short term, reducing the

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likelihood that employees would be significantly impacted by these dangers. Impacts are considered less than significant, and this issue will not be further discussed in the PEIR.

- g. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could result in temporary road closures, which could physically interfere with an emergency evacuation or response plan. Further analysis of this topic is required to determine whether the proposed program would impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. The impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

- h. Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

O&M and CIP

Potentially Significant Impact. The majority of the proposed O&M activities and CIP projects within the Western San Bernardino County Operating Region would occur within high to very high fire hazard severity zones. The use of construction equipment around flammable vegetation presents an increased fire risk that could result in the need for fire suppression services. All proposed activities would be required to have a fire safety plan or fire safety measures, such as fire suppression equipment, in place or on site prior to the start of any construction. In addition, fire extinguishers would be required on all heavy equipment. Compliance with recommended fire safety measures would further reduce potential impacts due to fire hazards. In addition, proposed vegetation mowing and trimming along patrol roads and around aboveground structures would provide adequate setbacks and reduce the risk of fire-related accidents. Although proposed O&M activities and CIP projects are not anticipated to create a substantial fire hazard or require new or expanded facilities, further analysis of this topic is required to determine whether the proposed program would expose people or structures to a significant risk of loss, injury, or death involving wildland fires. The impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

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4.9 Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY				
a. Violate any water quality standards or waste discharge requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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- a. *Would the project violate any water quality standards or waste discharge requirements?*

O&M and CIP

Potentially Significant Impact. Proposed program activities that would potentially have adverse effects on water quality include grading; cleanup and vegetation maintenance activities that use cleaners, solvents, pesticides, and/or herbicides (if improperly applied or spilled); and short-term, localized excavation and grading activities associated with installation of stabilized stream crossing, road paving, or slope repairs. Due to their proximity to watercourses and/or the magnitude of ground-disturbing activities, proposed O&M activities and CIP projects could result in releases of excess sediment or other pollutants into waterways. In addition, spills or leaks of petroleum products used by equipment and/or vehicles could adversely affect the quality of stormwater. Over the long term, the proposed O&M activities would have benefits with respect to excess sediment loads in receiving waters because proposed O&M activities include implementation of erosion control measures. In addition, routine maintenance of structures and patrol roads would prevent the propagation of rills, erosional channels, or gullies, thereby reducing the amount of sediment entering receiving waters.

Since details on the extent and timing of ground-disturbing activities and of BMPs to be used have not yet been determined, further analysis of the impacts is required. The temporary impacts of single-occurrence O&M and CIP projects on water quality are considered to be potentially significant, and this topic will be further evaluated in the PEIR.

- b. *Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?*

O&M

Less-Than-Significant Impact. Proposed O&M activities are primarily related to maintenance of patrol roads and aboveground pipeline structures. There are no proposed O&M activities that would be invasive enough to encounter groundwater during implementation. It should be noted that groundwater resources would not be relied on for water supply, dust suppression, or any other need. Impacts to groundwater from O&M activities would be less than significant, and this issue will not be analyzed further in the PEIR.

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CIP

Less-Than-Significant Impact. Proposed CIP projects are not anticipated to encounter groundwater during excavation or ground-disturbing activities; however, the potential for encountering groundwater does exist. Should groundwater be encountered during ground-disturbing activities and dewatering be necessary during construction, a general National Pollutant Discharge Elimination System (NPDES) dewatering permit from the local Regional Water Quality Control Board (RWQCB) shall be obtained by the contractor and discharges must be made in accordance with the RWQCB requirements outlined in the San Bernardino County Municipal Stormwater Permit (NPDES Order No. R8-2010-0036), which contains requirements for discharges that pose an insignificant (de minimus) threat to water quality. In addition, as a condition of coverage under Order No. R8-2010-0036, the contractor's construction activities would be required to comply with established discharge prohibitions, including prohibitions contained in basin plans and statewide water quality control plans.

Because the excavation required for proposed CIP projects would generally be limited to surface grading and shallow excavations, it is unlikely that dewatering would be required; however, groundwater could be encountered during implementation of proposed CIP projects that require excavation near creeks. If necessary, the groundwater would be pumped out of the excavation and discharged to land or the streambed, in accordance with Order No. R8-2010-0036. The amount of groundwater pumped would have minimal effects on the local aquifer because effects would be temporary and localized in nature and the groundwater would most likely consist of perched groundwater or throughflow of similar or same quality as water in the creek. Impacts to groundwater from the implementation of proposed CIP projects would be less than significant, and this issue will not be evaluated further in the PEIR.

- c. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?*

O&M

Potentially Significant Impact. Proposed routine O&M activities consist of maintenance and repair activities and would not substantially alter the existing drainage pattern. Proposed single-occurrence O&M projects such as construction of stabilized stream crossings, however, would have the potential to alter the drainage pattern of the site or area. Overall, many of the proposed O&M activities would reduce erosion and siltation. While it is unlikely that O&M activities would result in substantial erosion or

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siltation on or off site, there is still potential for impacts to occur that would be potentially significant, and further analysis is required in the PEIR.

CIP

Potentially Significant Impact. Surface disturbances associated with proposed CIP projects could alter existing drainage patterns, especially where an activity would increase impervious surfaces, such as patrol road paving. The focus of the proposed CIP projects, however, is to improve drainage conditions by repairing rills, channels, and gullies, reducing erosion and siltation and preventing subsequent deterioration of Metropolitan's infrastructure. Whether the impact of the change in drainage patterns would be substantial and adverse depends on site-specific conditions and infrastructure design details that are not available at this time. While it is unlikely that proposed CIP projects would result in substantial erosion or on- or off-site siltation, there is still potential for impacts to occur that would be potentially significant, and further analysis is required in the PEIR.

- d. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?*

O&M and CIP

Potentially Significant Impact. The impact mechanism for this criterion is the same as that in Section 4.9(c); that is, whether proposed program activities would substantially alter drainage patterns of a site or area. However, this criterion asks whether such changes would result in substantial changes to flooding on or off the site, rather than effects on erosion rates. As discussed in Section 4.9(c), details necessary to adequately assess whether changes would be substantial and adverse are not available at this time, and further analysis is required in the EIR.

- e. *Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

O&M

Less-Than-Significant Impact. Compared to existing conditions, proposed O&M activities would result in no appreciable change in the amount of runoff draining from

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Metropolitan's facilities and patrol roads. The proposed O&M activities do not involve the addition of impervious surfaces or construction of new drainage facilities. The only O&M activities that could impact the stormwater drainage system are shutdowns/dewatering, since the water from the pipelines may be discharged into the nearest storm drain inlet. Metropolitan pipelines convey raw and treated water, and are periodically dewatered for maintenance activities. Metropolitan releases the water in accordance with applicable regulations for dewatering/discharging. As necessary, Metropolitan may use visqueen sheets, hoses, sandbags, and other BMPs to ensure that sediment is not washed into the storm drain during dewatering. Dewatering activities occur only when necessary to access a segment of pipeline for repair or emergency purposes and are already occurring without exceeding the capacity of stormwater drainage systems or providing additional sources of polluted runoff. The proposed program would not increase the frequency or volume of such discharges compared to existing conditions. There are no other O&M activities that would impact stormwater drainage systems. Because none of the proposed O&M activities would increase impervious surfaces or sufficiently alter drainage patterns to measurably increase the volume of water entering storm drain systems, impacts would be less than significant, and this issue will not be analyzed further in the PEIR.

CIP

Potentially Significant Impact. Some proposed CIP projects may involve the paving of patrol roads, which would increase the amount of impervious surface that may contribute to the amount of runoff into existing stormwater drainage facilities; however, the limited amount of potential runoff would not exceed existing capacity. Proposed CIP projects could result in polluted runoff impacts associated with exposed soils, fuels, lubricants, and solid and liquid wastes that would be stored within active construction areas. A stormwater pollution prevention plan (where applicable) would be prepared, and BMPs would be implemented during construction of proposed CIP projects to prevent pollutants from contacting stormwater and to reduce the potential for substantial polluted runoff. Further analysis of this topic is required to determine whether the proposed program would create or contribute to runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. The impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

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f. Would the project otherwise substantially degrade water quality?

O&M

Less-Than-Significant Impact. The range of potential effects of the proposed O&M activities on water quality are adequately captured by the previous criteria, including construction-related effects from land disturbance and long-term effects of single-occurrence O&M projects on drainage patterns. Shutdown/dewatering discharges, if improperly performed, have the potential to degrade water quality; however, as part of the O&M Manual guidelines, work crews, prior to discharging/dewatering treated water, would dechlorinate and pH test the water. Samples of discharged water would be sent to the Metropolitan water quality lab for analysis. In addition, Metropolitan would notify the appropriate public and regulatory agencies with jurisdiction over affected bodies of water and drainage facilities. Because dewatering discharges are currently, and would continue to be, performed in accordance with these standard operating procedures and in coordination with the appropriate public and regulatory agencies, impacts would be less than significant, and this issue will not be evaluated further in the PEIR.

CIP

Potentially Significant Impact. The range of potential effects of the proposed CIP projects on water quality are adequately captured by the previous criteria; however, because proposed CIP project details are not available at this time, it is not possible to assess whether there are other, non-typical elements of one or more CIP projects that would for some other reason substantially degrade water quality. Further analysis of this topic is required to determine whether the proposed program would otherwise substantially degrade water quality, and this issue will be evaluated further in the PEIR.

g. Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

O&M and CIP

No Impact. The proposed program does not include the placement of housing within a 100-year flood hazard area. No impacts would occur, and this issue will not be evaluated further in the PEIR.

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- h. Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?*

O&M and CIP

Less-Than-Significant Impact. Some of the proposed O&M activities and CIP projects may be located within a 100-year flood hazard area (FEMA 2014); however, proposed routine O&M activities would not result in the construction of any structures that would impede or redirect flows. Proposed single-occurrence O&M and CIP projects could include construction of drainage structures, culverts, and Arizona crossings, which are designed to carry the flow of water so that facilities are not damaged or the damage is reduced in the event of flooding. None of the proposed O&M activities or CIP projects would require the construction of structures that would impede or redirect flood flows. Therefore, the impact is considered less than significant, and this issue will not be analyzed further in the PEIR.

- i. Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*

O&M and CIP

Less-Than-Significant Impact. Proposed O&M activities and CIP projects could occur downstream of dams and within dam inundation zones; however, these proposed activities would occur along existing infrastructure that is already subject to flooding due to dam failure and proposed program elements would not increase the risk of loss, injury, or death as a result of flooding from levee or dam failure. No dams would be modified as part of the proposed program, and the types of activities proposed do not involve structures that people would work or reside within. The proposed program would not expose people or structures to a significant risk of loss, injury, or death as a result of the failure of a levee or dam. This impact would be less than significant, and this issue will not be evaluated further in the PEIR.

- j. Would the project result in inundation by seiche, tsunami, or mudflow?*

O&M and CIP

Less-Than-Significant Impact. Pipelines in the Western San Bernardino Operating Region are not in close proximity to any reservoirs or large bodies of water. Furthermore, because Metropolitan's pipelines and appurtenant structures are already exposed to these hazards under current conditions, the proposed program would have no effect on the exposure of structures to inundation by seiche, tsunami, or mudflow. In addition, the types of activities proposed do not involve structures that people would work in or reside in. This impact would be less than significant, and this issue will not be evaluated further in the PEIR.

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4.10 Land Use and Planning

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
X. LAND USE AND PLANNING				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a. *Would the project physically divide an established community?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not divide an established community. The proposed O&M activities and CIP projects are related to routine maintenance activities and infrastructure protection activities for existing pipeline systems. These activities would not be invasive or large enough to physically divide a community. Rather, these activities would ensure water supply reliability for Metropolitan's member agencies and minimize the potential for emergencies, which would support the surrounding communities. No impacts would occur, and this topic will not be evaluated further in the PEIR.

b. *Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects would occur throughout San Bernardino County and a small portion of Riverside County; therefore, these activities could be subject to various land use plans, policies, and regulations of agencies with jurisdiction over these areas. Often, as a public utility, Metropolitan is exempt from these plans, policies, and/or regulations. Further investigation is necessary

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to determine whether any conflicts would occur between proposed O&M activities and CIP projects and these applicable plans, policies, and regulations. Impacts are considered potentially significant, and this topic will be evaluated further in the PEIR.

- c. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?*

O&M and CIP

Potentially Significant Impact. The Upper Feeder is located within the Western Riverside County MSHCP/NCCP area. The County of Riverside, in conjunction with CDFW, USFWS, local jurisdictions, and Caltrans, adopted the Western Riverside County MSHCP/NCCP in June 2004 (CDFW 2014).

The PEIR will examine the potential for significant impacts associated with implementation of proposed O&M activities and CIP projects within the Western Riverside County MSHCP/NCCP boundaries and compliance with the plan. Further analysis of this topic is required; therefore, the impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

4.11 Mineral Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XI. MINERAL RESOURCES				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a. Would the project 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?*

O&M and CIP

Less-Than-Significant Impact. The U.S. Geological Survey (USGS) records the locations of non-metallic and metallic mineral resources in the state of California. Non-

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metallic mineral resources (e.g., coal, salt, clay, and marble) are generally associated with sedimentary rocks. Metallic mineral resources (e.g., iron, copper, tin, and magnesium) are generally associated with igneous rocks. The closest identified proposed O&M activity and CIP project locations to a metallic mineral resource site are Rialto Pipeline Stations 3583+87 and 3571+01. The O&M activity and CIP project sites are located 3 and 4 miles away, respectively (USGS 2014). These project sites would not be located within the vicinity of metallic mineral resources; therefore, O&M activities and CIP projects would not impact these resources.

The closest identified proposed O&M activity and CIP project locations to a non-metallic mineral resource site are Inland Feeder Station 824+20 and Upper Feeder Station 687+00. The O&M activity and CIP project sites occur 0.35 and 0.2 mile away, respectively (USGS 2014). O&M activities for these stations would include pipeline appurtenance maintenance, repair or replacement; patrol road grading; vegetation maintenance and removal along patrol roads; and vegetation maintenance around structures. CIP projects would include engineered erosion control and patrol road paving and paving around structures. Proposed O&M and CIP projects would not cover over non-metallic mineral resources or otherwise obstruct access to these resources.

Activities under the proposed program could result in a loss of availability of mineral resources if they are located on or adjacent to a resource site and preclude the existing or future extraction of that resource. Mineral resources may not be extracted if there is on-site paving or construction, or construction of adjacent incompatible uses; however, proposed O&M activities and CIP projects would be temporary and are located within previously disturbed areas on or along existing distribution system infrastructure within Metropolitan's ROW, and the types of activities proposed would not preclude the future extraction of mineral resources. Proposed O&M activities and CIP projects would have a less-than-significant impact on the availability of known mineral resources, and this topic will not be evaluated further in the PEIR.

- b. Would the project 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?***

O&M and CIP

No Impact. According to the San Bernardino County General Plan Final EIR (County of San Bernardino 2007b), the mineral resources in the county include peat, bituminous rock, gold, sand, gravel, clay, crushed stone, limestone, diatomite, salt,

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borate, and potash. Aggregate mining is a major component of the mining industry within the county (County of San Bernardino 2007b). Aggregate resources (e.g., sand, gravel, and crushed stone) are used in composite materials such as concrete and asphalt and are mainly used for construction purposes. Riverside County has extensive deposits of clay, limestone, iron, sand, and aggregates (County of Riverside 2014a). However, the proposed O&M activities and CIP projects are not located on active mining operation sites or on designated mineral resource sites. As discussed in Section 4.11(a), the closest identified proposed O&M activity and CIP project locations to a metallic mineral resource site are Rialto Pipeline Stations 3583+87 and 3571+01. The O&M activity and CIP project sites are located 3 and 4 miles away, respectively. These project sites would not be located within the vicinity of metallic mineral resources; therefore, O&M activities and CIP projects are unlikely to impact these resources.

The closest identified proposed O&M activity and CIP project locations to a non-metallic mineral resource site are Inland Feeder Station 824+20 and Upper Feeder Station 687+00. The O&M activity and CIP project sites occur 0.35 and 0.2 mile away, respectively (USGS 2014). Proposed O&M activities and CIP projects would not result in the loss of availability of a locally important mineral resource recovery site or impact aggregate resource areas. Proposed O&M activities and CIP projects would occur within Metropolitan's ROW, as well as in previously disturbed areas on or along existing distribution system infrastructure, and the types of activities proposed would not be large enough to impact a mineral resource. None of the proposed O&M activities or CIP projects would result in the loss of availability of a locally important mineral resource recovery site. No impacts would occur on locally important mineral resources; therefore, this topic will not be evaluated further in the PEIR.

4.12 Noise

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. NOISE				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. NOISE				
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- a. *Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could generate noise at sensitive receptors (e.g., schools, hospitals, daycare centers, residential areas) that exceed established criteria or local regulations and codes. The construction-related noise levels would be from, but not necessarily limited to, the use of heavy equipment at the sites or vehicles transporting material to or from the construction and maintenance sites.

Proposed construction activities could cause exposure to noise in excess of standards established within the applicable local general plans or noise ordinances. Actual noise levels resulting from construction and maintenance activities would vary depending on the type of equipment used, the number of concurrent activities, and the distance to a particular receiver. Further analysis of this topic is required to determine whether the proposed program would result in exposure of persons to or generation of noise levels in excess of local plans or noise ordinances. The impact is considered potentially significant, and this issue will be evaluated further in the PEIR.

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- b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

O&M and CIP

Less-Than-Significant Impact. Construction and maintenance activities associated with proposed O&M activities and CIP projects would not result in exposure of persons to or generation of excessive ground-borne noise levels. The construction-related noise levels would be from, but not necessarily limited to, the use of heavy equipment at the site or vehicles transporting material to or from the construction site. Activities that could generate excessive ground-borne vibrations include pile-driving, blasting, and demolition, none of which are required to implement the O&M activities or CIP projects. Therefore, excessive ground-borne vibrations due to the proposed program are not anticipated. Impacts associated with the generation of excessive ground-borne noise levels are considered less than significant, and this topic will not be evaluated further in the PEIR.

- c. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not result in a substantial permanent increase in ambient noise levels in the program vicinity. All proposed activities are related to maintenance and repair and/or protection of the existing distribution system. The proposed activities do not involve structures that currently generate, or would generate in the future, substantial amounts of noise. Noise associated with implementation of O&M activities and construction of CIP projects would be short term and temporary, only for the duration of the construction, and would not introduce a new permanent source of noise. No impacts associated with a substantial permanent increase in ambient noise levels would occur, and this topic will not be evaluated further in the PEIR.

- d. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

O&M and CIP

Potentially Significant Impact. Implementation of proposed O&M activities and construction of proposed CIP projects could result in a substantial temporary or periodic increase in ambient noise levels in the vicinity. Proposed program activities could require the use of heavy equipment and machinery that could generate noise levels over those

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established or those specified in local regulations. Temporary noise impacts as a result of the proposed program are considered potentially significant; therefore, further evaluation is required in the PEIR.

- 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 expose people residing or working in the project area to excessive noise levels?*

O&M and CIP

Less-Than-Significant Impact. The Inland Feeder is located within 2 miles of Redlands Municipal Airport and San Bernardino International Airport, and the Upper Feeder is located within 2 miles of the Ontario International Airport (DOT 2013). However, program activities near these airports would not result in exposure of people to excessive noise levels because the work would be temporary and would not result in exposure of workers to sustained noise levels from airport operations. The proposed program also does not include any development of housing so it would not place residents in proximity to any airports. Impacts are considered less than significant for this topic; therefore, this issue will not be further discussed in the PEIR.

- f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

O&M and CIP

Less-Than-Significant Impact. The Rialto Pipeline is located within 2 miles of Cable Airport, which is located in the city of Upland (DOT 2013). Proposed O&M activities that would occur within this area include graffiti removal and coating of structures, vegetation maintenance around structures, and pipeline appurtenance maintenance, repair, and replacement. However, program activities near these airports would not expose people to excessive noise levels because the work would be temporary and would not subject workers to sustained noise levels from airport operations. The proposed program also does not include any development of housing so it would not place residents in proximity to any airports. Impacts are considered less than significant for this topic; therefore, this issue will not be further discussed in the PEIR.

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4.13 Population and Housing

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIII. POPULATION AND HOUSING				
a. Induce substantial 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- a. Would the project induce substantial 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)?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects are primarily related to maintenance and protection of the existing conveyance and distribution system and would not expand Metropolitan's existing infrastructure. Since the capacity of the distribution system would stay the same with the implementation of the proposed O&M activities and CIP projects, no indirect stimulus to growth would occur. No homes or employment opportunities are proposed that would directly facilitate population growth. The workforce hired to implement/construct the proposed program would be minimal in size and would most likely already be employed by Metropolitan or would come from the region, so there would be no growth as a result of implementation/construction or long-term maintenance activities. Proposed O&M activities and CIP projects would not directly or indirectly induce substantial population growth. No impacts associated with population growth directly or indirectly resulting from the proposed program would occur; therefore, this topic will not be evaluated further in the PEIR.

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- b. Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would occur along Metropolitan's existing conveyance and distribution system within the existing Metropolitan ROW and would not require the displacement of existing housing or the construction of replacement housing elsewhere. No impact to existing housing would occur; therefore, this issue will not be further evaluated in the PEIR.

- c. Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would occur along Metropolitan's existing conveyance and distribution system within the existing Metropolitan ROW and would not displace any people. These proposed O&M activities and CIP projects would not disrupt or displace substantial numbers of people requiring the construction of replacement housing elsewhere. No impact associated with the displacement of people and construction of replacement housing would occur; therefore, this issue will not be evaluated further in the PEIR.

4.14 Public Services

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:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIV. PUBLIC SERVICES				
Fire protection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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- 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:*

Fire protection?

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects would not directly induce population growth, which could result in the need for new or expanded fire protection services. The project would not add capacity to existing Metropolitan pipelines, which could induce population growth. Rather, the project would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area. However, as explained under Section 4.8, Hazards and Hazardous Materials, the proposed project would occur within high to very high fire hazard severity zones and the use of construction equipment around flammable vegetation presents an increased fire risk that could result in the need for additional fire suppression services. New or expanded fire protection services and facilities are not anticipated as a result of the proposed project; however, the need for additional fire protection services in high to very high fire hazard severity zones could occur. Therefore, impacts are considered potentially significant, and further evaluation will be included in the PEIR.

Police protection?

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not modify facilities in such a way as to present an attractive nuisance to the public, requiring the need for additional police services. Proposed O&M activities and CIP projects would not require additional police protection nor would they require the expansion of any police facilities. No impact to police protection would occur; therefore, this topic will not be evaluated further in the PEIR.

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Schools?

O&M and CIP

No Impact. The proposed O&M activities and CIP projects do not include the construction of new homes or businesses. Therefore, direct population growth, which could result in the need for additional or expanded school facilities, would not occur with implementation of the proposed program. The program would not add capacity to existing Metropolitan pipelines, which could induce population growth. Rather, the project would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area. As a result, the program would not increase school enrollment or result in the need for new or expanded school facilities. Impacts related to schools would not occur; therefore, this topic will not be further evaluated in the PEIR.

Parks?

O&M and CIP

Less-Than-Significant Impact. Proposed O&M activities and CIP projects would occur in the immediate vicinity of a number of parks; however, this section describes the impacts on parks as a public service. Impacts related to parks as sensitive receptors and resources associated with parks are described in Sections 4.1 Aesthetics; 4.2, Agriculture and Forestry Resources; 4.3, Air Quality; 4.4, Biological Resources; 4.5, Cultural Resources; and 4.12, Noise.

The proposed program would protect and repair an existing water conveyance distribution system; program activities would be limited to maintenance and minor construction activities along existing pipeline alignments. The proposed program does not include the expansion or construction of park facilities, and would not result in an increase in water conveyance capacity or otherwise affect the location, distribution, density, or growth rate of the population within the vicinity of the program area. Because growth would not occur, the program would not result in an increase in the use of existing parks such that new parks would be needed or that physical deterioration of the parks would occur. Proposed O&M activities and CIP projects would result in no impacts related to increased usage and physical deterioration of park facilities. Additionally, the proposed program would not result in environmental impacts related to the construction of parks. Therefore, impacts associated with park services as a public service would be less than significant, and this topic will not be further evaluated in the PEIR.

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Other public facilities?

O&M and CIP

No Impact. Proposed O&M activities and CIP projects may occur near other public facilities such as libraries, government buildings, or medical centers; however, none of the proposed activities would result in adverse physical impacts to public facilities. Proposed O&M activities and CIP projects would not involve a housing component or other components that would result in population growth and increased demands on public facilities within the area. Proposed O&M activities and CIP projects would not expand the existing conveyance and distribution system infrastructure that would result in population growth and increased demands on public facilities. No impact to other public facilities would occur; therefore, this issue will not be evaluated further in the PEIR.

4.15 Recreation

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XV. RECREATION				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- 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?*

O&M and CIP

Less-Than-Significant Impact. Proposed O&M activities and CIP projects would occur in the immediate vicinity of a number of parks and recreational areas. Temporary limited access to trails and other recreational areas could occur as a result of proposed O&M activities and CIP projects; however, the program activities would not result in closures

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of parks and recreational areas to the public, leading to the increased use of other existing neighborhood or regional parks and recreational facilities. In addition, O&M activities and CIP projects involve the maintenance and protection of existing infrastructure and do not include the construction of new housing or creation of employment opportunities, which could increase the use and resulting substantial physical deterioration of parks and recreational facilities. The impact of the proposed O&M activities and CIP projects on parks and recreational facilities would be less than significant, and this topic will not be evaluated further in the PEIR.

- 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?***

O&M and CIP

No Impact. The proposed program involves the maintenance and protection of existing infrastructure and does not include the construction or expansion of recreational facilities. Proposed O&M activities and CIP projects would occur within or in proximity to recreational facilities; however, the proposed program would not result in additional use of any recreational facilities, requiring the construction or expansion of new recreational facilities. Proposed O&M activities and CIP projects would not involve any growth-inducing components through the construction of new or expansion of existing infrastructure, which would result in an increase in population and result in the need for new or expanded recreational facilities. No impact would occur; therefore, this topic will not be evaluated further in the PEIR.

4.16 Transportation and Traffic

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC:				
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Result in inadequate emergency access?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

O&M and CIP

Potentially Significant Impact. O&M activities and CIP projects are proposed in multiple locations in San Bernardino and Riverside counties; therefore, they would be subject to several ordinances, plans, and policies related to the circulation system in these areas. Although it is not anticipated, increased traffic levels on surface streets and freeways could occur as a result of the transport of equipment, supplies, and personnel to construction and maintenance sites and temporary closure or detour around construction areas. Further analysis is required to determine whether the overall performance of the circulation system could be impacted because of the proposed program. Should impacts be identified, Metropolitan would be responsible for the development of a traffic control plan to minimize and mitigate the impacts of program activities on traffic conditions. Because further analysis is needed, the impact is considered potentially significant. A traffic analysis will be conducted, and this topic will be evaluated further in the PEIR.

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- b. *Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

O&M and CIP

Potentially Significant Impact. San Bernardino and Riverside counties establish level of service standards of “E” for highways, freeways, and arterials (RCTC 2011; SANBAG 2011). Although not anticipated, increased traffic levels on surface streets and freeways could occur as a result of construction activities associated with the proposed program, including the transport of equipment, supplies, and personnel to construction sites. Further analysis is required to determine whether the proposed program would result in level of service scores lower than E for the affected roadways, which would be a potentially significant impact. Because further analysis is needed, the impact is considered potentially significant. A traffic analysis will be conducted, and this topic will be evaluated further in the PEIR.

- c. *Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would occur within 2 miles of Redlands Municipal Airport, San Bernardino International Airport, Ontario International Airport, and Cable Airport. The proposed program would not result in construction of facilities or structures that could visually or physically obstruct flight paths leading to and from Redlands Municipal Airport, San Bernardino International Airport, Ontario International Airport, or Cable Airport. Proposed O&M activities and CIP projects would not result in a change in the air traffic levels or flight path locations. No impact to air traffic would occur; therefore, this issue will not be evaluated further in the PEIR.

- d. *Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could occur near or around surface streets and, although it is unlikely, they could expose pedestrians, bicyclists, and drivers to heavy equipment and dangerous design features associated with

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unfinished construction and maintenance. Although these hazards would be temporary in nature, permanent design features need to be evaluated to assess their danger to pedestrians, bicyclists, and drivers; therefore, a traffic analysis will be conducted. Further analysis is required to determine whether the proposed program would substantially increase hazards due to a design feature or incompatible uses; therefore, this topic will be evaluated further in the PEIR.

e. Would the project result in inadequate emergency access?

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could occur near or around surface streets. Although unlikely, increased traffic levels on surface streets and freeways could occur due to the transport of equipment, supplies, and personnel to construction sites. Further analysis is required to determine whether construction and maintenance activities would require road closures and result in traffic delays and inadequate emergency access; therefore, the impact is considered potentially significant. A traffic analysis will be conducted, and this topic will be evaluated further in the PEIR.

f. Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could occur near or around surface streets. Although it is unlikely, these activities and projects could expose pedestrians, bicyclists, and drivers to the dangers of heavy equipment. If road closures were to occur due to construction activities, the performance of public transit vehicles could decrease. Further analysis is required to determine whether pedestrian walkways and bike paths would be closed due to construction and maintenance activities; therefore, the impact is considered potentially significant. A traffic analysis will be conducted, and this topic will be evaluated further in the PEIR.

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4.17 Utilities and Service Systems

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- a. *Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not generate additional wastewater treatment demands nor would they exceed the wastewater treatment requirements of the applicable RWQCB. The proposed program would have no impacts related to wastewater treatment requirements; therefore, no further evaluation of this topic is required in the PEIR.

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- b. Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

O&M and CIP

No Impact. The purpose of the proposed program is to upgrade, rehabilitate, and maintain existing water infrastructure. Proposed O&M activities and CIP projects would not require or result in the construction of new or the expansion of existing water or wastewater facilities. The proposed program would have no impact on water or wastewater facilities; therefore, no further evaluation of this topic will be required in the PEIR.

- c. Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities would not involve the construction of infrastructure that expands the capacity of the existing water conveyance system; however, routine maintenance on existing stormwater drainage facilities would be necessary to increase the reliability and longevity of such infrastructure. Proposed O&M activities may require the construction of new stormwater drainage facilities to ameliorate existing drainage or erosion problems. Proposed CIP projects may require installation, upgrades, and/or relocation of stormwater drainage facilities to rehabilitate deteriorating infrastructure. Because further study is needed, impacts would be considered potentially significant, and this issue will be evaluated further in the PEIR.

- d. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not require additional water supplies. Proposed O&M activities and CIP projects would increase the reliability and longevity of existing infrastructure; there would be no expansion of existing infrastructure. Proposed program activities may require water for construction-related activities, including dust suppression and washing down streets or paved areas. Existing entitlements and resources would be adequate to support potential needs. Proposed program activities would have sufficient water supplies and no new or expanded

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entitlements would be needed. There would be no impact from the proposed program on water supplies; therefore, no further evaluation of this topic is required in the PEIR.

- e. Would the project 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?*

O&M and CIP

No Impact. Proposed O&M activities and CIP projects would not involve the construction of facilities that would increase the generation of wastewater. There would be no construction that would result in impacts to wastewater treatment providers because the proposed program does not involve new housing, commercial construction, or other wastewater generators. Proposed program activities would have no impact on wastewater systems; therefore, no further evaluation of this issue is required in the PEIR.

- f. Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could generate small amounts of solid waste, construction and demolition debris, and green waste. All waste produced during implementation of proposed O&M and CIP activities would be removed immediately following the activity and disposed of properly in accordance with federal, state, and local statutes and regulations. One of the many county landfills with remaining capacity would serve proposed O&M activities and CIP projects. Although O&M activities and CIP projects are not anticipated to have a significant impact on solid waste disposal needs, in order to adequately identify potential impacts, further analysis is required. Impacts are considered potentially significant, and this topic will be evaluated further in the PEIR.

- g. Would the project comply with federal, state, and local statutes and regulations related to solid waste?*

O&M and CIP

Less-Than-Significant Impact. As previously discussed, proposed O&M activities and CIP projects would generate small amounts of solid waste, construction and demolition debris, and green waste during construction-related activities. All waste produced due to proposed program activities would be removed immediately following the activity and

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disposed of properly in accordance with federal, state, and local statutes and regulations. Impacts would be less than significant; therefore, this topic will be not be evaluated further in the PEIR.

4.18 Mandatory Findings of Significance

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 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?**

O&M and CIP

Potentially Significant Impact. As discussed in Section 4.4, Biological Resources, significant impacts to biological resources could occur. Proposed O&M activities and CIP projects would have the potential to degrade the quality of the environment and impact fish or wildlife species and plant communities. As discussed in Section 4.5,

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Cultural Resources, although proposed program activities are not anticipated to have a substantial impact on cultural resources, there is a potential that such impacts would occur. Proposed O&M activities and CIP projects would potentially damage important examples of the major periods of California history or prehistory or disrupt archaeological or paleontological resources. Because further analysis is necessary, impacts to biological and cultural resources are considered potentially significant, and these issues will be analyzed further in the PEIR.

- b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

O&M and CIP

Potentially Significant Impact. Proposed O&M activities and CIP projects could have cumulatively considerable impacts. Impacts that are not considered potentially significant and would not contribute to a cumulatively considerable impact include agriculture and forestry resources, mineral resources, population and housing, and recreation. Proposed program activities would result in potentially significant impacts to aesthetics, air quality, biological resources, cultural resources, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, transportation and traffic, and utilities and service systems. All of these potentially significant impacts could contribute to a cumulatively considerable impact when combined with other projects occurring in the vicinity of the Metropolitan service area. These issues will be analyzed further in the PEIR.

- c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?*

O&M and CIP

Potentially Significant Impact. Based on the analysis contained in this Initial Study, proposed O&M activities and CIP projects could generate air pollution and noise, which could adversely affect workers and nearby residents. The potential for environmental effects from proposed O&M activities and CIP projects that could cause substantial adverse effects on human beings requires additional study and analysis. Therefore, impacts are considered potentially significant, and this topic will be fully analyzed in the PEIR.

Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program

5 REFERENCES AND PREPARERS

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5.2 List of Preparers

Dudek

Shelah Riggs, Project Manager
Rachel Struglia, Environmental Task Leader
Dylan Duvergé, Hydrogeologist
Alexandra Martini, Environmental Analyst
Caitlin Munson, Environmental Analyst
Spenser Lucarelli, GIS
Laurel Porter, Technical Editor
Lindsey Powers, Publications Specialist
Ellie Choa, Publications Specialist

Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program

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APPENDIX A

Proposed Western San Bernardino County DSIPP Activity Locations

APPENDIX A

Proposed Western San Bernardino County DSIPP Activity Locations

ID	Feeder Name	APN
Sta 15+45	Inland Feeder	015124119
Sta 17+20	Inland Feeder	015124119
Sta 19+55	Inland Feeder	015124119
Sta 22+10	Inland Feeder	015124119
Sta 250+40	Inland Feeder	027006115
Sta 251+45	Inland Feeder	027006115
Sta 257+21	Inland Feeder	027006115
Sta 266+15	Inland Feeder	027007107
Sta 267+81	Inland Feeder	027007107
Sta 271+24	Inland Feeder	027007107
Sta 277+87	Inland Feeder	027007107
Sta 281+90	Inland Feeder	027007107
Sta 288+90	Inland Feeder	027011102
Sta 290+15	Inland Feeder	027011102
Sta 586+45	Inland Feeder	119934101
Sta 591+40	Inland Feeder	119929106
Sta 596+20	Inland Feeder	119929106
Sta 615+60	Inland Feeder	120011101
Sta 660+00	Inland Feeder	120053101
Sta 733+15	Inland Feeder	120136119
Sta 735+40	Inland Feeder	120136119
Sta 736+40	Inland Feeder	120136119
Sta 745+00	Inland Feeder	120140101
Sta 755+00	Inland Feeder	120140102
Sta 763+00	Inland Feeder	120140102
Sta 802+94	Inland Feeder	029113101
Sta 813+00	Inland Feeder	029113101
Sta 822+10	Inland Feeder	029115101
Sta 824+20	Inland Feeder	029115101
Sta 831+00	Inland Feeder	029115101
Sta 841+00	Inland Feeder	029115101
Sta 851+00	Inland Feeder	029115102
Sta 881+00	Inland Feeder	029705102
Sta 889+00	Inland Feeder	029705101
Sta 891+10	Inland Feeder	029705101
Sta 902+50	Inland Feeder	016831106
Sta 914+10	Inland Feeder	016831106
Sta 940+80	Inland Feeder	029711109
Sta 945+10	Inland Feeder	029711114
Sta 950+10	Inland Feeder	029711114
Sta 964+50	Inland Feeder	N/A
Sta 1005+15	Inland Feeder	029804717
Sta 1013+35	Inland Feeder	029804717
Sta 1020+66	Inland Feeder	029805410
Sta 1054+10	Inland Feeder	029903101
Sta 1056+70	Inland Feeder	029904101
Sta 1066+45	Inland Feeder	029910106
Sta 1079+50	Inland Feeder	029911102

APPENDIX A (Continued)

ID	Feeder Name	APN
Sta 2920+00	Rialto Pipeline	100528103
Sta 2920+70	Rialto Pipeline	100528103
Sta 2929+17	Rialto Pipeline	100528103
Sta 2929+24	Rialto Pipeline	100528103
Sta 3094+04	Rialto Pipeline	104415102
Sta 3094+04	Rialto Pipeline	020120123
Sta 3094+04	Rialto Pipeline	020120137
Sta 3094+04	Rialto Pipeline	020120136
Sta 3094+04	Rialto Pipeline	106264103
Sta 3163+02	Rialto Pipeline	020122136
Sta 3209+32	Rialto Pipeline	106241105
Sta 3243+60	Rialto Pipeline	020125152
Sta 3389+50	Rialto Pipeline	022510132
Sta 3470+05	Rialto Pipeline	022512201
Sta 3475+02	Rialto Pipeline	022512201
Sta 3475+25	Rialto Pipeline	022512201
Sta 3475+35	Rialto Pipeline	022512201
Sta 3479+29	Rialto Pipeline	022512202
Sta 3480+00	Rialto Pipeline	022512202
Sta 3480+97	Rialto Pipeline	022512202
Sta 3492+97	Rialto Pipeline	022512204
Sta 3504+96	Rialto Pipeline	022513120
Sta 3518+00	Rialto Pipeline	022513107
Sta 3521+50	Rialto Pipeline	022513107
Sta 3571+01	Rialto Pipeline	022608219
Sta 3571+01	Rialto Pipeline	022608221
Sta 3571+01	Rialto Pipeline	022625101
Sta 3571+01	Rialto Pipeline	022625141
Sta 3571+01	Rialto Pipeline	022628201
Sta 3571+01	Rialto Pipeline	022628202
Sta 3571+01	Rialto Pipeline	022608220
Sta 3583+87	Rialto Pipeline	110725101
Sta 3583+87	Rialto Pipeline	022608208
Sta 3583+87	Rialto Pipeline	110725112
Sta 3583+87	Rialto Pipeline	110725114
Sta 3583+87	Rialto Pipeline	110725106
Sta 3583+87	Rialto Pipeline	110725113
Sta 3711+91	Rialto Pipeline	023913142
Sta 3711+91	Rialto Pipeline	023913147
Sta 3736+11	Rialto Pipeline	023913144
Sta 3756+12	Rialto Pipeline	N/A
Sta 3901+02	Rialto Pipeline	026203113
Sta 3901+02	Rialto Pipeline	023912122
Sta 3907+96	Rialto Pipeline	026203113
Sta 3907+96	Rialto Pipeline	023912122
Sta 3907+96	Rialto Pipeline	026207121
Sta 3915+10	Rialto Pipeline	026203113
Sta 3945+00	Rialto Pipeline	026203115
Sta 4055+81	Rialto Pipeline	N/A
Sta 4110+97	Rialto Pipeline	026110106

APPENDIX A (Continued)

ID	Feeder Name	APN
Sta 680+00	Upper Feeder	173180002
Sta 687+00	Upper Feeder	173180002
Sta 698+84	Upper Feeder	173180002
Sta 711+70	Upper Feeder	173170002
Sta 721+25	Upper Feeder	173170002
Sta 721+77	Upper Feeder	173170002
Sta 721+77	Upper Feeder	173170003
Sta 728+50	Upper Feeder	019319216
Sta 736+94	Upper Feeder	019319216
Sta 1073+90	Upper Feeder	022929154
Sta 1073+90	Upper Feeder	022929146
Sta 1074+03	Upper Feeder	022929122
Sta 1074+03	Upper Feeder	022929123
Sta 1264+68	Upper Feeder	N/A
Sta 1317+94	Upper Feeder	N/A
Sta 1413+85	Upper Feeder	N/A
Sta 560+32	Yorba Linda Feeder	100001108
Sta 560+44	Yorba Linda Feeder	100001108
Sta 573+42	Yorba Linda Feeder	100001108
Sta 595+97	Yorba Linda Feeder	100001108
Sta 615+93	Yorba Linda Feeder	100001108
Sta 635+96	Yorba Linda Feeder	100001108
Sta 655+94	Yorba Linda Feeder	100001108
Sta 677+79	Yorba Linda Feeder	100001108
Sta 688+15	Yorba Linda Feeder	100001108
Sta 688+15	Yorba Linda Feeder	100002113
Sta 704+71	Yorba Linda Feeder	100001108

Legend:

ID: Station IDs refer to locations at 100-foot increments along the pipelines, with the station numbers increasing in the direction of the flow of water. For example, Station 542+00 is 54,200 feet from the beginning of the pipeline. Each proposed activity in the table is identified by the closest pipeline station. This means that the activity would occur at or in the immediate vicinity of the station.

Feeder Name: Identifies the pipeline along which the activity would occur.

APN: Each station number is matched to an Assessor's Parcel Number (APN).

N/A: Not applicable. These station numbers do not have APNs because it is a public roadway.

APPENDIX A (Continued)

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Appendix C-2

Notice of Preparation

NOTICE OF PREPARATION

To: Distribution List

From: The Metropolitan Water District of
Southern California
700 North Alameda Street
Los Angeles, California 90012

Subject: Notice of Preparation of a Draft Program Environmental Impact Report for the Western San Bernardino County Distribution System Infrastructure Protection Program

The Metropolitan Water District of Southern California (Metropolitan) will be the lead agency under the California Environmental Quality Act (CEQA) and will prepare a Draft Program Environmental Impact Report (PEIR) for the Western San Bernardino County Distribution System Infrastructure Protection Program (DSIPP) (proposed program). This Notice of Preparation (NOP) is being sent to responsible, trustee, and other public agencies as part of the review process required under CEQA (according to Section 21080.4 of the California Public Resources Code) and the CEQA Guidelines (14 CCR 15082).

The proposed program is located primarily within Western San Bernardino County, California, with a small portion located in northwestern Riverside County. Metropolitan is requesting input from responsible, trustee, and other public agencies, as well as interested organizations and individuals, regarding the scope and content of the environmental information to be included in the PEIR. Responsible agencies are requested to indicate their statutory responsibilities in connection with the proposed program. Public agencies receiving this NOP may need to consider this PEIR if they need to issue permits or other approvals for the proposed program.

The description and location of the proposed program and information on the potential environmental effects resulting from the proposed program are provided in this NOP. Copies of the complete program description and Initial Study are available at the libraries listed in the NOP or on Metropolitan's website at <http://mwdh2o.com/mwdh2o/pages/about/EnvPlanTeam/index.html>.


Due to the time limits mandated by state law, your written comments must be sent at the earliest possible date, but not later than the end of the public review period, which begins November 25, 2014, and ends January 9, 2015.

Please send your response to Ms. Jennifer Harriger at the address shown above or via email at EPT@mwdh2o.com (reference "Western San Bernardino County DSIPP" in subject line). Written comments should include the name, mailing address, and telephone number of a contact person.

Project Title: Western San Bernardino County Distribution System Infrastructure Protection Program

Project Applicant: The Metropolitan Water District of Southern California

Date: 11-20-14

Signature: 
Manager, Environmental Planning Team
Telephone: 213.217.6696

NOTICE OF PREPARATION

Western San Bernardino County Distribution System Infrastructure Protection Program

Introduction

The Metropolitan Water District of Southern California (Metropolitan) is one of the nation's largest providers of treated drinking water. On average, Metropolitan moves more than 1.5 billion gallons of water daily through its distribution system, delivering supplies to 26 member agencies. Those agencies sell that water to more than 300 subagencies or directly to consumers. In all, approximately 18.4 million Southern Californians rely on Metropolitan for some or all of the water they use in their homes and businesses. Metropolitan's service area encompasses a six-county area of 5,200 square miles in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties.

In June 2012, Metropolitan established the Distribution System Infrastructure Protection Program (DSIPP), a comprehensive assessment program that identifies, prioritizes, and executes needed surface infrastructure protection projects for Metropolitan's conveyance and distribution system. The scope of the program includes activities/projects that have been identified from visual inspection of the surface or accessed from manholes at the surface and does not include activities related to the rehabilitation or replacement of subsurface pipelines. For this program, Metropolitan has divided its service area into operating regions based on geographic areas and roughly following county lines. Under the DSIPP, programmatic California Environmental Quality Act (CEQA) documentation will be prepared and long-term programmatic regional permits will be obtained for each operating region to streamline the permitting process and execute program activities in a timely manner.

Program Environmental Impact Reports (PEIRs) will be prepared for each of Metropolitan's operating regions. Metropolitan proposes (1) the preparation and implementation of an Operations and Maintenance (O&M) Manual that covers routine and single-occurrence O&M activities and (2) the design, construction, and operation and maintenance of Capital Investment Plan (CIP) infrastructure projects for Metropolitan's conveyance and distribution system within the Western San Bernardino County Operating Region (proposed program).

Project Location

The Western San Bernardino County Operating Region comprises Metropolitan's conveyance and distribution system pipelines and appurtenant structures, right-of-way, and patrol roads within Western San Bernardino County, California and a small portion of northwestern Riverside County. The Western San Bernardino County Operating Region includes 74 miles of pipeline, 392

Notice of Preparation

pipeline structures, and associated patrol roads. Figure 1 depicts Metropolitan's distribution system on a regional scale and Figure 2 depicts the distribution system within the Western San Bernardino County Operating Region, where proposed O&M activities and CIP projects will occur.

Project Description

The proposed program consists of a comprehensive program to design and implement projects to address surface infrastructure repair and protection needs, while simultaneously implementing a plan for conducting routine O&M activities in the Western San Bernardino County Operating Region in order to ensure continued water supply reliability. There are two components within the proposed program: O&M activities and CIP infrastructure projects.

O&M Activities: O&M activities within the Western San Bernardino County Operating Region will be addressed in the Western San Bernardino County Operating Region O&M Manual, which will serve as a comprehensive guide for the maintenance of existing water conveyance and distribution infrastructure. The O&M Manual describes O&M activities and provides a schedule for routine inspection and maintenance of patrol roads and pipeline appurtenant structures (e.g., blowoff structures, pumpwells, manholes, pump stations, air vents, service connections, valves). The activities described in the O&M Manual are already ongoing, but the O&M Manual will provide a more systematic and scheduled approach to maintenance necessary to minimize environmental impacts and obtain regional programmatic regional permits. O&M activities in the Western San Bernardino County Operating Region include the following:

- Maintenance of patrol roads (i.e., grading, erosion control, vegetation maintenance, and maintenance of culverts and Arizona crossings) to restore or continue unimpeded access to pipelines and associated aboveground appurtenant structures to perform inspections and other routine and/or emergency maintenance activities
- Routine patrol and visual inspection of patrol roads and aboveground pipeline appurtenant structures to identify maintenance and security needs
- Routine facility maintenance, repair, and replacement activities (i.e., cleaning of equipment and structures; graffiti removal and coating of structures; vegetation maintenance; pipeline appurtenance maintenance, repair, and replacement; pest control; and repair/installation of security fencing/signage)
- Pipeline shutdowns and dewatering
- Emergency operation procedures
- Single-occurrence O&M activities (i.e., patrol road repairs such as construction or replacement of Arizona crossings, culverts, or bridges to continue or restore unimpeded access to pipelines and associated aboveground appurtenant structures).

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CIP Projects: CIP projects are those that result in structures or improvements that are more permanent in nature than O&M solutions and that rectify access or infrastructure problems threatening the reliability of the conveyance and distribution system and water supply to member agencies. These projects typically require design engineering, are more expensive to construct, and would be conducted on a one-time basis. Proposed CIP projects in the Western San Bernardino County Operating Region are categorized as one of the following CIP project types:

- Paving of patrol roads and around aboveground appurtenant structures
- Engineered erosion control projects (i.e., installation of new or repair of existing permanent structures, such as culverts, corrugated metal pipes, flared inlets, level control structures, secant walls, and/or upstream wing walls/head walls necessary to safely direct stormwater flows or creek flows across or along patrol roads or around pipeline structures)
- Slope stabilization projects (i.e., regrading and compacting of the slope, rock slope protection, soil cement, anchors, tie-backs, stepped retaining walls, or a combination of methods)
- Repair, replacement, or relocation of aboveground appurtenant pipeline structures, including those threatened or undermined by erosion or subject to significant flooding.

The preparation and implementation of the O&M Manual and the proposed design, construction, and operation of the CIP projects considered together are referred to as the proposed program.

Potential Environmental Effects of the Proposed Program

The initial environmental review indicates that the proposed program may have potentially significant effects on the environment in some resource categories; these resources will require more detailed analysis in the PEIR. The following resources require further analysis in the PEIR: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology/Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services, Transportation and Traffic, Utilities and Service Systems, and Mandatory Findings of Significance. The PEIR will include an analysis of these impact areas, and feasible mitigation measures and alternatives to avoid or reduce potential impacts will be included.

Environmental Categories Not Impacted by the Proposed Program

The initial environmental review indicates that the proposed program would have no impact or a less-than-significant impact on the following resources: Agricultural and Forestry Resources, Mineral Resources, Population and Housing, and Recreation. These resources do not require further evaluation and, therefore, will not be analyzed in the PEIR.

Notice of Preparation

Opportunity for Public Review and Comment

Copies of the Notice of Preparation (NOP) are available for public review at the following location:

The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, California 90012

Please contact Jennifer Harriger to arrange for viewing.

Additionally, copies of the NOP are available for public review at the following locations:

James S. Thalman Chino Hills Branch Library
14020 City Center Drive
Chino Hills, California 91709

Paul A. Biane Library
12505 Cultural Center Drive
Rancho Cucamonga, California 91739

Fontana Lewis Library and Technology Center
8437 Sierra Avenue
Fontana, California 92335-3892

A.K. Smiley Public Library
125 West Vine Street
Redlands, California 92373

Highland Sam J. Racadio Library
7863 Central Avenue
Highland, California 92346-4107

Rialto Branch Library
251 West First Street
Rialto, California 92376

Glen Avon Library
9244 Galena Street
Jurupa Valley, California 92509

Norman F. Feldheym Central Library
555 West Sixth Street
San Bernardino, California 92410

Ovitt Family Community Library
215 East C Street
Ontario, California 91764-4111

The NOP is also available on Metropolitan's website:
<http://mwdh2o.com/mwdh2o/pages/about/EnvPlanTeam/index.html>

Interested individuals, groups, and agencies may provide Metropolitan with written comments on topics to be addressed in the PEIR for the proposed program. Responsible agencies, trustee agencies, and other agencies having jurisdiction over the proposed program or natural resources are requested to provide specific information as to the scope and content of the environmental information related to that agency's statutory responsibilities that should be included in the Draft

Notice of Preparation

PEIR. Responding agencies should also identify a contact person for their agency. Written responses to this notice must be received no later than close of business on January 9, 2015.

Please direct comments to:

Ms. Jennifer Harriger
Environmental Planning Team
The Metropolitan Water District of Southern California
PO Box 54153
Los Angeles, California 90054-0153
Phone: 213.217.7658
Email: EPT@mwdh2o.com (reference “Western San Bernardino County DSIPP” in subject line)

All parties who have submitted their names and mailing addresses will be placed on the mailing list to receive notifications during the course of the environmental review process for the proposed program.

FIGURES



SOURCE: ArcGIS Online Basemap

Western San Bernardino County Distribution System Infrastructure Protection Program

Metropolitan Conveyance and Distribution System

— Etiwanda Pipeline
 — Inland Feeder
 — Rialto Pipeline
 — Upper Feeder
 — Yorba Linda Feeder
 — Other Metropolitan Pipelines

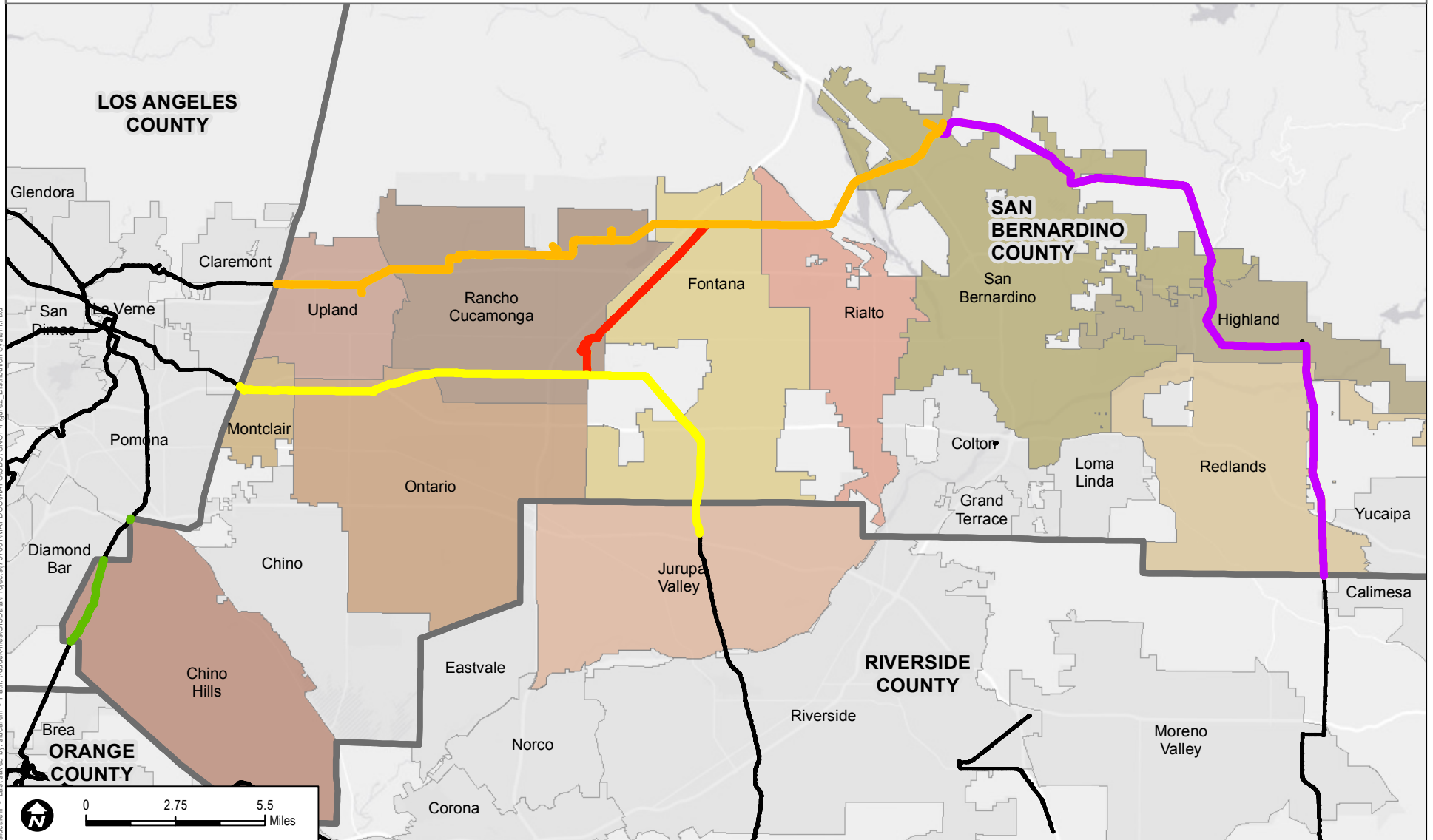


FIGURE 2

Western San Bernardino County Operating Region Pipeline Locations

SOURCE: ArcGIS Online Basemap

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Western San Bernardino County Distribution System Infrastructure Protection Program

Date: 11/14/2014 - Created by: slucarelli - Last saved by: slucarelli - Path: \\d:\del-files\GISData\Projects\57601\MAPOCMAPSSBC\ISGNOP\Figure2_Distribution System.mxd

Appendix D

Initial Study/NOP Comment Letters

DEPARTMENT OF TRANSPORTATION

DISTRICT 8

PLANNING (MS 722)

464 WEST 4th STREET, 6th FLOOR

SAN BERNARDINO, CA 92401-1400

PHONE (909) 383-4557

FAX (909) 383-5936

TTY 711

www.dot.ca.gov/dist8



Serious Drought.
Help save water!

December 12, 2014

Jennifer Harriger
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Subject: Western San Bernardino County Distribution System Infrastructure Protection Program – Initial Study dated November 2014

Dear Ms. Harriger:

Caltrans has received and reviewed the Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program, dated November 2014. The proposed project includes the preparation and implementation of an Operations and Maintenance Manual and the design, construction, operation, and maintenance of a Capital Investment Plan.

As the owner and operator of the State Highway System (SHS), it is our responsibility to coordinate and consult with local and regional jurisdictions when proposed development may impact our facilities. As the responsible agency under the California Environmental Quality Act (CEQA), it is also our responsibility to make recommendations to offset associated impacts with the proposed project. The following comments are for your consideration:

Traffic Operations

- As noted in the Initial Study, a traffic analysis or impact study is necessary to determine the proposed project's near-term and long-term impacts to the State facilities – existing and proposed – and to propose appropriate mitigation measures. When preparing the traffic impact study (TIS), please use the guidelines provided in the *Caltrans Guide for the Preparation of Traffic Impact Studies*, which is located at the following website: http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf
Minimum contents of the TIS are listed in Appendix A of the TIS Guide.
- All state facilities, including intersections and ramp interchanges, impacted by the project area should be analyzed in the traffic study.
- Mitigation measures to State facilities should be included in the traffic impact analysis. Mitigation identified in the traffic study, subsequent environmental documents, and mitigation monitoring reports, should be coordinated with

Caltrans to identify and implement the appropriate mitigation, as well as the appropriate timing of the mitigation.

Hydrology and Grading

- Existing capacity of affected State drainage systems cannot be exceeded. Should 100-year project runoff volumes be determined to exceed the maximum capacity of the existing State drainage facilities, construction of on-site detention basins, new drainage systems or other impact mitigations will be required.

Encroachment Permit

- When development does occur, an encroachment permit is required for any work performed within, under, or over the State Right-of-Way. Furthermore, the applicant's environmental documentation must include such work in their project description and indicate that an encroachment permit will be needed. You can find more information regarding Encroachment Permits at:

Caltrans Office of Encroachment Permits
464 W 4th Street, Basement, MS 619
San Bernardino, CA 92401-1400
<http://www.dot.ca.gov/hq/traffops/developserv/permits/>

Thank you for providing us with the opportunity to review the Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program. These recommendations are preliminary and summarize our review of the materials provided for our evaluation. If this proposed project is later modified in any way, please forward copies of the revised plans so that updated recommendations for impact mitigation may be provided.

If you have any questions regarding this letter, please contact Rena Tang at (909) 806-3927, or myself at (909) 383-4457.

Sincerely,



MARK ROBERTS
Office Chief
Intergovernmental Review, Community and Regional Planning

Harriger, Jennifer A

From: Bob Critchfield <BCritchfield@ci.upland.ca.us>
Sent: Monday, December 29, 2014 10:24 AM
To: Environmental Planning Team - EPT
Cc: Rosemary Hoerning; Ponce Yambot
Subject: Western San Bernardino County DSIPP

Ms. Jennifer Harriger,

The City reviewed the Notice of Preparation (NOP) and Initial Study for the Western San Bernardino County Distribution System Infrastructure Protection Program. Upon reviewing Section 3 "Program Description", of the Initial Study, the third sentence of the second paragraph reads "The recommended maintenance or repair activity and detailed plans for proposed single-occurrence O&M activities and CIP projects will be provided in the forthcoming Draft EIR." The City of Upland is requesting written notification when the Draft EIR is available for review so that the City may review the detailed plans associated with any and all contemplated improvements to the Rialto Feeder Pipeline within the limits of the City of Upland.

Should you have any questions, please feel free to contact me.

Sincerely,

Bob Critchfield, PE
Principal Engineer



1370 N. Benson Avenue
Upland, CA 91786
Tel. (909) 291-2946
Fax (909) 291-2974

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471



December 3, 2014

Jennifer Harriger
Metropolitan Water District of Southern California
P. O. Box 54153
Los Angeles, CA 90054-0153

RE: SCH# 2014111071 Western San Bernardino County Distribution System Infrastructure Protection Program, San Bernardino and Riverside Counties.

Dear Ms. Harriger,

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
 - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
 - If any known cultural resources have already been recorded on or adjacent to the APE.
 - If the probability is low, moderate, or high that cultural resources are located in the APE.
 - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
 - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
 - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required**
 - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
 - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
 - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
 - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

A handwritten signature in blue ink that reads "Gayle Totton".

Gayle Totton
Associate Government Program Analyst

CC: State Clearinghouse

**Native American Tribal Government Consultation List
San Bernardino and Riverside Counties
December 3, 2014**

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway Cahuilla
Indio , CA 92203
(760) 342-2593
(760) 347-7880 Fax

Los Coyotes Band of Mission Indians
Shane Chapparosa, Chairman
P.O. Box 189 Cahuilla
Warner Springs , CA 92086
(760) 782-0711
(760) 782-2701 Fax

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Lynn Valbuena, Chairwoman
26569 Community Center Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 Fax

Torres-Martinez Desert Cahuilla Indians
Mary Resvaloso, Chairperson
P.O. Box 1160 Cahuilla
Thermal , CA 92274
mresvaloso@torresmartinez.org
(760) 397-0300
(760) 397-8146 Fax

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall , CA 91322
tsen2u@hotmail.com
(661) 753-9833 Office
(760) 885-0955 Cell
Fernandeño
Tataviam
Serrano
Vanyume
Kitanemuk

Santa Rosa Band of Mission Indians
John Marcus, Chairman
P.O. Box 391820 Cahuilla
Anza , CA 92539
(951) 659-2700
(951) 659-2228 Fax

Augustine Band of Cahuilla Mission Indians
Mary Ann Green, Chairperson
P.O. Box 846 Cahuilla
Coachella , CA 92236
(760) 398-4722
(760) 369-7161 Fax

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
dtorres@morongo-nsn.gov
(951) 572-6004 Fax

San Manuel Band of Mission Indians
Daniel McCarthy, M.S., Director-CRM Dept.
26569 Community Center Drive Serrano
Highland , CA 92346
dmccarthy@sanmanuel-nsn.gov
(909) 864-8933 Ext 3248
(909) 862-5152 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3 and 65362.4, et seq.

**Native American Tribal Government Consultation List
San Bernardino and Riverside Counties
December 3, 2014**

Torres-Martinez Desert Cahuilla Indians
Matthew Krystal, Cultural Resources Manager
P.O. Box 1160 Cahuilla
Thermal, CA 92274
mkrystal@tmdci-nsn.gov
(760) 397-0300
(760) 409-2987 Cell

Ramona Band of Mission Indians
John Gomez, Environmental Coordinator
P.O. Box 391670 Cahuilla
Anza, CA 92539
Jgomez@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

Cabazon Band of Mission Indians
Judy Stapp, Director of Cultural Affairs
84-245 Indio Springs Parkway Cahuilla
Indio, CA 92203
jstapp@cabazonindians-nsn.gov
(760) 342-2593
(760) 347-7880 Fax

Santa Rosa Band of Mission Indians
Terry Hughes, Tribal Administrator
P.O. Box 609 Cahuilla
Hemet, CA 92546
tkentucky@aol.com
(951) 658-5311
(951) 658-6733 Fax

Los Coyotes Band of Cahuilla and Cupeno Indians
Tribal Administrator
P.O. Box 189 Cahuilla
Warner Springs, CA 92086
(760) 782-0711
(760) 782-2701 Fax

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive Cahuilla
Palm Springs, CA 92262
lfreogoz@aguacaliente-nsn.gov
(760) 325-3400
(760) 325-0593 Fax

Los Coyotes Band of Cahuilla and Cupeno Indians
Environmental Director
P.O. Box 189 Cahuilla
Warner Springs, CA 92086
(760) 782-0712
(760) 782-2730 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road Cahuilla
Banning, CA 92220 Serrano
(951) 849-8807
(951) 755-5200

Ramona Band of Cahuilla Indians
Manuel Hamilton, Vice Chairperson
P.O. Box 391670 Cahuilla
Anza, CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 Serrano
Patton, CA 92369
(909) 528-9027
(909) 528-9032

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**Native American Tribal Government Consultation List
San Bernardino and Riverside Counties
December 3, 2014**

Agua Caliente Band of Cahuilla Indians THPO
Patricia Garcia, Tribal Historic Preservation Officer
5401 Dinah Shore Drive Cahuilla
Palm Springs , CA 92264
ptuck@augacaliente-nsn.gov
(760) 699-6907
(760) 699-6924 Fax

Augustine Band of Cahuilla Mission Indians
Karen Kupcha
P.O. Box 849 Cahuilla
Coachella , CA 92236
(760) 398-4722
(916) 369-7161 Fax

Cahuilla Band of Indians
Luther Salgado, Chairperson
P.O. Box 391760 Cahuilla
Anza , CA 92539
Chairman@cahuilla.net
(760) 763-5549
(760) 763-2631 Tribal EPA

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road
Banning , CA 92220 Serrano
siva@dishmail.net Cahuilla
(951) 849-4676

This list is current only as of the date of this document.

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This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3 and 65362.4, et seq.

**Native American Tribal Government Consultation List
San Bernardino and Riverside Counties
December 3, 2014**

Pala Band of Mission Indians
Historic Preservation Office/Shasta Gaughen
12196 Pala Mission Road Luiseno
Pala , CA 92059 Cupeno
sgaughen@palatribe.com
(760) 891-3515
(760) 742-3189 Fax

Pauma & Yuima Reservation
Randall Majel, Chairperson
P.O. Box 369 Luiseno
Pauma Valley , CA 92061
(760) 742-1289
(760) 742-3422 Fax

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resources Manager
P.O. Box 1477 Luiseno
Temecula , CA 92593
pmacarro@pechanga-nsn.gov
(951) 770-8100
(951) 506-9491 Fax

Rincon Band of Mission Indians
Vincent Whipple, Tribal Historic Pres. Officer
1 West Tribal Road Luiseno
Valley Center , CA 92082
vwhipple@rincontribe.org
(760) 297-2635
(760) 297-2639 Fax

Soboba Band of Mission Indians
Rosemary Morillo, Chairperson; Attn: Carrie Garcia
P.O. Box 487 Luiseno
San Jacinto , CA 92581
carrieg@soboba-nsn.gov
(951) 654-2765
(951) 654-4198 Fax

Pauma Valley Band of Luiseño Indians
Bennae Calac
P.O. Box 369 Luiseno
Pauma Valley , CA 92061
bennaecalac@aol.com
(760) 617-2872
(760) 742-3422 Fax

Pauma & Yuima
ATTN: EPA
P.O. Box 369 Luiseno
Pauma Valley , CA 92061
kymberli_peters@yahoo.com
(760) 742-1289
(760) 742-3422 Fax

Rincon Band of Mission Indians
Bo Mazzetti, Chairperson
1 West Tribal Road Luiseno
Valley Center , CA 92082
bomazzetti@aol.com
(760) 749-1051
(760) 749-8901 Fax

San Luis Rey Band of Mission Indians
Tribal Council
1889 Sunset Drive Luiseno
Vista , CA 92081
cjmojado@slrmissionindians.org
(760) 724-8505
(760) 724-2172 Fax

San Luis Rey Band of Mission Indians
Cultural Department
1889 Sunset Drive Luiseno
Vista , CA 92081 Cupeno
cjmojado@slrmissionindians.org
(760) 724-8505
(760) 724-2172 Fax

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This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3 and 65362.4, et seq.

**Native American Tribal Government Consultation List
San Bernardino and Riverside Counties
December 3, 2014**

Kupa Cultural Center (Pala Band)
Shasta Gaughen, Assistant Director
35008 Pala-Temecula Rd., PMB 50 Luiseno
Pala , CA 92059
cupa@palatribe.com
(760) 891-3590
(760) 742-4543 Fax

Pechanga Band of Mission Indians
Mark Macarro, Chairperson
P.O. Box 1477 Luiseno
Temecula , CA 92593
mgoodhart@pechanga-nsn.gov
(951) 770-6100
(951) 695-1778 Fax

William J. Pink
48310 Pechanga Road Luiseno
Temecula , CA 92592
wjpink@hotmail.com
(909) 936-1216
Prefers e-mail contact

La Jolla Band of Mission Indians
Lavonne Peck, Chairwoman
22000 Highway 76 Luiseno
Pauma Valley , CA 92061
rob.roy@lajolla-nsn.gov
(760) 742-3771
(760) 742-1704 Fax

Pauma & Yuima Reservation
Charles Devers, Cultural Committee
P.O. Box 369 Luiseno
Pauma Valley , CA 92061
(760) 742-1289
(760) 742-3422 Fax

Pechanga Cultural Resources Department
Anna Hoover, Cultural Analyst
P.O. Box 2183
Temecula , CA 92593 Luiseño
ahoover@pechanga-nsn.gov
(951) 770-8104
(951) 694-0446 Fax

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487
San Jacinto , CA 92581 Luiseno
jontiveros@soboba-nsn.gov
(951) 663-5279
(951) 654-5544, ext 4137

Pala Band of Mission Indians
Robert H. Smith, Chairperson
35008 Pala-Temecula Rd., PMB 50 Luiseno
Pala , CA 92059 Cupeno
(760) 891-3500
(760) 742-3189 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3 and 65362.4, et seq.



Edmund G. Brown Jr.
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit



Ken Alex
Director

Notice of Preparation

November 25, 2014

To: Reviewing Agencies

Re: Western San Bernardino County Distribution System Infrastructure Protection Program
SCH# 2014111071

Attached for your review and comment is the Notice of Preparation (NOP) for the Western San Bernardino County Distribution System Infrastructure Protection Program draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Jennifer Harriger
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

SCH# 2014111071
Project Title Western San Bernardino County Distribution System Infrastructure Protection Program
Lead Agency Metropolitan Water District of Southern California

Type NOP Notice of Preparation
Description Note: Review period per lead

The Metropolitan Water District of Southern California (Metropolitan) is proposing the implementation of an Operations and Maintenance (O&M) Manual and the design, construction, and operation of Capital Investment Plan (CIP) projects for the conveyance and distribution system within its Western San Bernardino County Operating Region (proposed project). The proposed project is part of Metropolitan's Distribution System Infrastructure Protection Program (DSIPP), which is a comprehensive assessment program that identifies, prioritizes, and executes needed surface infrastructure protection projects for Metropolitan's conveyance and distribution system. Ongoing maintenance, rehabilitation and/or replacement of Metropolitan's existing facilities and construction of new facilities are necessary to ensure water supply reliability.

Lead Agency Contact

Name	Jennifer Harriger		
Agency	Metropolitan Water District of Southern California		
Phone	(213) 217-7658	Fax	
email			
Address	P.O. Box 54153		
City	Los Angeles	State CA	Zip 90054-0153

Project Location

County San Bernardino, Riverside
City San Bernardino, Jurupa Valley
Region
Cross Streets
Lat / Long 34° 07' 22.8" N / 117° 20' 58.5" W
Parcel No.

Township	Range	Section	Base
-----------------	--------------	----------------	-------------

Proximity to:

Highways Multiple
Airports Multiple
Railways Multiple
Waterways Multiple
Schools Multiple
Land Use Various for the multiple locations.

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Landuse; Biological Resources

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Fish and Wildlife, Region 6; Native American Heritage Commission; Caltrans, District 8; Air Resources Board; Regional Water Quality Control Board, Region 8

Date Received 11/25/2014 **Start of Review** 11/25/2014 **End of Review** 01/09/2015

NOP Distribution List

AN

County:

San Bernardino, Riverside

SCH#

2014111071

Resources Agency

Resources Agency Nadell Gayou

- ☐ Dept. of Boating & Waterways
Nicole Wong
- ☐ California Coastal Commission
Elizabeth A. Fuchs
- ☐ Colorado River Board
Lisa Johansen
- ☐ Dept. of Conservation
Elizabeth Carpenter
- ☐ California Energy Commission
Eric Knight
- ☐ Cal Fire
Dan Foster
- ☐ Central Valley Flood Protection Board
James Herota
- ☐ Office of Historic Preservation
Ron Parsons

- ☐ Fish & Wildlife Region 1E
Laurie Harnsberger
- ☐ Fish & Wildlife Region 2
Jeff Drongesen
- ☐ Fish & Wildlife Region 3
Charles Armor
- ☐ Fish & Wildlife Region 4
Julie Vance
- ☐ Fish & Wildlife Region 5
Leslie Newton-Reed
Habitat Conservation Program
- ☐ Fish & Wildlife Region 6
Tiffany Ellis
Habitat Conservation Program
- ☐ Fish & Wildlife Region 6 I/M
Heidi Sickler
Inyo/Mono, Habitat Conservation Program
- ☐ Dept. of Fish & Wildlife M
George Isaac
Marine Region

Other Departments

- ☐ Food & Agriculture
Sandra Schubert
Dept. of Food and Agriculture
- ☐ Depart. of General Services
Public School Construction
- ☐ Dept. of General Services
Anna Garbeff
Environmental Services Section
- ☐ Delta Stewardship Council
Kevan Samsam
- ☐ Housing & Comm. Dev.
CEQA Coordinator
Housing Policy Division

Independent Commissions, Boards

- ☐ Delta Protection Commission
Michael Machado

Fish and Game

- ☐ Depart. of Fish & Wildlife
Scott Flint
Environmental Services Division
- ☐ Fish & Wildlife Region 1
Donald Koch

- ☐ OES (Office of Emergency Services)
Dennis Castrillo

Native American Heritage Comm. Debbie Treadway

- ☐ Public Utilities Commission
Leo Wong
- ☐ Santa Monica Bay Restoration
Guangyu Wang
- ☐ State Lands Commission
Jennifer Deleong
- ☐ Tahoe Regional Planning Agency (TRPA)
Cherry Jacques

Cal State Transportation Agency CalSTA

- ☐ Caltrans - Division of Aeronautics
Philip Crimmins
- ☐ Caltrans - Planning
HQ LD-IGR
Terri Pencovic
- ☐ California Highway Patrol
Suzann Ikeuchi
Office of Special Projects

Dept. of Transportation

- ☐ Caltrans, District 1
Rex Jackman
- ☐ Caltrans, District 2
Marcelino Gonzalez
- ☐ Caltrans, District 3
Eric Federicks - South
Susan Zanchi - North
- ☐ Caltrans, District 4
Erik Alm
- ☐ Caltrans, District 5
Larry Newland
- ☐ Caltrans, District 6
Michael Navarro
- ☐ Caltrans, District 7
Dianna Watson

- ☒ Caltrans, District 8
Mark Roberts

- ☐ Caltrans, District 9
Gayle Rosander

- ☐ Caltrans, District 10
Tom Dumas

- ☐ Caltrans, District 11
Jacob Armstrong

- ☐ Caltrans, District 12
Maureen El Harake

Cal EPA

Air Resources Board

- ☒ All Other Projects
Cathi Slaminski
- ☐ Transportation Projects
Nesamani Kalandiyur
- ☐ Industrial/Energy Projects
Mike Tollstrup
- ☐ State Water Resources Control Board
Regional Programs Unit
Division of Financial Assistance
- ☐ State Water Resources Control Board
Jeffery Werth
Division of Drinking Water
- ☐ State Water Resources Control Board
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality
- ☐ State Water Resources Control Board
Phil Crader
Division of Water Rights
- ☐ Dept. of Toxic Substances Control
CEQA Tracking Center
- ☐ Department of Pesticide Regulation
CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ RWQCB 1
Cathleen Hudson
North Coast Region (1)
- ☐ RWQCB 2
Environmental Document Coordinator
San Francisco Bay Region (2)
- ☐ RWQCB 3
Central Coast Region (3)
- ☐ RWQCB 4
Teresa Rodgers
Los Angeles Region (4)
- ☐ RWQCB 5S
Central Valley Region (5)
- ☐ RWQCB 5F
Central Valley Region (5)
Fresno Branch Office
- ☐ RWQCB 5R
Central Valley Region (5)
Redding Branch Office
- ☐ RWQCB 6
Lahontan Region (6)
- ☐ RWQCB 6V
Lahontan Region (6)
Victorville Branch Office
- ☐ RWQCB 7
Colorado River Basin Region (7)
- ☒ RWQCB 8
Santa Ana Region (8)
- ☐ RWQCB 9
San Diego Region (9)

- ☐ Other _____
- ☐ _____
- ☐ _____
- ☐ Conservancy



South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 ♦ www.aqmd.gov

December 10, 2014

Ms. Jennifer Harriger
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012

Notice of Preparation of a CEQA Document for the
Western San Bernardino County Distribution System Infrastructure Protection Program

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft CEQA document. Please send the SCAQMD a copy of the CEQA document upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website here: [http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-\(1993\)](http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993)). SCAQMD staff also recommends that the lead agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the lead agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2>. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is

recommended that the lead agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis>. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Perspective*, which can be found at the following internet address: <http://www.arb.ca.gov/ch/handbook.pdf>. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies>.
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>.
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions
- Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: <http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf?sfvrsn=4>.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (<http://www.aqmd.gov>).

The SCAQMD staff is available to work with the Lead Agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at jbaker@aqmd.gov or call me at (909) 396-3176.

Sincerely,

Jillian Baker

Jillian Baker, Ph.D.
Program Supervisor
Planning, Rule Development & Area Sources



VIA EMAIL & US MAIL

December 9, 2014

The Metropolitan Water District of Southern California
Attn: Ms. Jennifer Harriger
700 North Alameda Street
Los Angeles, California 90012

RE: Western San Bernardino County DSIPP

Dear Ms. Harriger:

In regards to the Notice of Preparation for the Western San Bernardino County DSIPP, Auto Club Speedway provides the following comments:

MWD activities could have adverse impacts if they are not coordinated with private landowners. It is unclear from the Notice of Preparation whether the O&M Manual will contain such a requirement. The MWD should ensure that the O&M Manual contains a requirement to coordinate their O&M Activities and CIP Projects with private landowners where applicable. This ensures that the MWD is alerted in advance of any special issues that may apply to proposed work and that might otherwise cause adverse impacts.

For example, the Auto Club Speedway property is subject to multiple easements that require certain work to be coordinated with the California Department of Toxic Substances Control. The Auto Club Speedway also occasionally hosts large events with many guests that require careful coordination of traffic to minimize traffic congestion and noise. These kinds of issues could be easily addressed via proper advance coordination.

Please contact my office with any questions at (909) 429-5651, or via email at bgeye@autoclubspeedway.com.

Regards,

Brian Geye
Senior Director, Operations



State of California - Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, CA 91764
(909) 484-0459
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



January 8, 2015

Ms. Jennifer Harriger
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Subject: Notice of Preparation of a Draft Environmental Impact Report
Western San Bernardino County Distribution System Infrastructure
Protection Program Project
State Clearinghouse No. 2014111071

Dear Ms. Harriger:

The Department of Fish and Wildlife (Department) appreciates the opportunity to comment on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Western San Bernardino County Distribution System Infrastructure Protection Program Project (Project) [State Clearinghouse No. 2014111071]. The Department is responding to the NOP and DEIR as a Trustee Agency for fish and wildlife resources (California Fish and Game Code Sections 711.7 and 1802, and the California Environmental Quality Act [CEQA] Guidelines Section 15386), and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines Section 15381), such as the issuance of a Lake or Streambed Alteration Agreement (California Fish and Game Code Sections 1600 *et seq.*) and/or a California Endangered Species Act (CESA) Permit for Incidental Take of Endangered, Threatened, and/or Candidate species (California Fish and Game Code Sections 2080 and 2080.1).

Project Description

The Project is located within western San Bernardino County with a small portion in northwestern Riverside County, California. The Metropolitan Water District of Southern California (Metropolitan) proposes the preparation and implementation of an Operations and Maintenance (O&M) Manual and the design, construction, operation, and maintenance of Capital Investment Plan (CIP) projects for the conveyance and distribution system within its Western San Bernardino County Operation Region. The O&M Manual would develop a formalized plan that would provide a systematic and schedule approach to these maintenance activities and would serve as a comprehensive guide for the maintenance of existing water conveyance and distribution infrastructure. Routine O&M activities are preventative in nature and include, on a regular basis, standard practices that detect and correct minor issues that may

eventually lead to damage or loss of surface infrastructure. CIP projects consist of activities that involve the repair, upgrade and/or relocation of existing structures, or the installation of new permanent structures to address access or infrastructure problems that threaten system reliability. The proposed program is part of Metropolitan's Distribution System Infrastructure Protection Program (DSIPP), which identifies, prioritizes, and implements needed surface infrastructure protection projects for Metropolitan's conveyance and distribution system. The scope of the program includes those projects along pipeline routes, at aboveground structures, and along patrol roads that were identified from visual inspection of the surface or accessed from manholes at the surface. The proposed program does not include projects related to the rehabilitation or replacement of subsurface pipelines. Pipelines to be included in project activities are Etiwanda Pipeline (Cities of Rancho Cucamonga and Fontana), Inland Feeder (Cities of San Bernardino, Highland, and Redlands; unincorporated San Bernardino County), Rialto Pipeline (Cities of San Bernardino, Rialto, Fontana, Rancho Cucamonga and Upland; unincorporated San Bernardino County), Upper Feeder (Cities of Montclair, Ontario, Rancho Cucamonga, Fontana, Jurupa Valley; unincorporated San Bernardino and Riverside counties), and the Yorba Linda Feeder (City of Chino Hills).

Biological Resources and Impacts

The DEIR should contain sufficient, specific, and current biological information on the existing habitat and species at the Project site; measures to minimize and avoid sensitive biological resources; and mitigation measures to offset the loss of native flora and fauna and State waters. The DEIR should not defer impact analysis and mitigation measures to future regulatory discretionary actions, such as a Lake or Streambed Alteration Agreement.

If state or federal endangered or threatened species have the potential to occur on the Project, site species specific surveys should be conducted using methods approved by the Department or assume the presence of the species throughout the project site. The DEIR should include recent survey data (CEQA Guidelines Section 15125(a)). The DEIR should also address species of special concern and federal critical habitat. To assist with review, an accompanying map showing the areas of impact should be included in the DEIR. Additional maps detailing the location of endangered, threatened, or species of special concern should also be included in the DEIR.

California Endangered Species Act (CESA)

The Department is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to the CESA. The Department recommends that a CESA ITP be obtained if the Project has the potential to result in "take" (California Fish and Game Code Section 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through

construction or over the life of the Project. CESA ITPs are issued to conserve, protect, enhance, and restore State-listed CESA species and their habitats. The Department encourages early consultation, as significant modification to the proposed project and mitigation measures may be necessary to obtain a CESA ITP. Revisions to the California Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA ITP unless the Project CEQA document addresses all Project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. The Department's CESA ITP requires that a project fully minimize and mitigate impacts to State-listed resources.

Natural Community Conservation Program (NCCP)

The Department administers the Natural Community Conservation Plan Program (NCCP Program). Within the Inland Deserts Region, the Department issued Natural Community Conservation Plan Approval and Take Authorization for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) per Section 2800, *et seq.*, of the California Fish and Game Code on June 22, 2004. The MSHCP establishes a multiple species conservation program to minimize and mitigate habitat loss and provides for the incidental take of covered species in association with activities covered under the permit.

Compliance with approved habitat plans, such as the MSHCP, is discussed in CEQA. Specifically, Section 15125(d) of the CEQA Guidelines requires that the CEQA document discuss any inconsistencies between a proposed Project and applicable general plans and regional plans, including habitat conservation plans and natural community conservation plans. An assessment of the impacts to the MSHCP as a result of this Project is necessary to address CEQA requirements. To obtain additional information regarding the MSHCP please go to: <http://rctlma.org/epd/WR-MSHCP>.

Part of the proposed Project occurs within the MSHCP area and is subject to the provisions and policies of the MSHCP. In order to be considered a covered activity, Permittees must demonstrate that proposed actions are consistent with the MSHCP and its associated Implementing Agreement. The Metropolitan Water District of Southern California is the lead agency but is not signatory to the MSHCP, therefore, in order to participate in the MSHCP they would need to act as a Participating Special Entity (PSE). The project is located within Jurupa Mountains Subunit (SU2) of the Jurupa Area Plan, and occurs within Criteria Cells 17, 18, 45, 46, 75, and 76 of Cell Group E. Planning species for SU2 include: San Bernardino kangaroo rat, bobcat, Bell's sage sparrow, California gnatcatcher, loggerhead shrike, Cooper's hawk, sharp-shinned hawk. Conservation within Cell Group E is focused on coastal sage scrub habitat and will contribute to the assembly of Proposed Noncontiguous Habitat Block 2. Conservation within Cell Group E is proposed to range between five and 15 percent, focusing on the northeastern portion of the Cell Group.

If the Metropolitan Water District of Southern California (i.e., the Lead Agency) chooses to act as a PSE and obtain take through the MSHCP then the following MSHCP policies and procedures will apply to this project: Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools (MSHCP Section 6.1.2), Protection of the Narrow Endemic Plant Species (MSHCP Section 6.1.3), Additional Survey Needs and procedures (MSHCP section 6.3.2), and Urban/Wildland Interface Guidelines (MSHCP section 6.1.4). Focused surveys for burrowing owl (*Athene cunicularia*), San Diego ambrosia (*Ambrosia pumila*), Brand's Phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*) are required by the MSHCP for this area. Surveys should be completed following accepted protocols, at the appropriate time of year, and time of day.

If the project is not processed through the MSHCP for covered species, then the project may be subject to the Federal Endangered Species Act (FESA) and/or CESA for threatened, endangered, and/or candidate species.

Lake and Streambed Alteration Program

For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream or use material from a streambed, the project applicant (or "entity") must provide written notification to the Department pursuant to Section 1602 of the Fish and Game Code. Based on this notification and other information, the Department then determines whether a Lake and Streambed Alteration (LSA) Agreement is required. The Department's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code 21065). To facilitate issuance of an LSA Agreement, if necessary, the environmental document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with the Department is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Lake or Streambed Alteration notification package, please go to <http://www.dfg.ca.gov/habcon/1600/forms.html>.

Please note that the Department has observed that several biological consulting companies in the area are incorrectly referencing California Code of Regulations (CCR) Title 14, section 1.72 in reference to the Department's jurisdiction under section 1600 *et seq.* of the Fish and Game Code. Please note that CCR Title 14, section 1.72 does not pertain to the Department's jurisdiction as embodied in California Fish and Game Code (FGC) section 1600 *et seq.*, and is not the definition of a stream used by the Department. The section 1.72 definition was developed to address a specific sport fish issue that came before the Fish and Game Commission, and has not been adopted by the Department.

Rather than limiting Department jurisdiction to fish-bearing streams alone, FGC Chapter 6, Fish and Wildlife Protection and Conservation, Section 1600 *et seq.* was enacted to provide for the conservation of fish and wildlife resources associated with stream ecosystems. The FGC further defines fish and wildlife to include: all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability (FGC Division 5, Chapter 1, section 45, and Division 2, Chapter 1, section 711.2(a), respectively). Fish means wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn or ova thereof (FGC, Division 5, Chapter 1, section 45).

For the purposes of implementing sections 1601 and 1603 of the FGC, California Code of Regulations Title 14, section 720 requires submission to the Department of "...general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, government agency, state or local, and any public utility, of any project which will divert, obstruct or change the natural flow or bed of any river, stream or lake designated by the Department, or will use material from the streambeds designated by the Department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose."

Division 2, Chapter 5, Article 6, Section 1600 *et seq.* of the California Fish and Game Code does not limit jurisdiction to areas defined by specific flow events, seasonal changes in water flow, or presence or absence of specific vegetation types or communities. By long practice, the Department defines a stream as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators. The "*historic hydrologic regime*" is defined in practice by the Department as circa 1800 to the present." Thus, a channel is not defined by a specific flow event, nor by the path of surface water as this path might vary seasonally. Rather, it is the Department's practice to define the channel based on the topography or elevations of land that confine the water to a definite course when the waters of a creek rise to their highest point.

The Department's website has information regarding dryland streams in "A review of Stream Processes and Forms in Dryland Watersheds," available at this location:
<http://www.dfg.ca.gov/habcon/1600/1600resources.html>.

Additional information can also be found in "Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants, With the MESA Field Guide - Final Project Report" available here:
<http://www.energy.ca.gov/2014publications/CEC-500-2014-013/index.html>

Although a portion of the proposed Project is within the MSHCP, a Notification of Lake or Streambed Alteration may be required by the Department, should the site contain areas subject to Fish and Game Code section 1600 *et seq.* jurisdiction, and the Project proposes impacts to these areas. Please note that when reviewing a project area and/or reviewing Notifications of Lake or Streambed Alteration the Department relies on California Code of Regulations Title 14, section 720; section 1600 *et seq.* of the FGC; and the Department's accepted definition of a stream. Additionally, the Department's criteria for determining the presence of areas subject to Fish and Game Code section 1600 *et seq.* jurisdiction is more comprehensive than the MSHCP criteria in Section 6.1.2 (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools).

The following information will be required for the processing of a Notification of Lake or Streambed Alteration and the Department recommends incorporating this information into the DEIR to avoid subsequent documentation and project delays. Please note that failure to include this analysis in the project's environmental document could preclude the Department from relying on the Lead Agency's analysis to issue a LSA Agreement without the Department first conducting its own, separate Lead Agency subsequent or supplemental analysis for the project:

- 1) Delineation of lakes, streams, and associated habitat that will be temporarily and/or permanently impacted by the proposed project (include an estimate of impact to each habitat type);
- 2) Discussion of avoidance and minimization measures to reduce project impacts; and,
- 3) Discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance. Please refer to section 15370 of the CEQA Guidelines for the definition of mitigation.

Alternatives Analysis

The DEIR should analyze a range of fully considered and evaluated alternatives to the Project (CEQA Guidelines Section 15126.6). The analysis should include a range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources. The Department considers Rare Natural Communities as threatened habitats, having both local and regional significance. Thus, these communities should be fully avoided and otherwise protected from Project-related impacts. The CEQA document should include an evaluation of specific alternative locations with lower resource sensitivity where appropriate. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat should be addressed.

Please note that the Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or

endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

Department Recommendations

The Department recommends that the DEIR address the following:

1. The DEIR should quantify impacts to habitats and species as per the informational requirements of CEQA. An accompanying map showing the areas of impact should also be included.
2. The DEIR should include *recent* biological surveys for fauna and flora (CEQA Guidelines Section 15125(a)). The Department recommends that the Lead Agency contact the Department's California Natural Diversity Database (CNDDDB) in Sacramento, (916) 327-5960, to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the California Fish and Game Code. Please note that the Department's CNDDDB is not exhaustive in terms of the data it houses, nor is it an absence database. The Department recommends that it be used as a starting point in gathering information about the *potential presence* of species within the general area of the project site. If state or federal threatened or endangered species may occur within the project area, species specific surveys, conducted at the appropriate time of year and time of day, should be included with the CEQA document. Acceptable species specific surveys have been developed by the Department, and by the U.S. Fish and Wildlife Service, and are accessible through each agencies websites.

Assessments for rare plants and rare plant natural communities should follow the Department's 2009 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. If the Department's 2009 guidelines were not used, surveys conducted after the issuance of the 2009 guidance should be updated following the 2009 guidelines. The guidance document is available here:

http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/protocols_for_surveying_and_evaluating_impacts.pdf

3. The analysis in the CEQA DEIR should satisfy the requirements of the Department's Lake and Streambed Alteration Program and CESA (if deemed necessary).
4. The CEQA document should provide an analysis of habitat conservation plans and natural community conservation plans, including the MSHCP. The CEQA document should include a discussion of how the project will affect reserve

assembly; how the Project will affect the goals and objectives of the NCCP; the applicable policies and procedures that pertain to the Project; a discussion of survey requirements; and a list of proposed mitigation measures pursuant to the NCCP. A copy of any documents discussing the Project's consistency with the NCCP (e.g., Determination of Biologically Equivalent or Superior Preservation) should be included with the CEQA document.

5. The Department recommends that a CESA ITP be obtained if the Project has the potential to result in "take" (California Fish and Game Code Section 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through construction or over the life of the Project. CESA ITPs are issued to conserve, protect, enhance, and restore State-listed CESA species and their habitats. The Department encourages early consultation, as significant modification to the proposed project and mitigation measures may be recommended in order to obtain a CESA ITP. Revisions to the California Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA ITP unless the Project CEQA document addresses all Project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit.
6. The DEIR should provide a thorough analysis of direct, indirect, and cumulative impacts and identify specific measures to offset such impacts.
7. The DEIR should analyze a range of fully considered and evaluated alternatives to the Project (CEQA Guidelines Section 15126.6).

Further Coordination

The Department recommends early consultation on this project, and that Metropolitan attend a pre-application meeting at the Regional Conservation Authority's (RCA) office in Riverside to discuss the portion of the project that occurs within the MSHCP Area. Meetings are held on the second Wednesday of every month and are attended by the RCA, US Fish and Wildlife Service, US Army Corps of Engineers, Santa Ana Regional Water Quality Control Board, and the Department. To schedule a meeting, please contact Laurie Dobson Correa, Director of Reserve Management and Monitoring at the RCA, at 951-955-8805 or ldcorrea@wrcrca.org

In summary, the Department requests that the DEIR include current information regarding biological resources, adequately address whether the project will be processed through the MSHCP for those areas located in northwestern Riverside County, provide a thorough analysis of cumulative impacts, and provide an alternatives analysis. If you should have any questions pertaining to these

Notice of Preparation of a Draft Environmental Impact Report
Western San Bernardino County Distribution System Infrastructure Protection Program
Project
SCH No. 2014111071
Page 9 of 9

comments, please contact Joanna Gibson at (909) 987-7449 or at
Joanna.gibson@wildlife.ca.gov.

Sincerely,


Leslie MacNair (For)
Acting Regional Manager
cc: State Clearinghouse, Sacramento



Department of Public Works

- Environmental & Construction • Flood Control
- Operations • Solid Waste Management
- Surveyor • Transportation

www.SBCounty.gov

Gerry Newcombe
Director

January 7, 2015

File: 10(ENV)-4.01

Jennifer Harriger
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA. 90012
EPT@mwdh2o.com

RE: CEQA – NOTICE OF PREPARATION FOR THE WESTERN SAN BERNARDINO COUNTY DISTRIBUTION SYSTEM INFRASTRUCTURE PROTECTION PROGRAM FOR THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Dear Ms. Harriger:

Thank you for giving the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. **We received this request on December 1, 2014,** and pursuant to our review, the following comments are provided:

Flood Control Planning Division (David Lovell, PWE III, 909-387-7964):

1. Whenever Municipal Water District work is required that crosses our facilities, encroaches onto the San Bernardino Flood Control District's (District) right-of-way, or in any way makes modification or construction within our fee or easements, it must be reviewed and approved by the District's Permits/Operations Support Division.
2. Any work that involves grading of areas that alter the drainage of flows in/on District's right-of-way will require a permit review.

Water Resources Division (Mary Lou Mermilliod, PWE III, 909-387-8213):

1. We have reviewed the Notice of Preparation and it appears that the NOP has identified the major concerns of the District. However, the District's recommendations are most often made for site specific conditions and, therefore, the recommendations made here are general in nature until such time as more detailed plans become available.

BOARD OF SUPERVISORS

ROBERT A. LOVINGOOD
Vice Chairman, First District

JANICE RUTHERFORD
Second District

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Fourth District

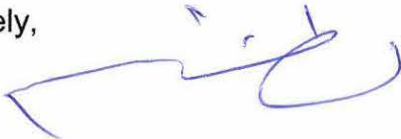
JOSIE GONZALES
Fifth District

GREGORY C. DEVEREAUX
Chief Executive Officer

2. Prior to any activity on District right-of-way, a permit shall be obtained from the District. Other on-site or off-site improvements may be required which cannot be determined at this time.
3. Other Federal or State approvals may also be required. Information regarding this item can be obtained from the District's Permits/Operations Support Division.
4. We recommend that the most current FEMA regulations, for construction within established floodplains and the Regulatory Floodway, be enforced by the local jurisdictions. In particular, we emphasize the regulations that states that the proposed encroachment "will not result in any increase in flood levels within the community during the occurrence of the base flood discharge (44CFR 60.3(d)(3))".

If you have any questions, please contact the individual(s) who provided the specific comment, as listed above.

Sincerely,



NIDHAM ARAM ALRAYES, MSCE, P.E., QSD/P
Public Works Engineer III
Environmental Management

NAA:PE:nh/CEQAComment_MetroWtrDistrictofSoCal_NOP_WesternSBCountyDistSytmlnfra_2015-01-07-01

Appendix E

Air Quality and Greenhouse Gas Emission Calculations

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.64	27,878.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project A Patrol Road Improvements and Paving (CIP Activity Code No. 1).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Annual

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13939	15246
tblAreaCoating	Area_Nonresidential_Interior	41817	45738
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblGrading	AcresOfGrading	1.50	0.70
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	27,878.00
tblLandUse	LotAcreage	0.00	0.64
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

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tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	3.00	9.00
tblTripsAndVMT	WorkerTripNumber	12.00	9.00
tblTripsAndVMT	WorkerTripNumber	8.00	18.00
tblTripsAndVMT	WorkerTripNumber	12.00	6.00

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tblVehicleTrips	CC_TL	8.40	10.10
tblVehicleTrips	CNW_TL	6.90	7.90
tblVehicleTrips	CW_TL	16.60	18.50

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	2.8600e-003	0.0401	0.0151	7.0000e-005	0.0374	1.1900e-003	0.0386	3.9400e-003	1.1000e-003	5.0400e-003	0.0000	6.1373	6.1373	1.0900e-003	0.0000	6.1646
Maximum	2.8600e-003	0.0401	0.0151	7.0000e-005	0.0374	1.1900e-003	0.0386	3.9400e-003	1.1000e-003	5.0400e-003	0.0000	6.1373	6.1373	1.0900e-003	0.0000	6.1646

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.0200e-003	0.0194	0.0221	7.0000e-005	0.0371	1.1000e-004	0.0372	3.9000e-003	1.1000e-004	4.0100e-003	0.0000	6.1373	6.1373	1.0900e-003	0.0000	6.1646
Maximum	1.0200e-003	0.0194	0.0221	7.0000e-005	0.0371	1.1000e-004	0.0372	3.9000e-003	1.1000e-004	4.0100e-003	0.0000	6.1373	6.1373	1.0900e-003	0.0000	6.1646

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	64.34	51.53	-46.65	0.00	0.83	90.76	3.60	1.02	90.00	20.44	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Grading - Over excavation	Grading	1/3/2020	1/5/2020	5	3	
3	Building Construction 1 - Lay base	Building Construction	1/6/2020	1/10/2020	5	3	
4	Paving	Paving	1/11/2020	1/11/2020	5	1	
5	Building Construction 2 - Finish work	Building Construction	1/12/2020	1/12/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Over excavation	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Rollers	1	8.00	80	0.38
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Graders	1	8.00	187	0.41
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37

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Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Over excavation	1	9.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Lay base	2	9.00	14.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	18.00	8.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7000e-004	0.0000	3.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-004	6.3300e-003	1.8100e-003	1.0000e-005		2.0000e-004	2.0000e-004		1.9000e-004	1.9000e-004	0.0000	0.5831	0.5831	1.9000e-004	0.0000	0.5878
Total	4.8000e-004	6.3300e-003	1.8100e-003	1.0000e-005	3.7000e-004	2.0000e-004	5.7000e-004	4.0000e-005	1.9000e-004	2.3000e-004	0.0000	0.5831	0.5831	1.9000e-004	0.0000	0.5878

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.0100e-003	1.5000e-004	0.0000	2.2200e-003	0.0000	2.2200e-003	2.3000e-004	0.0000	2.4000e-004	0.0000	0.2989	0.2989	2.0000e-005	0.0000	0.2993
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	7.0000e-005	1.3400e-003	4.5000e-004	0.0000	5.5400e-003	0.0000	5.5400e-003	5.7000e-004	0.0000	5.9000e-004	0.0000	0.4538	0.4538	2.0000e-005	0.0000	0.4544

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1000e-004	1.7400e-003	3.5200e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.5831	0.5831	1.9000e-004	0.0000	0.5878
Total	1.1000e-004	1.7400e-003	3.5200e-003	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.5831	0.5831	1.9000e-004	0.0000	0.5878

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.0100e-003	1.5000e-004	0.0000	2.2200e-003	0.0000	2.2200e-003	2.3000e-004	0.0000	2.4000e-004	0.0000	0.2989	0.2989	2.0000e-005	0.0000	0.2993
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	7.0000e-005	1.3400e-003	4.5000e-004	0.0000	5.5400e-003	0.0000	5.5400e-003	5.7000e-004	0.0000	5.9000e-004	0.0000	0.4538	0.4538	2.0000e-005	0.0000	0.4544

3.3 Grading - Over excavation - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2000e-004	0.0000	1.2000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4000e-004	3.1600e-003	9.1000e-004	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.2915	0.2915	9.0000e-005	0.0000	0.2939
Total	2.4000e-004	3.1600e-003	9.1000e-004	0.0000	1.2000e-004	1.0000e-004	2.2000e-004	1.0000e-005	9.0000e-005	1.0000e-004	0.0000	0.2915	0.2915	9.0000e-005	0.0000	0.2939

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.6000e-004	3.0000e-005	0.0000	4.4000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0493	0.0493	0.0000	0.0000	0.0493
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	1.8200e-003	0.0000	1.8300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Total	2.0000e-005	1.8000e-004	2.0000e-004	0.0000	2.2600e-003	0.0000	2.2800e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0916	0.0916	0.0000	0.0000	0.0917

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0000e-005	8.7000e-004	1.7600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.2915	0.2915	9.0000e-005	0.0000	0.2939
Total	5.0000e-005	8.7000e-004	1.7600e-003	0.0000	5.0000e-005	1.0000e-005	6.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2915	0.2915	9.0000e-005	0.0000	0.2939

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	1.6000e-004	3.0000e-005	0.0000	4.4000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0493	0.0493	0.0000	0.0000	0.0493
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	1.8200e-003	0.0000	1.8300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Total	2.0000e-005	1.8000e-004	2.0000e-004	0.0000	2.2600e-003	0.0000	2.2800e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0916	0.0916	0.0000	0.0000	0.0917

3.4 Building Construction 1 - Lay base - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7100e-003	0.0210	9.2700e-003	2.0000e-005		8.4000e-004	8.4000e-004		7.7000e-004	7.7000e-004	0.0000	2.0339	2.0339	6.6000e-004	0.0000	2.0503
Total	1.7100e-003	0.0210	9.2700e-003	2.0000e-005		8.4000e-004	8.4000e-004		7.7000e-004	7.7000e-004	0.0000	2.0339	2.0339	6.6000e-004	0.0000	2.0503

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	2.5300e-003	3.9000e-004	1.0000e-005	3.3400e-003	1.0000e-005	3.3500e-003	3.6000e-004	1.0000e-005	3.6000e-004	0.0000	0.7472	0.7472	4.0000e-005	0.0000	0.7482
Vendor	1.7000e-004	5.4500e-003	1.1600e-003	2.0000e-005	0.0155	4.0000e-005	0.0156	1.6500e-003	4.0000e-005	1.6800e-003	0.0000	1.7249	1.7249	8.0000e-005	0.0000	1.7268
Worker	1.1000e-004	9.0000e-005	8.7000e-004	0.0000	9.1200e-003	0.0000	9.1300e-003	9.5000e-004	0.0000	9.5000e-004	0.0000	0.2115	0.2115	1.0000e-005	0.0000	0.2116
Total	3.4000e-004	8.0700e-003	2.4200e-003	3.0000e-005	0.0280	5.0000e-005	0.0281	2.9600e-003	5.0000e-005	2.9900e-003	0.0000	2.6835	2.6835	1.3000e-004	0.0000	2.6866

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-004	7.2300e-003	0.0138	2.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.0339	2.0339	6.6000e-004	0.0000	2.0503
Total	4.2000e-004	7.2300e-003	0.0138	2.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.0339	2.0339	6.6000e-004	0.0000	2.0503

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	2.5300e-003	3.9000e-004	1.0000e-005	3.3400e-003	1.0000e-005	3.3500e-003	3.6000e-004	1.0000e-005	3.6000e-004	0.0000	0.7472	0.7472	4.0000e-005	0.0000	0.7482
Vendor	1.7000e-004	5.4500e-003	1.1600e-003	2.0000e-005	0.0155	4.0000e-005	0.0156	1.6500e-003	4.0000e-005	1.6800e-003	0.0000	1.7249	1.7249	8.0000e-005	0.0000	1.7268
Worker	1.1000e-004	9.0000e-005	8.7000e-004	0.0000	9.1200e-003	0.0000	9.1300e-003	9.5000e-004	0.0000	9.5000e-004	0.0000	0.2115	0.2115	1.0000e-005	0.0000	0.2116
Total	3.4000e-004	8.0700e-003	2.4200e-003	3.0000e-005	0.0280	5.0000e-005	0.0281	2.9600e-003	5.0000e-005	2.9900e-003	0.0000	2.6835	2.6835	1.3000e-004	0.0000	2.6866

Unmitigated Construction On-Site

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	1.1000e-003	0.0000	1.1000e-003	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	1.1000e-003	0.0000	1.1000e-003	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

[illegible][illegible]

Unmitigated Construction On-Site

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Mitigated Construction Off-Site

[illegible]

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.64	27,878.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project A Patrol Road Improvements and Paving (CIP Activity Code No. 1).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Summer

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13939	15246
tblAreaCoating	Area_Nonresidential_Interior	41817	45738
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblGrading	AcresOfGrading	1.50	0.70
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	27,878.00
tblLandUse	LotAcreage	0.00	0.64
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Summer

tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	3.00	9.00
tblTripsAndVMT	WorkerTripNumber	12.00	9.00
tblTripsAndVMT	WorkerTripNumber	8.00	18.00
tblTripsAndVMT	WorkerTripNumber	12.00	6.00

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Summer

tblVehicleTrips	CC_TL	8.40	10.10
tblVehicleTrips	CNW_TL	6.90	7.90
tblVehicleTrips	CW_TL	16.60	18.50

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8269	11.5473	7.0235	0.0207	14.2938	0.3538	14.5926	1.4932	0.3261	1.7685	0.0000	2,098.640 1	2,098.640 1	0.3432	0.0000	2,107.218 7
Maximum	0.8269	11.5473	7.0235	0.0207	14.2938	0.3538	14.5926	1.4932	0.3261	1.7685	0.0000	2,098.640 1	2,098.640 1	0.3432	0.0000	2,107.218 7

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3227	6.3735	7.8599	0.0207	14.2938	0.0715	14.3653	1.4932	0.0709	1.5641	0.0000	2,098.640 1	2,098.640 1	0.3432	0.0000	2,107.218 7
Maximum	0.3227	6.3735	7.8599	0.0207	14.2938	0.0715	14.3653	1.4932	0.0709	1.5641	0.0000	2,098.640 1	2,098.640 1	0.3432	0.0000	2,107.218 7

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	60.98	44.81	-11.91	0.00	0.00	79.79	1.56	0.00	78.27	11.56	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Grading - Over excavation	Grading	1/3/2020	1/5/2020	5	3	
3	Building Construction 1 - Lay base	Building Construction	1/6/2020	1/10/2020	5	3	
4	Paving	Paving	1/11/2020	1/11/2020	5	1	
5	Building Construction 2 - Finish work	Building Construction	1/12/2020	1/12/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Over excavation	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Rollers	1	8.00	80	0.38
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Graders	1	8.00	187	0.41
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Over excavation	1	9.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Lay base	2	9.00	14.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	18.00	8.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3712	0.0000	0.3712	0.0401	0.0000	0.0401			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.3712	0.2022	0.5734	0.0401	0.1861	0.2261		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0675	1.3098	0.4779	4.8600e-003	6.0567	5.5600e-003	6.0622	0.6329	5.3000e-003	0.6382		510.4689	510.4689	0.0246		511.0844

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1448	0.0000	0.1448	0.0156	0.0000	0.0156			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.1448	0.0108	0.1556	0.0156	0.0108	0.0265	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0675	1.3098	0.4779	4.8600e-003	6.0567	5.5600e-003	6.0622	0.6329	5.3000e-003	0.6382		510.4689	510.4689	0.0246		511.0844

3.3 Grading - Over excavation - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2475	0.0000	0.2475	0.0267	0.0000	0.0267			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.2475	0.2022	0.4497	0.0267	0.1861	0.2128		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0590	0.3349	0.4674	2.0600e-003	4.9640	2.8400e-003	4.9668	0.5172	2.7000e-003	0.5199		211.2882	211.2882	7.6800e-003		211.4802

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0965	0.0000	0.0965	0.0104	0.0000	0.0104			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0965	0.0108	0.1073	0.0104	0.0108	0.0212	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0590	0.3349	0.4674	2.0600e-003	4.9640	2.8400e-003	4.9668	0.5172	2.7000e-003	0.5199		211.2882	211.2882	7.6800e-003		211.4802

3.4 Building Construction 1 - Lay base - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6840	8.4067	3.7078	9.2600e-003		0.3349	0.3349		0.3081	0.3081		896.7851	896.7851	0.2900		904.0361
Total	0.6840	8.4067	3.7078	9.2600e-003		0.3349	0.3349		0.3081	0.3081		896.7851	896.7851	0.2900		904.0361

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	1.4610	2.9400e-003	1.4640	0.1548	2.8100e-003	0.1576		333.0832	333.0832	0.0180		333.5326
Vendor	0.0689	2.1238	0.4388	7.2800e-003	6.7976	0.0153	6.8129	0.7169	0.0146	0.7315		767.0642	767.0642	0.0320		767.8648
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.1429	3.1406	0.9890	0.0114	12.2515	0.0189	12.2704	1.2865	0.0180	1.3045		1,201.8550	1,201.8550	0.0531		1,203.1826

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1672	2.8918	5.4996	9.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	896.7851	896.7851	0.2900		904.0361
Total	0.1672	2.8918	5.4996	9.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	896.7851	896.7851	0.2900		904.0361

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	1.4610	2.9400e-003	1.4640	0.1548	2.8100e-003	0.1576		333.0832	333.0832	0.0180		333.5326
Vendor	0.0689	2.1238	0.4388	7.2800e-003	6.7976	0.0153	6.8129	0.7169	0.0146	0.7315		767.0642	767.0642	0.0320		767.8648
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.1429	3.1406	0.9890	0.0114	12.2515	0.0189	12.2704	1.2865	0.0180	1.3045		1,201.8550	1,201.8550	0.0531		1,203.1826

3.5 Paving - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4955	5.2849	5.8178	8.7700e-003		0.2858	0.2858		0.2629	0.2629		848.7634	848.7634	0.2745		855.6260
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.4955	5.2849	5.8178	8.7700e-003		0.2858	0.2858		0.2629	0.2629		848.7634	848.7634	0.2745		855.6260

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0982	0.0631	0.8095	2.0400e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		203.4151	203.4151	6.2100e-003		203.5704
Total	0.1625	2.2620	1.2057	9.3400e-003	14.2938	0.0130	14.3068	1.4932	0.0124	1.5056		974.8208	974.8208	0.0425		975.8829

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1602	4.1116	6.6542	8.7700e-003		0.0585	0.0585		0.0585	0.0585	0.0000	848.7634	848.7634	0.2745		855.6260
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.1602	4.1116	6.6542	8.7700e-003		0.0585	0.0585		0.0585	0.0585	0.0000	848.7634	848.7634	0.2745		855.6260

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0982	0.0631	0.8095	2.0400e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		203.4151	203.4151	6.2100e-003		203.5704
Total	0.1625	2.2620	1.2057	9.3400e-003	14.2938	0.0130	14.3068	1.4932	0.0124	1.5056		974.8208	974.8208	0.0425		975.8829

3.6 Building Construction 2 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5557	7.3879	3.2045	8.7000e-003		0.2482	0.2482		0.2284	0.2284		842.8874	842.8874	0.2726		849.7026
Total	0.5557	7.3879	3.2045	8.7000e-003		0.2482	0.2482		0.2284	0.2284		842.8874	842.8874	0.2726		849.7026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1591	2.9066	5.0852	8.7000e-003		0.0583	0.0583		0.0583	0.0583	0.0000	842.8874	842.8874	0.2726		849.7026
Total	0.1591	2.9066	5.0852	8.7000e-003		0.0583	0.0583		0.0583	0.0583	0.0000	842.8874	842.8874	0.2726		849.7026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.64	27,878.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project A Patrol Road Improvements and Paving (CIP Activity Code No. 1).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Winter

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13939	15246
tblAreaCoating	Area_Nonresidential_Interior	41817	45738
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblGrading	AcresOfGrading	1.50	0.70
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	27,878.00
tblLandUse	LotAcreage	0.00	0.64
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Winter

tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	3.00	9.00
tblTripsAndVMT	WorkerTripNumber	12.00	9.00
tblTripsAndVMT	WorkerTripNumber	8.00	18.00
tblTripsAndVMT	WorkerTripNumber	12.00	6.00

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Winter

tblVehicleTrips	CC_TL	8.40	10.10
tblVehicleTrips	CNW_TL	6.90	7.90
tblVehicleTrips	CW_TL	16.60	18.50

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8305	11.5723	6.9257	0.0204	14.2938	0.3539	14.5926	1.4932	0.3263	1.7686	0.0000	2,063.943 3	2,063.943 3	0.3470	0.0000	2,072.618 9
Maximum	0.8305	11.5723	6.9257	0.0204	14.2938	0.3539	14.5926	1.4932	0.3263	1.7686	0.0000	2,063.943 3	2,063.943 3	0.3470	0.0000	2,072.618 9

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3252	6.3924	7.7621	0.0204	14.2938	0.0716	14.3654	1.4932	0.0710	1.5642	0.0000	2,063.943 3	2,063.943 3	0.3470	0.0000	2,072.618 9
Maximum	0.3252	6.3924	7.7621	0.0204	14.2938	0.0716	14.3654	1.4932	0.0710	1.5642	0.0000	2,063.943 3	2,063.943 3	0.3470	0.0000	2,072.618 9

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	60.84	44.76	-12.08	0.00	0.00	79.78	1.56	0.00	78.25	11.56	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Grading - Over excavation	Grading	1/3/2020	1/5/2020	5	3	
3	Building Construction 1 - Lay base	Building Construction	1/6/2020	1/10/2020	5	3	
4	Paving	Paving	1/11/2020	1/11/2020	5	1	
5	Building Construction 2 - Finish work	Building Construction	1/12/2020	1/12/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Over excavation	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Graders	1	8.00	187	0.41
Building Construction 1 - Lay base	Rollers	1	8.00	80	0.38
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Graders	1	8.00	187	0.41
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Winter

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Over excavation	1	9.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Lay base	2	9.00	14.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	18.00	8.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3712	0.0000	0.3712	0.0401	0.0000	0.0401			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.3712	0.2022	0.5734	0.0401	0.1861	0.2261		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0689	1.3187	0.4572	4.6900e-003	6.0567	5.6100e-003	6.0623	0.6329	5.3500e-003	0.6382		492.5836	492.5836	0.0263		493.2408

MWD Representative CIP Project A Patrol Road Improvements and Paving (CIP 1) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1448	0.0000	0.1448	0.0156	0.0000	0.0156			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.1448	0.0108	0.1556	0.0156	0.0108	0.0265	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0689	1.3187	0.4572	4.6900e-003	6.0567	5.6100e-003	6.0623	0.6329	5.3500e-003	0.6382		492.5836	492.5836	0.0263		493.2408

3.3 Grading - Over excavation - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2475	0.0000	0.2475	0.0267	0.0000	0.0267			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.2475	0.2022	0.4497	0.0267	0.1861	0.2128		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0594	0.3392	0.4017	1.9400e-003	4.9640	2.8500e-003	4.9669	0.5172	2.7100e-003	0.5199		198.5978	198.5978	7.6900e-003		198.7901

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0965	0.0000	0.0965	0.0104	0.0000	0.0104			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0965	0.0108	0.1073	0.0104	0.0108	0.0212	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0594	0.3392	0.4017	1.9400e-003	4.9640	2.8500e-003	4.9669	0.5172	2.7100e-003	0.5199		198.5978	198.5978	7.6900e-003		198.7901

3.4 Building Construction 1 - Lay base - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6840	8.4067	3.7078	9.2600e-003		0.3349	0.3349		0.3081	0.3081		896.7851	896.7851	0.2900		904.0361
Total	0.6840	8.4067	3.7078	9.2600e-003		0.3349	0.3349		0.3081	0.3081		896.7851	896.7851	0.2900		904.0361

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	1.4610	2.9800e-003	1.4640	0.1548	2.8500e-003	0.1577		324.3983	324.3983	0.0195		324.8859
Vendor	0.0714	2.1419	0.4834	7.1300e-003	6.7976	0.0154	6.8130	0.7169	0.0147	0.7316		751.5224	751.5224	0.0348		752.3913
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.1466	3.1656	0.9824	0.0111	12.2515	0.0190	12.2705	1.2865	0.0182	1.3047		1,167.1582	1,167.1582	0.0570		1,168.5828

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1672	2.8918	5.4996	9.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	896.7851	896.7851	0.2900		904.0361
Total	0.1672	2.8918	5.4996	9.2600e-003		0.0151	0.0151		0.0151	0.0151	0.0000	896.7851	896.7851	0.2900		904.0361

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	1.4610	2.9800e-003	1.4640	0.1548	2.8500e-003	0.1577		324.3983	324.3983	0.0195		324.8859
Vendor	0.0714	2.1419	0.4834	7.1300e-003	6.7976	0.0154	6.8130	0.7169	0.0147	0.7316		751.5224	751.5224	0.0348		752.3913
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.1466	3.1656	0.9824	0.0111	12.2515	0.0190	12.2705	1.2865	0.0182	1.3047		1,167.1582	1,167.1582	0.0570		1,168.5828

3.5 Paving - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4955	5.2849	5.8178	8.7700e-003		0.2858	0.2858		0.2629	0.2629		848.7634	848.7634	0.2745		855.6260
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.4955	5.2849	5.8178	8.7700e-003		0.2858	0.2858		0.2629	0.2629		848.7634	848.7634	0.2745		855.6260

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0983	0.0663	0.6653	1.8300e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		182.4750	182.4750	5.4500e-003		182.6112
Total	0.1651	2.2809	1.1079	8.9600e-003	14.2938	0.0131	14.3069	1.4932	0.0125	1.5057		936.3146	936.3146	0.0448		937.4350

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1602	4.1116	6.6542	8.7700e-003		0.0585	0.0585		0.0585	0.0585	0.0000	848.7634	848.7634	0.2745		855.6260
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.1602	4.1116	6.6542	8.7700e-003		0.0585	0.0585		0.0585	0.0585	0.0000	848.7634	848.7634	0.2745		855.6260

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0983	0.0663	0.6653	1.8300e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		182.4750	182.4750	5.4500e-003		182.6112
Total	0.1651	2.2809	1.1079	8.9600e-003	14.2938	0.0131	14.3069	1.4932	0.0125	1.5057		936.3146	936.3146	0.0448		937.4350

3.6 Building Construction 2 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5557	7.3879	3.2045	8.7000e-003		0.2482	0.2482		0.2284	0.2284		842.8874	842.8874	0.2726		849.7026
Total	0.5557	7.3879	3.2045	8.7000e-003		0.2482	0.2482		0.2284	0.2284		842.8874	842.8874	0.2726		849.7026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1591	2.9066	5.0852	8.7000e-003		0.0583	0.0583		0.0583	0.0583	0.0000	842.8874	842.8874	0.2726		849.7026
Total	0.1591	2.9066	5.0852	8.7000e-003		0.0583	0.0583		0.0583	0.0583	0.0000	842.8874	842.8874	0.2726		849.7026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

MWD Representative CIP Project B Engineered Erosion Control (CIP 2)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company					
CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project B Engineered Erosion Control (CIP Activity Code No. 2).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

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Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	100.00	1.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	4.00	0.00

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tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	12.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00

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tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	6.7300e-003	0.0770	0.0423	1.2000e-004	0.0912	3.1000e-003	0.0943	0.0176	2.8600e-003	0.0205	0.0000	11.0077	11.0077	2.1600e-003	0.0000	11.0618
Maximum	6.7300e-003	0.0770	0.0423	1.2000e-004	0.0912	3.1000e-003	0.0943	0.0176	2.8600e-003	0.0205	0.0000	11.0077	11.0077	2.1600e-003	0.0000	11.0618

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	2.0000e-003	0.0368	0.0491	1.2000e-004	0.0802	2.0000e-004	0.0804	0.0116	1.9000e-004	0.0117	0.0000	11.0077	11.0077	2.1600e-003	0.0000	11.0618
Maximum	2.0000e-003	0.0368	0.0491	1.2000e-004	0.0802	2.0000e-004	0.0804	0.0116	1.9000e-004	0.0117	0.0000	11.0077	11.0077	2.1600e-003	0.0000	11.0618

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Removing materials and mobilization	Site Preparation	1/1/2020	1/6/2020	5	4	
2	Grading	Grading	1/7/2020	1/8/2020	5	2	
3	Building Construction 1 - Place riprap	Building Construction	1/9/2020	1/14/2020	5	4	
4	Building Construction 2 - Concrete	Building Construction	1/15/2020	1/16/2020	5	2	
5	Building Construction 3 - Finish work and place base rock	Building Construction	1/17/2020	1/21/2020	5	3	
6	Building Construction 4 - Demobilization	Building Construction	1/22/2020	1/22/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Removing materials and mobilization	Excavators	1	8.00	158	0.38
Site Preparation - Removing materials and mobilization	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction 1 - Place riprap	Graders	1	8.00	187	0.41
Building Construction 1 - Place riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 3 - Finish work and place base rock	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 4 - Demobilization	Cranes	0	0.00	231	0.29

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Remove materials	2	9.00	2.00	24.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	9.00	8.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1. Place riprap rock	2	12.00	12.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2. Concrete curb	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3. Finish work and	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 4. Demobilization	0	9.00	0.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Removing materials and mobilization -

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0120	0.0000	0.0120	6.6200e-003	0.0000	6.6200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6500e-003	0.0275	0.0148	3.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	2.4085	2.4085	7.8000e-004	0.0000	2.4280
Total	2.6500e-003	0.0275	0.0148	3.0000e-005	0.0120	1.3400e-003	0.0134	6.6200e-003	1.2400e-003	7.8600e-003	0.0000	2.4085	2.4085	7.8000e-004	0.0000	2.4280

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.0300e-003	4.6000e-004	1.0000e-005	6.6500e-003	1.0000e-005	6.6600e-003	7.0000e-004	1.0000e-005	7.1000e-004	0.0000	0.8966	0.8966	5.0000e-005	0.0000	0.8979
Vendor	2.0000e-005	6.2000e-004	1.3000e-004	0.0000	1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.1971	0.1971	1.0000e-005	0.0000	0.1973
Worker	9.0000e-005	7.0000e-005	7.0000e-004	0.0000	7.3000e-003	0.0000	7.3000e-003	7.6000e-004	0.0000	7.6000e-004	0.0000	0.1692	0.1692	1.0000e-005	0.0000	0.1693
Total	1.9000e-004	3.7200e-003	1.2900e-003	1.0000e-005	0.0157	1.0000e-005	0.0157	1.6500e-003	1.0000e-005	1.6600e-003	0.0000	1.2629	1.2629	7.0000e-005	0.0000	1.2645

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.7000e-003	0.0000	4.7000e-003	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-004	9.0500e-003	0.0169	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.4085	2.4085	7.8000e-004	0.0000	2.4280
Total	4.1000e-004	9.0500e-003	0.0169	3.0000e-005	4.7000e-003	4.0000e-005	4.7400e-003	2.5800e-003	4.0000e-005	2.6200e-003	0.0000	2.4085	2.4085	7.8000e-004	0.0000	2.4280

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.0300e-003	4.6000e-004	1.0000e-005	6.6500e-003	1.0000e-005	6.6600e-003	7.0000e-004	1.0000e-005	7.1000e-004	0.0000	0.8966	0.8966	5.0000e-005	0.0000	0.8979
Vendor	2.0000e-005	6.2000e-004	1.3000e-004	0.0000	1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.1971	0.1971	1.0000e-005	0.0000	0.1973
Worker	9.0000e-005	7.0000e-005	7.0000e-004	0.0000	7.3000e-003	0.0000	7.3000e-003	7.6000e-004	0.0000	7.6000e-004	0.0000	0.1692	0.1692	1.0000e-005	0.0000	0.1693
Total	1.9000e-004	3.7200e-003	1.2900e-003	1.0000e-005	0.0157	1.0000e-005	0.0157	1.6500e-003	1.0000e-005	1.6600e-003	0.0000	1.2629	1.2629	7.0000e-005	0.0000	1.2645

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0200e-003	0.0000	6.0200e-003	3.3100e-003	0.0000	3.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3200e-003	0.0137	7.4000e-003	1.0000e-005		6.7000e-004	6.7000e-004		6.2000e-004	6.2000e-004	0.0000	1.2043	1.2043	3.9000e-004	0.0000	1.2140
Total	1.3200e-003	0.0137	7.4000e-003	1.0000e-005	6.0200e-003	6.7000e-004	6.6900e-003	3.3100e-003	6.2000e-004	3.9300e-003	0.0000	1.2043	1.2043	3.9000e-004	0.0000	1.2140

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.2500e-003	2.6000e-004	0.0000	3.5500e-003	1.0000e-005	3.5600e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	0.3943	0.3943	2.0000e-005	0.0000	0.3947
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	8.0000e-005	1.2800e-003	6.1000e-004	0.0000	7.2000e-003	1.0000e-005	7.2100e-003	7.6000e-004	1.0000e-005	7.6000e-004	0.0000	0.4788	0.4788	2.0000e-005	0.0000	0.4793

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3500e-003	0.0000	2.3500e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	4.5200e-003	8.4500e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2043	1.2043	3.9000e-004	0.0000	1.2140
Total	2.0000e-004	4.5200e-003	8.4500e-003	1.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	1.2900e-003	2.0000e-005	1.3100e-003	0.0000	1.2043	1.2043	3.9000e-004	0.0000	1.2140

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.2500e-003	2.6000e-004	0.0000	3.5500e-003	1.0000e-005	3.5600e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	0.3943	0.3943	2.0000e-005	0.0000	0.3947
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	8.0000e-005	1.2800e-003	6.1000e-004	0.0000	7.2000e-003	1.0000e-005	7.2100e-003	7.6000e-004	1.0000e-005	7.6000e-004	0.0000	0.4788	0.4788	2.0000e-005	0.0000	0.4793

3.4 Building Construction 1 - Place riprap rock - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3700e-003	0.0169	8.1900e-003	2.0000e-005		6.7000e-004	6.7000e-004		6.2000e-004	6.2000e-004	0.0000	1.7118	1.7118	5.5000e-004	0.0000	1.7257
Total	1.3700e-003	0.0169	8.1900e-003	2.0000e-005		6.7000e-004	6.7000e-004		6.2000e-004	6.2000e-004	0.0000	1.7118	1.7118	5.5000e-004	0.0000	1.7257

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7400e-003	7.9000e-004	1.0000e-005	0.0107	3.0000e-005	0.0107	1.1300e-003	3.0000e-005	1.1500e-003	0.0000	1.1828	1.1828	5.0000e-005	0.0000	1.1841
Worker	1.2000e-004	9.0000e-005	9.3000e-004	0.0000	9.7300e-003	0.0000	9.7300e-003	1.0100e-003	0.0000	1.0200e-003	0.0000	0.2256	0.2256	1.0000e-005	0.0000	0.2257
Total	2.4000e-004	3.8300e-003	1.7200e-003	1.0000e-005	0.0204	3.0000e-005	0.0204	2.1400e-003	3.0000e-005	2.1700e-003	0.0000	1.4083	1.4083	6.0000e-005	0.0000	1.4098

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6000e-004	6.2000e-003	0.0117	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.7118	1.7118	5.5000e-004	0.0000	1.7257
Total	3.6000e-004	6.2000e-003	0.0117	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.7118	1.7118	5.5000e-004	0.0000	1.7257

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7400e-003	7.9000e-004	1.0000e-005	0.0107	3.0000e-005	0.0107	1.1300e-003	3.0000e-005	1.1500e-003	0.0000	1.1828	1.1828	5.0000e-005	0.0000	1.1841
Worker	1.2000e-004	9.0000e-005	9.3000e-004	0.0000	9.7300e-003	0.0000	9.7300e-003	1.0100e-003	0.0000	1.0200e-003	0.0000	0.2256	0.2256	1.0000e-005	0.0000	0.2257
Total	2.4000e-004	3.8300e-003	1.7200e-003	1.0000e-005	0.0204	3.0000e-005	0.0204	2.1400e-003	3.0000e-005	2.1700e-003	0.0000	1.4083	1.4083	6.0000e-005	0.0000	1.4098

3.5 Building Construction 2 - Concrete grout - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.1000e-004	2.1100e-003	2.2800e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2729	0.2729	9.0000e-005	0.0000	0.2751
Total	2.1000e-004	2.1100e-003	2.2800e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2729	0.2729	9.0000e-005	0.0000	0.2751

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5600e-003	3.3000e-004	1.0000e-005	4.4400e-003	1.0000e-005	4.4500e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	0.4928	0.4928	2.0000e-005	0.0000	0.4934
Worker	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411
Total	1.2000e-004	1.6200e-003	9.1000e-004	1.0000e-005	0.0105	1.0000e-005	0.0105	1.1000e-003	1.0000e-005	1.1100e-003	0.0000	0.6338	0.6338	2.0000e-005	0.0000	0.6344

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0000e-005	1.3500e-003	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.2729	0.2729	9.0000e-005	0.0000	0.2751
Total	7.0000e-005	1.3500e-003	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.2729	0.2729	9.0000e-005	0.0000	0.2751

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5600e-003	3.3000e-004	1.0000e-005	4.4400e-003	1.0000e-005	4.4500e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	0.4928	0.4928	2.0000e-005	0.0000	0.4934
Worker	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411
Total	1.2000e-004	1.6200e-003	9.1000e-004	1.0000e-005	0.0105	1.0000e-005	0.0105	1.1000e-003	1.0000e-005	1.1100e-003	0.0000	0.6338	0.6338	2.0000e-005	0.0000	0.6344

3.6 Building Construction 3 - Finish work and place base rock**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.1000e-004	3.1600e-003	3.4200e-003	0.0000		2.0000e-004	2.0000e-004		1.8000e-004	1.8000e-004	0.0000	0.4093	0.4093	1.3000e-004	0.0000	0.4126
Total	3.1000e-004	3.1600e-003	3.4200e-003	0.0000		2.0000e-004	2.0000e-004		1.8000e-004	1.8000e-004	0.0000	0.4093	0.4093	1.3000e-004	0.0000	0.4126

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.3400e-003	5.0000e-004	1.0000e-005	6.6600e-003	2.0000e-005	6.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	0.7392	0.7392	3.0000e-005	0.0000	0.7400
Worker	1.1000e-004	9.0000e-005	8.7000e-004	0.0000	9.1200e-003	0.0000	9.1300e-003	9.5000e-004	0.0000	9.5000e-004	0.0000	0.2115	0.2115	1.0000e-005	0.0000	0.2116
Total	1.8000e-004	2.4300e-003	1.3700e-003	1.0000e-005	0.0158	2.0000e-005	0.0158	1.6600e-003	2.0000e-005	1.6700e-003	0.0000	0.9507	0.9507	4.0000e-005	0.0000	0.9517

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0000e-004	2.0300e-003	3.5100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4093	0.4093	1.3000e-004	0.0000	0.4126
Total	1.0000e-004	2.0300e-003	3.5100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4093	0.4093	1.3000e-004	0.0000	0.4126

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.3400e-003	5.0000e-004	1.0000e-005	6.6600e-003	2.0000e-005	6.6800e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	0.7392	0.7392	3.0000e-005	0.0000	0.7400
Worker	1.1000e-004	9.0000e-005	8.7000e-004	0.0000	9.1200e-003	0.0000	9.1300e-003	9.5000e-004	0.0000	9.5000e-004	0.0000	0.2115	0.2115	1.0000e-005	0.0000	0.2116
Total	1.8000e-004	2.4300e-003	1.3700e-003	1.0000e-005	0.0158	2.0000e-005	0.0158	1.6600e-003	2.0000e-005	1.6700e-003	0.0000	0.9507	0.9507	4.0000e-005	0.0000	0.9517

3.7 Building Construction 4 - Demobilization - 2020**Unmitigated Construction On-Site**

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	1.8200e-003	0.0000	1.8300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Total	4.0000e-005	7.8000e-004	2.9000e-004	0.0000	3.4800e-003	0.0000	3.4900e-003	3.6000e-004	0.0000	3.7000e-004	0.0000	0.2664	0.2664	1.0000e-005	0.0000	0.2668

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Annual

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	1.8200e-003	0.0000	1.8300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0423	0.0423	0.0000	0.0000	0.0423
Total	4.0000e-005	7.8000e-004	2.9000e-004	0.0000	3.4800e-003	0.0000	3.4900e-003	3.6000e-004	0.0000	3.7000e-004	0.0000	0.2664	0.2664	1.0000e-005	0.0000	0.2668

MWD Representative CIP Project B Engineered Erosion Control (CIP 2)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company					
CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project B Engineered Erosion Control (CIP Activity Code No. 2).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

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Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	100.00	1.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

tblOnRoadDust	HaulingPercentPave	Page 3 of 19	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	12.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00

MWD Representative CIP District B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

tblTripsAndVMT	WorkerTripNumber	Page 4 of 19	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino South Coast County, Summer

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.4207	15.5578	8.0850	0.0205	14.6215	0.6812	15.3006	4.2083	0.6271	4.8333	0.0000	2,038.374 0	2,038.374 0	0.4640	0.0000	2,049.973 2
Maximum	1.4207	15.5578	8.0850	0.0205	14.6215	0.6812	15.3006	4.2083	0.6271	4.8333	0.0000	2,038.374 0	2,038.374 0	0.4640	0.0000	2,049.973 2

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3024	6.3375	9.1342	0.0205	11.5103	0.0318	11.5273	2.1891	0.0314	2.2184	0.0000	2,038.374 0	2,038.374 0	0.4640	0.0000	2,049.973 2
Maximum	0.3024	6.3375	9.1342	0.0205	11.5103	0.0318	11.5273	2.1891	0.0314	2.2184	0.0000	2,038.374 0	2,038.374 0	0.4640	0.0000	2,049.973 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	78.72	59.26	-12.98	0.00	21.28	95.33	24.66	47.98	95.00	54.10	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Removing materials and mobilization	Site Preparation	1/1/2020	1/6/2020	5	4	
2	Grading	Grading	1/7/2020	1/8/2020	5	2	
3	Building Construction 1 - Place riprap	Building Construction	1/9/2020	1/14/2020	5	4	
4	Building Construction 2 - Concrete	Building Construction	1/15/2020	1/16/2020	5	2	
5	Building Construction 3 - Finish work and place base rock	Building Construction	1/17/2020	1/21/2020	5	3	
6	Building Construction 4 - Demobilization	Building Construction	1/22/2020	1/22/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Removing materials and mobilization	Excavators	1	8.00	158	0.38
Site Preparation - Removing materials and mobilization	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction 1 - Place riprap	Graders	1	8.00	187	0.41
Building Construction 1 - Place riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 3 - Finish work and place base rock	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 4 - Demobilization	Cranes	0	0.00	231	0.29

Trips and VMT

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Remove materials	2	9.00	2.00	24.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	9.00	8.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1. Place riprap rock	2	12.00	12.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2. Concrete curb	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3. Finish work and	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 4. Demobilization	0	9.00	0.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Removing materials and mobilization -

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3245	13.7449	7.3994	0.0137		0.6718	0.6718		0.6181	0.6181		1,327.4609	1,327.4609	0.4293		1,338.1941
Total	1.3245	13.7449	7.3994	0.0137	6.0221	0.6718	6.6939	3.3102	0.6181	3.9283		1,327.4609	1,327.4609	0.4293		1,338.1941

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0962	1.8130	0.6856	6.7700e-003	8.5995	7.2400e-003	8.6067	0.8981	6.9100e-003	0.9050		710.9130	710.9130	0.0346		711.7791

Mitigated Construction On-Site

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.2029	4.5246	8.4486	0.0137		0.0224	0.0224		0.0224	0.0224	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941
Total	0.2029	4.5246	8.4486	0.0137	2.3486	0.0224	2.3710	1.2910	0.0224	1.3134	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0962	1.8130	0.6856	6.7700e-003	8.5995	7.2400e-003	8.6067	0.8981	6.9100e-003	0.9050		710.9130	710.9130	0.0346		711.7791

3.3 Grading - 2020

Unmitigated Construction On-Site MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3245	13.7449	7.3994	0.0137		0.6718	0.6718		0.6181	0.6181		1,327.4609	1,327.4609	0.4293		1,338.1941
Total	1.3245	13.7449	7.3994	0.0137	6.0221	0.6718	6.6939	3.3102	0.6181	3.9283		1,327.4609	1,327.4609	0.4293		1,338.1941

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0885	1.2451	0.6555	5.1800e-003	7.8773	9.3900e-003	7.8866	0.8245	8.9600e-003	0.8334		540.0300	540.0300	0.0214		540.5651

Mitigated Construction On-Site

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.2029	4.5246	8.4486	0.0137		0.0224	0.0224		0.0224	0.0224	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941
Total	0.2029	4.5246	8.4486	0.0137	2.3486	0.0224	2.3710	1.2910	0.0224	1.3134	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0885	1.2451	0.6555	5.1800e-003	7.8773	9.3900e-003	7.8866	0.8245	8.9600e-003	0.8334		540.0300	540.0300	0.0214		540.5651

3.4 Building Construction 1 - Place riprap rock - 2020

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0591	1.8204	0.3761	6.2400e-003	5.8265	0.0131	5.8396	0.6145	0.0125	0.6270		657.4836	657.4836	0.0275		658.1699
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1246	1.8624	0.9158	7.6000e-003	11.1504	0.0140	11.1644	1.1676	0.0133	1.1809		793.0937	793.0937	0.0316		793.8834

Mitigated Construction On-Site

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0591	1.8204	0.3761	6.2400e-003	5.8265	0.0131	5.8396	0.6145	0.0125	0.6270		657.4836	657.4836	0.0275		658.1699
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1246	1.8624	0.9158	7.6000e-003	11.1504	0.0140	11.1644	1.1676	0.0133	1.1809		793.0937	793.0937	0.0316		793.8834

3.5 Building Construction 2 - Concrete grout - 2020

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer
Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	1.5170	0.3135	5.2000e-003	4.8554	0.0109	4.8663	0.5120	0.0104	0.5225		547.9030	547.9030	0.0229		548.4749
Worker	0.0819	0.0525	0.6746	1.7000e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		169.5126	169.5126	5.1700e-003		169.6420
Total	0.1311	1.5695	0.9880	6.9000e-003	11.5103	0.0120	11.5223	1.2034	0.0114	1.2149		717.4156	717.4156	0.0281		718.1169

Mitigated Construction On-Site

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	1.5170	0.3135	5.2000e-003	4.8554	0.0109	4.8663	0.5120	0.0104	0.5225		547.9030	547.9030	0.0229		548.4749
Worker	0.0819	0.0525	0.6746	1.7000e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		169.5126	169.5126	5.1700e-003		169.6420
Total	0.1311	1.5695	0.9880	6.9000e-003	11.5103	0.0120	11.5223	1.2034	0.0114	1.2149		717.4156	717.4156	0.0281		718.1169

3.6 Building Construction 3 - Finish work and place base rock - Page 16 of 19

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	1.5170	0.3135	5.2000e-003	4.8554	0.0109	4.8663	0.5120	0.0104	0.5225		547.9030	547.9030	0.0229		548.4749
Worker	0.0819	0.0525	0.6746	1.7000e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		169.5126	169.5126	5.1700e-003		169.6420
Total	0.1311	1.5695	0.9880	6.9000e-003	11.5103	0.0120	11.5223	1.2034	0.0114	1.2149		717.4156	717.4156	0.0281		718.1169

Mitigated Construction On-Site

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0492	1.5170	0.3135	5.2000e-003	4.8554	0.0109	4.8663	0.5120	0.0104	0.5225		547.9030	547.9030	0.0229		548.4749
Worker	0.0819	0.0525	0.6746	1.7000e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		169.5126	169.5126	5.1700e-003		169.6420
Total	0.1311	1.5695	0.9880	6.9000e-003	11.5103	0.0120	11.5223	1.2034	0.0114	1.2149		717.4156	717.4156	0.0281		718.1169

3.7 Building Construction 4 - Demobilization - 2020

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0864	1.5096	0.6229	5.7300e-003	7.6284	5.0600e-003	7.6334	0.7957	4.8200e-003	0.8005		601.3324	601.3324	0.0301		602.0841

Mitigated Construction On-Site

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MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0864	1.5096	0.6229	5.7300e-003	7.6284	5.0600e-003	7.6334	0.7957	4.8200e-003	0.8005		601.3324	601.3324	0.0301		602.0841

MWD Representative CIP Project B Engineered Erosion Control (CIP 2)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company					
CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project B Engineered Erosion Control (CIP Activity Code No. 2).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Winter

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	3.00
tblConstructionPhase	NumDays	100.00	1.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	4.00	0.00

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Winter

tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	12.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00
tblTripsAndVMT	VendorTripNumber	5.00	10.00

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Winter

tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.4228	15.5699	8.0507	0.0202	14.6215	0.6813	15.3007	4.2083	0.6271	4.8334	0.0000	2,012.6562	2,012.6562	0.4663	0.0000	2,024.3131
Maximum	1.4228	15.5699	8.0507	0.0202	14.6215	0.6813	15.3007	4.2083	0.6271	4.8334	0.0000	2,012.6562	2,012.6562	0.4663	0.0000	2,024.3131

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3046	6.3496	9.0999	0.0202	11.5103	0.0319	11.5274	2.1891	0.0314	2.2185	0.0000	2,012.6562	2,012.6562	0.4663	0.0000	2,024.3131
Maximum	0.3046	6.3496	9.0999	0.0202	11.5103	0.0319	11.5274	2.1891	0.0314	2.2185	0.0000	2,012.6562	2,012.6562	0.4663	0.0000	2,024.3131

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	78.59	59.22	-13.03	0.00	21.28	95.32	24.66	47.98	94.99	54.10	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Removing materials and mobilization	Site Preparation	1/1/2020	1/6/2020	5	4	
2	Grading	Grading	1/7/2020	1/8/2020	5	2	
3	Building Construction 1 - Place riprap	Building Construction	1/9/2020	1/14/2020	5	4	
4	Building Construction 2 - Concrete	Building Construction	1/15/2020	1/16/2020	5	2	
5	Building Construction 3 - Finish work and place base rock	Building Construction	1/17/2020	1/21/2020	5	3	
6	Building Construction 4 - Demobilization	Building Construction	1/22/2020	1/22/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Removing materials and mobilization	Excavators	1	8.00	158	0.38
Site Preparation - Removing materials and mobilization	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction 1 - Place riprap	Graders	1	8.00	187	0.41
Building Construction 1 - Place riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 3 - Finish work and place base rock	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 4 - Demobilization	Cranes	0	0.00	231	0.29

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Remove materials	2	9.00	2.00	24.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	9.00	8.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1. Place riprap rock	2	12.00	12.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2. Concrete curb	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3. Finish work and	1	15.00	10.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 4. Demobilization	0	9.00	0.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Removing materials and mobilization - Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3245	13.7449	7.3994	0.0137		0.6718	0.6718		0.6181	0.6181		1,327.4609	1,327.4609	0.4293		1,338.1941
Total	1.3245	13.7449	7.3994	0.0137	6.0221	0.6718	6.6939	3.3102	0.6181	3.9283		1,327.4609	1,327.4609	0.4293		1,338.1941

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0983	1.8250	0.6513	6.5200e-003	8.5995	7.3100e-003	8.6068	0.8981	6.9800e-003	0.9051		685.1953	685.1953	0.0370		686.1190

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.2029	4.5246	8.4486	0.0137		0.0224	0.0224		0.0224	0.0224	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941
Total	0.2029	4.5246	8.4486	0.0137	2.3486	0.0224	2.3710	1.2910	0.0224	1.3134	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0983	1.8250	0.6513	6.5200e-003	8.5995	7.3100e-003	8.6068	0.8981	6.9800e-003	0.9051		685.1953	685.1953	0.0370		686.1190

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3245	13.7449	7.3994	0.0137		0.6718	0.6718		0.6181	0.6181		1,327.4609	1,327.4609	0.4293		1,338.1941
Total	1.3245	13.7449	7.3994	0.0137	6.0221	0.6718	6.6939	3.3102	0.6181	3.9283		1,327.4609	1,327.4609	0.4293		1,338.1941

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0900	1.2571	0.6089	4.9900e-003	7.8773	9.4400e-003	7.8867	0.8245	9.0000e-003	0.8335		520.6788	520.6788	0.0226		521.2435

MWD Representative CIP Project B Engineered Erosion Control (CIP 2) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.2029	4.5246	8.4486	0.0137		0.0224	0.0224		0.0224	0.0224	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941
Total	0.2029	4.5246	8.4486	0.0137	2.3486	0.0224	2.3710	1.2910	0.0224	1.3134	0.0000	1,327.4609	1,327.4609	0.4293		1,338.1941

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0900	1.2571	0.6089	4.9900e-003	7.8773	9.4400e-003	7.8867	0.8245	9.0000e-003	0.8335		520.6788	520.6788	0.0226		521.2435

3.4 Building Construction 1 - Place riprap rock - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0612	1.8359	0.4143	6.1100e-003	5.8265	0.0132	5.8397	0.6145	0.0126	0.6270		644.1620	644.1620	0.0298		644.9069
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1268	1.8801	0.8579	7.3300e-003	11.1504	0.0140	11.1644	1.1676	0.0134	1.1810		765.8120	765.8120	0.0334		766.6476

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0612	1.8359	0.4143	6.1100e-003	5.8265	0.0132	5.8397	0.6145	0.0126	0.6270		644.1620	644.1620	0.0298		644.9069
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1268	1.8801	0.8579	7.3300e-003	11.1504	0.0140	11.1644	1.1676	0.0134	1.1810		765.8120	765.8120	0.0334		766.6476

3.5 Building Construction 2 - Concrete grout - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0510	1.5299	0.3453	5.0900e-003	4.8554	0.0110	4.8664	0.5120	0.0105	0.5225		536.8017	536.8017	0.0248		537.4224
Worker	0.0819	0.0553	0.5544	1.5300e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		152.0625	152.0625	4.5400e-003		152.1760
Total	0.1329	1.5852	0.8997	6.6200e-003	11.5103	0.0121	11.5223	1.2034	0.0115	1.2149		688.8642	688.8642	0.0294		689.5983

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0510	1.5299	0.3453	5.0900e-003	4.8554	0.0110	4.8664	0.5120	0.0105	0.5225		536.8017	536.8017	0.0248		537.4224
Worker	0.0819	0.0553	0.5544	1.5300e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		152.0625	152.0625	4.5400e-003		152.1760
Total	0.1329	1.5852	0.8997	6.6200e-003	11.5103	0.0121	11.5223	1.2034	0.0115	1.2149		688.8642	688.8642	0.0294		689.5983

3.6 Building Construction 3 - Finish work and place base rock -**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0510	1.5299	0.3453	5.0900e-003	4.8554	0.0110	4.8664	0.5120	0.0105	0.5225		536.8017	536.8017	0.0248		537.4224
Worker	0.0819	0.0553	0.5544	1.5300e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		152.0625	152.0625	4.5400e-003		152.1760
Total	0.1329	1.5852	0.8997	6.6200e-003	11.5103	0.0121	11.5223	1.2034	0.0115	1.2149		688.8642	688.8642	0.0294		689.5983

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0510	1.5299	0.3453	5.0900e-003	4.8554	0.0110	4.8664	0.5120	0.0105	0.5225		536.8017	536.8017	0.0248		537.4224
Worker	0.0819	0.0553	0.5544	1.5300e-003	6.6549	1.1000e-003	6.6560	0.6914	1.0100e-003	0.6924		152.0625	152.0625	4.5400e-003		152.1760
Total	0.1329	1.5852	0.8997	6.6200e-003	11.5103	0.0121	11.5223	1.2034	0.0115	1.2149		688.8642	688.8642	0.0294		689.5983

3.7 Building Construction 4 - Demobilization - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0881	1.5191	0.5822	5.5000e-003	7.6284	5.1200e-003	7.6335	0.7957	4.8800e-003	0.8006		577.8349	577.8349	0.0320		578.6345

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0881	1.5191	0.5822	5.5000e-003	7.6284	5.1200e-003	7.6335	0.7957	4.8800e-003	0.8006		577.8349	577.8349	0.0320		578.6345

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/10/2020 8:05 AM

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.69	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project C Slope Stabilization (CIP Activity Code No. 3).

Land Use - No specific project selected. Assumed an average work area of 0.69 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

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Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	6.00
tblConstructionPhase	NumDays	100.00	20.00
tblConstructionPhase	NumDays	1.00	10.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.69
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripLength	6.90	16.00

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tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	22.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0109	0.1375	0.1193	3.5000e-004	0.2392	4.8600e-003	0.2440	0.0252	4.4800e-003	0.0296	0.0000	32.3915	32.3915	5.0900e-003	0.0000	32.5187
Maximum	0.0109	0.1375	0.1193	3.5000e-004	0.2392	4.8600e-003	0.2440	0.0252	4.4800e-003	0.0296	0.0000	32.3915	32.3915	5.0900e-003	0.0000	32.5187

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	5.1600e-003	0.1216	0.1321	3.5000e-004	0.2392	6.0000e-004	0.2398	0.0252	5.9000e-004	0.0258	0.0000	32.3915	32.3915	5.0900e-003	0.0000	32.5187
Maximum	5.1600e-003	0.1216	0.1321	3.5000e-004	0.2392	6.0000e-004	0.2398	0.0252	5.9000e-004	0.0258	0.0000	32.3915	32.3915	5.0900e-003	0.0000	32.5187

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	52.83	11.60	-10.75	0.00	0.00	87.65	1.75	0.00	86.83	13.12	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/12/2020	5	10	
2	Building Construction 1 - Restore the slope	Building Construction	1/13/2020	1/22/2020	5	6	
3	Building Construction 2 - Geotextile and riprap	Building Construction	1/23/2020	2/19/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Excavators	1	8.00	158	0.38
Site Preparation - Clear and grub	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Restore the slope	Excavators	1	8.00	158	0.38
Building Construction 1 - Restore the slope	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Geotextile and riprap	Excavators	1	8.00	158	0.38
Building Construction 2 - Geotextile and riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	2	12.00	8.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Restore the slope	2	12.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Geotextile and riprap	2	12.00	22.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8200e-003	0.0181	0.0222	3.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297
Total	1.8200e-003	0.0181	0.0222	3.0000e-005	0.0000	1.0000e-003	1.0000e-003	0.0000	9.2000e-004	9.2000e-004	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.0400e-003	6.2000e-004	1.0000e-005	0.0111	1.0000e-005	0.0111	1.1600e-003	1.0000e-005	1.1700e-003	0.0000	1.1954	1.1954	7.0000e-005	0.0000	1.1971
Vendor	1.6000e-004	4.9900e-003	1.0600e-003	2.0000e-005	0.0142	3.0000e-005	0.0142	1.5000e-003	3.0000e-005	1.5400e-003	0.0000	1.5770	1.5770	7.0000e-005	0.0000	1.5788
Worker	2.4000e-004	1.9000e-004	1.8600e-003	0.0000	0.0195	0.0000	0.0195	2.0300e-003	0.0000	2.0300e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4515
Total	5.0000e-004	9.2200e-003	3.5400e-003	3.0000e-005	0.0447	4.0000e-005	0.0448	4.6900e-003	4.0000e-005	4.7400e-003	0.0000	3.2236	3.2236	1.5000e-004	0.0000	3.2273

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3000e-004	0.0145	0.0250	3.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297
Total	5.3000e-004	0.0145	0.0250	3.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.0400e-003	6.2000e-004	1.0000e-005	0.0111	1.0000e-005	0.0111	1.1600e-003	1.0000e-005	1.1700e-003	0.0000	1.1954	1.1954	7.0000e-005	0.0000	1.1971
Vendor	1.6000e-004	4.9900e-003	1.0600e-003	2.0000e-005	0.0142	3.0000e-005	0.0142	1.5000e-003	3.0000e-005	1.5400e-003	0.0000	1.5770	1.5770	7.0000e-005	0.0000	1.5788
Worker	2.4000e-004	1.9000e-004	1.8600e-003	0.0000	0.0195	0.0000	0.0195	2.0300e-003	0.0000	2.0300e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4515
Total	5.0000e-004	9.2200e-003	3.5400e-003	3.0000e-005	0.0447	4.0000e-005	0.0448	4.6900e-003	4.0000e-005	4.7400e-003	0.0000	3.2236	3.2236	1.5000e-004	0.0000	3.2273

3.3 Building Construction 1 - Restore the slope - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8200e-003	0.0181	0.0222	3.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297
Total	1.8200e-003	0.0181	0.0222	3.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	2.0200e-003	3.1000e-004	1.0000e-005	3.3300e-003	1.0000e-005	3.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	0.5977	0.5977	3.0000e-005	0.0000	0.5986
Vendor	1.6000e-004	4.9900e-003	1.0600e-003	2.0000e-005	0.0142	3.0000e-005	0.0142	1.5000e-003	3.0000e-005	1.5400e-003	0.0000	1.5770	1.5770	7.0000e-005	0.0000	1.5788
Worker	2.4000e-004	1.9000e-004	1.8600e-003	0.0000	0.0195	0.0000	0.0195	2.0300e-003	0.0000	2.0300e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4515
Total	4.5000e-004	7.2000e-003	3.2300e-003	3.0000e-005	0.0370	4.0000e-005	0.0371	3.8800e-003	4.0000e-005	3.9300e-003	0.0000	2.6259	2.6259	1.1000e-004	0.0000	2.6288

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.3000e-004	0.0145	0.0250	3.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297
Total	5.3000e-004	0.0145	0.0250	3.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	2.9062	2.9062	9.4000e-004	0.0000	2.9297

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	2.0200e-003	3.1000e-004	1.0000e-005	3.3300e-003	1.0000e-005	3.3400e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	0.5977	0.5977	3.0000e-005	0.0000	0.5986
Vendor	1.6000e-004	4.9900e-003	1.0600e-003	2.0000e-005	0.0142	3.0000e-005	0.0142	1.5000e-003	3.0000e-005	1.5400e-003	0.0000	1.5770	1.5770	7.0000e-005	0.0000	1.5788
Worker	2.4000e-004	1.9000e-004	1.8600e-003	0.0000	0.0195	0.0000	0.0195	2.0300e-003	0.0000	2.0300e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4515
Total	4.5000e-004	7.2000e-003	3.2300e-003	3.0000e-005	0.0370	4.0000e-005	0.0371	3.8800e-003	4.0000e-005	3.9300e-003	0.0000	2.6259	2.6259	1.1000e-004	0.0000	2.6288

3.4 Building Construction 2 - Geotextile and riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5400e-003	0.0452	0.0555	8.0000e-005		2.5000e-003	2.5000e-003		2.3000e-003	2.3000e-003	0.0000	7.2655	7.2655	2.3500e-003	0.0000	7.3243
Total	4.5400e-003	0.0452	0.0555	8.0000e-005		2.5000e-003	2.5000e-003		2.3000e-003	2.3000e-003	0.0000	7.2655	7.2655	2.3500e-003	0.0000	7.3243

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	5.0500e-003	7.7000e-004	2.0000e-005	0.0111	1.0000e-005	0.0111	1.1700e-003	1.0000e-005	1.1800e-003	0.0000	1.4943	1.4943	8.0000e-005	0.0000	1.4964
Vendor	1.1000e-003	0.0343	7.2600e-003	1.1000e-004	0.0977	2.4000e-004	0.0979	0.0104	2.3000e-004	0.0106	0.0000	10.8420	10.8420	4.7000e-004	0.0000	10.8539
Worker	5.9000e-004	4.7000e-004	4.6500e-003	1.0000e-005	0.0487	1.0000e-005	0.0487	5.0700e-003	1.0000e-005	5.0800e-003	0.0000	1.1278	1.1278	3.0000e-005	0.0000	1.1286
Total	1.8200e-003	0.0398	0.0127	1.4000e-004	0.1574	2.6000e-004	0.1577	0.0166	2.5000e-004	0.0168	0.0000	13.4641	13.4641	5.8000e-004	0.0000	13.4789

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Annual

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3300e-003	0.0363	0.0626	8.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	7.2655	7.2655	2.3500e-003	0.0000	7.3243
Total	1.3300e-003	0.0363	0.0626	8.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	7.2655	7.2655	2.3500e-003	0.0000	7.3243

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	5.0500e-003	7.7000e-004	2.0000e-005	0.0111	1.0000e-005	0.0111	1.1700e-003	1.0000e-005	1.1800e-003	0.0000	1.4943	1.4943	8.0000e-005	0.0000	1.4964
Vendor	1.1000e-003	0.0343	7.2600e-003	1.1000e-004	0.0977	2.4000e-004	0.0979	0.0104	2.3000e-004	0.0106	0.0000	10.8420	10.8420	4.7000e-004	0.0000	10.8539
Worker	5.9000e-004	4.7000e-004	4.6500e-003	1.0000e-005	0.0487	1.0000e-005	0.0487	5.0700e-003	1.0000e-005	5.0800e-003	0.0000	1.1278	1.1278	3.0000e-005	0.0000	1.1286
Total	1.8200e-003	0.0398	0.0127	1.4000e-004	0.1574	2.6000e-004	0.1577	0.0166	2.5000e-004	0.0168	0.0000	13.4641	13.4641	5.8000e-004	0.0000	13.4789

MWD Representative CIP Project C Slope Stabilization (CIP 3)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.69	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project C Slope Stabilization (CIP Activity Code No. 3).

Land Use - No specific project selected. Assumed an average work area of 0.69 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Summer

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	6.00
tblConstructionPhase	NumDays	100.00	20.00
tblConstructionPhase	NumDays	1.00	10.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.69
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripLength	6.90	16.00

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Summer

tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	22.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.6407	8.3898	6.8495	0.0226	17.2176	0.2763	17.4940	1.8066	0.2552	2.0617	0.0000	2,308.425 2	2,308.425 2	0.3225	0.0000	2,316.487 1
Maximum	0.6407	8.3898	6.8495	0.0226	17.2176	0.2763	17.4940	1.8066	0.2552	2.0617	0.0000	2,308.425 2	2,308.425 2	0.3225	0.0000	2,316.487 1

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3194	7.5033	7.5621	0.0226	17.2176	0.0399	17.2575	1.8066	0.0387	1.8453	0.0000	2,308.425 2	2,308.425 2	0.3225	0.0000	2,316.487 1
Maximum	0.3194	7.5033	7.5621	0.0226	17.2176	0.0399	17.2575	1.8066	0.0387	1.8453	0.0000	2,308.425 2	2,308.425 2	0.3225	0.0000	2,316.487 1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	50.15	10.57	-10.40	0.00	0.00	85.57	1.35	0.00	84.83	10.50	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/12/2020	5	10	
2	Building Construction 1 - Restore the slope	Building Construction	1/13/2020	1/22/2020	5	6	
3	Building Construction 2 - Geotextile and riprap	Building Construction	1/23/2020	2/19/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Excavators	1	8.00	158	0.38
Site Preparation - Clear and grub	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Restore the slope	Excavators	1	8.00	158	0.38
Building Construction 1 - Restore the slope	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Geotextile and riprap	Excavators	1	8.00	158	0.38
Building Construction 2 - Geotextile and riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	2	12.00	8.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Restore the slope	2	12.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Geotextile and riprap	2	12.00	22.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003	0.0000	0.2500	0.2500	0.0000	0.2300	0.2300		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	3.0253	2.9400e-003	3.0282	0.3158	2.8100e-003	0.3186		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1297	2.2410	0.9358	8.6600e-003	12.2335	0.0126	12.2460	1.2786	0.0120	1.2905		907.0157	907.0157	0.0404		908.0261

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003	0.0000	0.0135	0.0135	0.0000	0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	3.0253	2.9400e-003	3.0282	0.3158	2.8100e-003	0.3186		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1297	2.2410	0.9358	8.6600e-003	12.2335	0.0126	12.2460	1.2786	0.0120	1.2905		907.0157	907.0157	0.0404		908.0261

3.3 Building Construction 1 - Restore the slope - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	0.9110	1.4700e-003	0.9125	0.0960	1.4000e-003	0.0974		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1173	1.7483	0.8631	7.0900e-003	10.1192	0.0111	10.1303	1.0587	0.0106	1.0693		740.4741	740.4741	0.0314		741.2598

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	0.9110	1.4700e-003	0.9125	0.0960	1.4000e-003	0.0974		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1173	1.7483	0.8631	7.0900e-003	10.1192	0.0111	10.1303	1.0587	0.0106	1.0693		740.4741	740.4741	0.0314		741.2598

3.4 Building Construction 2 - Geotextile and riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.1083	3.3373	0.6896	0.0114	10.6819	0.0240	10.7059	1.1265	0.0230	1.1495		1,205.3866	1,205.3866	0.0503		1,206.6447
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1863	3.8721	1.3020	0.0144	17.2176	0.0264	17.2440	1.8066	0.0252	1.8317		1,507.5383	1,507.5383	0.0635		1,509.1246

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.1083	3.3373	0.6896	0.0114	10.6819	0.0240	10.7059	1.1265	0.0230	1.1495		1,205.3866	1,205.3866	0.0503		1,206.6447
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1863	3.8721	1.3020	0.0144	17.2176	0.0264	17.2440	1.8066	0.0252	1.8317		1,507.5383	1,507.5383	0.0635		1,509.1246

CalEEMod Version: CalEEMod.2016.3.2

Date: 11/14/2019 9:06 AM

MWD Representative CIP Project C Slope Stabilization (CIP 3)
San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.69	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative CIP Project C Slope Stabilization (CIP Activity Code No. 3).

Land Use - No specific project selected. Assumed an average work area of 0.69 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail. Included water trucks in vendor trips.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	6.00
tblConstructionPhase	NumDays	100.00	20.00
tblConstructionPhase	NumDays	1.00	10.00
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.69
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation - Clear and grub
tblOffRoadEquipment	PhaseName		Building Construction 1 - Restore the slope
tblOffRoadEquipment	PhaseName		Building Construction 2 - Geotextile and riprap
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	22.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.6234	8.4083	6.6859	0.0218	15.4430	0.2762	15.7192	1.6222	0.2550	1.8772	0.0000	2,225.1498	2,225.1498	0.3258	0.0000	2,233.2952
Maximum	0.6234	8.4083	6.6859	0.0218	15.4430	0.2762	15.7192	1.6222	0.2550	1.8772	0.0000	2,225.1498	2,225.1498	0.3258	0.0000	2,233.2952

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3021	7.5218	7.3985	0.0218	15.4430	0.0397	15.4828	1.6222	0.0386	1.6608	0.0000	2,225.1498	2,225.1498	0.3258	0.0000	2,233.2952
Maximum	0.3021	7.5218	7.3985	0.0218	15.4430	0.0397	15.4828	1.6222	0.0386	1.6608	0.0000	2,225.1498	2,225.1498	0.3258	0.0000	2,233.2952

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	51.54	10.54	-10.66	0.00	0.00	85.61	1.50	0.00	84.87	11.53	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
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MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/12/2020	5	10
2	Building Construction 1 - Restore the slope	Building Construction	1/13/2020	1/22/2020	5	6
3	Building Construction 2 - Geotextile and riprap	Building Construction	1/23/2020	2/19/2020	5	20

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Excavators	1	8.00	158	0.38
Site Preparation - Clear and grub	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Restore the slope	Excavators	1	8.00	158	0.38
Building Construction 1 - Restore the slope	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Geotextile and riprap	Excavators	1	8.00	158	0.38
Building Construction 2 - Geotextile and riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	2	8.00	8.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Restore the slope	2	8.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Geotextile and riprap	2	8.00	22.00	40.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0732	0.0000	0.0732	7.9000e-003	0.0000	7.9000e-003			0.0000			0.0000
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003	0.0732	0.2500	0.3232	7.9000e-003	0.2300	0.2379		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	3.0253	2.9800e-003	3.0282	0.3158	2.8500e-003	0.3187		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.1105	2.2440	0.7383	7.9400e-003	10.4589	0.0124	10.4712	1.0942	0.0118	1.1060		834.9396	834.9396	0.0418		835.9844

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0285	0.0000	0.0285	3.0800e-003	0.0000	3.0800e-003			0.0000			0.0000
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003	0.0285	0.0135	0.0421	3.0800e-003	0.0135	0.0166	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	3.0253	2.9800e-003	3.0282	0.3158	2.8500e-003	0.3187		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.1105	2.2440	0.7383	7.9400e-003	10.4589	0.0124	10.4712	1.0942	0.0118	1.1060		834.9396	834.9396	0.0418		835.9844

3.3 Building Construction 1 - Restore the slope - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	0.9110	1.4900e-003	0.9125	0.0960	1.4200e-003	0.0974		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.0975	1.7487	0.6551	6.4100e-003	8.3446	0.0109	8.3555	0.8744	0.0104	0.8847		672.7405	672.7405	0.0320		673.5414

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	0.9110	1.4900e-003	0.9125	0.0960	1.4200e-003	0.0974		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.0975	1.7487	0.6551	6.4100e-003	8.3446	0.0109	8.3555	0.8744	0.0104	0.8847		672.7405	672.7405	0.0320		673.5414

3.4 Building Construction 2 - Geotextile and riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625
Total	0.4545	4.5178	5.5475	8.2700e-003		0.2500	0.2500		0.2300	0.2300		800.8869	800.8869	0.2590		807.3625

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.1122	3.3658	0.7596	0.0112	10.6819	0.0241	10.7061	1.1265	0.0231	1.1496		1,180.9637	1,180.9637	0.0546		1,182.3292
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.1689	3.8906	1.1384	0.0135	15.4430	0.0262	15.4692	1.6222	0.0251	1.6472		1,424.2629	1,424.2629	0.0668		1,425.9327

MWD Representative CIP Project C Slope Stabilization (CIP 3) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625
Total	0.1332	3.6313	6.2601	8.2700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	800.8869	800.8869	0.2590		807.3625

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.1122	3.3658	0.7596	0.0112	10.6819	0.0241	10.7061	1.1265	0.0231	1.1496		1,180.9637	1,180.9637	0.0546		1,182.3292
Worker	0.0437	0.0295	0.2957	8.1000e-004	3.5493	5.9000e-004	3.5498	0.3687	5.4000e-004	0.3693		81.1000	81.1000	2.4200e-003		81.1605
Total	0.1689	3.8906	1.1384	0.0135	15.4430	0.0262	15.4692	1.6222	0.0251	1.6472		1,424.2629	1,424.2629	0.0668		1,425.9327

MWD Representative O&M Activity A Patrol Road Grading - High (O&M 1)
San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.45	63,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - High (O&M Activity Code No. 1).

Land Use - No specific project selected. High-Level Maintenance (1 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Annual

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	4.00	1.00
tblGrading	AcresOfGrading	0.50	1.45
tblLandUse	LandUseSquareFeet	0.00	63,360.00
tblLandUse	LotAcreage	0.00	1.45
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	4.1000e-004	5.4600e-003	2.4900e-003	1.0000e-005	6.2000e-003	1.7000e-004	6.3700e-003	6.5000e-004	1.6000e-004	8.1000e-004	0.0000	0.8563	0.8563	1.6000e-004	0.0000	0.8603
Maximum	4.1000e-004	5.4600e-003	2.4900e-003	1.0000e-005	6.2000e-003	1.7000e-004	6.3700e-003	6.5000e-004	1.6000e-004	8.1000e-004	0.0000	0.8563	0.8563	1.6000e-004	0.0000	0.8603

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.5000e-004	2.8000e-003	3.3800e-003	1.0000e-005	5.7300e-003	1.0000e-005	5.7400e-003	6.0000e-004	1.0000e-005	6.2000e-004	0.0000	0.8563	0.8563	1.6000e-004	0.0000	0.8603
Maximum	1.5000e-004	2.8000e-003	3.3800e-003	1.0000e-005	5.7300e-003	1.0000e-005	5.7400e-003	6.0000e-004	1.0000e-005	6.2000e-004	0.0000	0.8563	0.8563	1.6000e-004	0.0000	0.8603

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	63.41	48.72	-35.74	0.00	7.58	94.12	9.89	7.69	93.75	23.46	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.45

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.7000e-004	0.0000	7.7000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4000e-004	4.2200e-003	2.0500e-003	0.0000		1.7000e-004	1.7000e-004		1.5000e-004	1.5000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	3.4000e-004	4.2200e-003	2.0500e-003	0.0000	7.7000e-004	1.7000e-004	9.4000e-004	8.0000e-005	1.5000e-004	2.3000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	1.0000e-005	4.7000e-004	1.0000e-004	0.0000	1.3300e-003	0.0000	1.3400e-003	1.4000e-004	0.0000	1.4000e-004	0.0000	0.1479	0.1479	1.0000e-005	0.0000	0.1480
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	6.0000e-005	1.2500e-003	4.5000e-004	0.0000	5.4200e-003	0.0000	5.4300e-003	5.6000e-004	0.0000	5.7000e-004	0.0000	0.4284	0.4284	2.0000e-005	0.0000	0.4289

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Annual

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.0000e-004	0.0000	3.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-005	1.5500e-003	2.9300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	9.0000e-005	1.5500e-003	2.9300e-003	0.0000	3.0000e-004	1.0000e-005	3.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	1.0000e-005	4.7000e-004	1.0000e-004	0.0000	1.3300e-003	0.0000	1.3400e-003	1.4000e-004	0.0000	1.4000e-004	0.0000	0.1479	0.1479	1.0000e-005	0.0000	0.1480
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	6.0000e-005	1.2500e-003	4.5000e-004	0.0000	5.4200e-003	0.0000	5.4300e-003	5.6000e-004	0.0000	5.7000e-004	0.0000	0.4284	0.4284	2.0000e-005	0.0000	0.4289

MWD Representative O&M Activity A Patrol Road Grading - High (O&M 1)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.45	63,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - High (O&M Activity Code No. 1).

Land Use - No specific project selected. High-Level Maintenance (1 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Summer

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	4.00	1.00
tblGrading	AcresOfGrading	0.50	1.45
tblLandUse	LandUseSquareFeet	0.00	63,360.00
tblLandUse	LotAcreage	0.00	1.45
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8176	10.8609	5.0400	0.0189	13.4103	0.3472	13.7575	1.4072	0.3198	1.7270	0.0000	1,907.4639	1,907.4639	0.3500	0.0000	1,916.2132
Maximum	0.8176	10.8609	5.0400	0.0189	13.4103	0.3472	13.7575	1.4072	0.3198	1.7270	0.0000	1,907.4639	1,907.4639	0.3500	0.0000	1,916.2132

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3101	5.5292	6.8037	0.0189	12.4723	0.0277	12.5000	1.3059	0.0272	1.3331	0.0000	1,907.4639	1,907.4639	0.3500	0.0000	1,916.2132
Maximum	0.3101	5.5292	6.8037	0.0189	12.4723	0.0277	12.5000	1.3059	0.0272	1.3331	0.0000	1,907.4639	1,907.4639	0.3500	0.0000	1,916.2132

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	62.07	49.09	-34.99	0.00	6.99	92.02	9.14	7.20	91.50	22.81	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.45

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5377	0.0000	1.5377	0.1660	0.0000	0.1660			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	1.5377	0.3353	1.8731	0.1660	0.3085	0.4746		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1323	2.4302	0.9459	9.1900e-003	11.8726	0.0118	11.8844	1.2412	0.0113	1.2525		963.9767	963.9767	0.0448		965.0975

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5997	0.0000	0.5997	0.0648	0.0000	0.0648			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	0.5997	0.0159	0.6156	0.0648	0.0159	0.0806	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1323	2.4302	0.9459	9.1900e-003	11.8726	0.0118	11.8844	1.2412	0.0113	1.2525		963.9767	963.9767	0.0448		965.0975

MWD Representative O&M Activity A Patrol Road Grading - High (O&M 1)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.45	63,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - High (O&M Activity Code No. 1).

Land Use - No specific project selected. High-Level Maintenance (1 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Winter

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	4.00	1.00
tblGrading	AcresOfGrading	0.50	1.45
tblLandUse	LandUseSquareFeet	0.00	63,360.00
tblLandUse	LotAcreage	0.00	1.45
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8204	10.8787	4.9944	0.0186	13.4103	0.3473	13.7576	1.4072	0.3199	1.7271	0.0000	1,873.8156	1,873.8156	0.3529	0.0000	1,882.6389
Maximum	0.8204	10.8787	4.9944	0.0186	13.4103	0.3473	13.7576	1.4072	0.3199	1.7271	0.0000	1,873.8156	1,873.8156	0.3529	0.0000	1,882.6389

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3129	5.5470	6.7581	0.0186	12.4723	0.0278	12.5001	1.3059	0.0273	1.3332	0.0000	1,873.8156	1,873.8156	0.3529	0.0000	1,882.6389
Maximum	0.3129	5.5470	6.7581	0.0186	12.4723	0.0278	12.5001	1.3059	0.0273	1.3332	0.0000	1,873.8156	1,873.8156	0.3529	0.0000	1,882.6389

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	61.86	49.01	-35.31	0.00	6.99	91.99	9.14	7.20	91.48	22.81	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.45

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5377	0.0000	1.5377	0.1660	0.0000	0.1660			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	1.5377	0.3353	1.8731	0.1660	0.3085	0.4746		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1351	2.4481	0.9002	8.8600e-003	11.8726	0.0119	11.8845	1.2412	0.0114	1.2526		930.3284	930.3284	0.0478		931.5231

MWD Representative O Activity A Patrol Road Grading - High (O 1) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5997	0.0000	0.5997	0.0648	0.0000	0.0648			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	0.5997	0.0159	0.6156	0.0648	0.0159	0.0806	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1351	2.4481	0.9002	8.8600e-003	11.8726	0.0119	11.8845	1.2412	0.0114	1.2526		930.3284	930.3284	0.0478		931.5231

MWD Representative O&M Activity A Patrol Road Grading - Moderate (O&M 1)
San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.91	126,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Moderate (O&M Activity Code No. 1).

Land Use - No specific project selected. Moderate-Level Maintenance (2 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Annual

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	63360	31680
tblAreaCoating	Area_Nonresidential_Interior	190080	95040
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	6.00	1.00
tblGrading	AcresOfGrading	0.50	2.91
tblLandUse	LandUseSquareFeet	0.00	126,720.00
tblLandUse	LotAcreage	0.00	2.91
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	4.0000e-004	5.3100e-003	2.4600e-003	1.0000e-005	6.5300e-003	1.7000e-004	6.7000e-003	6.9000e-004	1.6000e-004	8.5000e-004	0.0000	0.8071	0.8071	1.6000e-004	0.0000	0.8110
Maximum	4.0000e-004	5.3100e-003	2.4600e-003	1.0000e-005	6.5300e-003	1.7000e-004	6.7000e-003	6.9000e-004	1.6000e-004	8.5000e-004	0.0000	0.8071	0.8071	1.6000e-004	0.0000	0.8110

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.5000e-004	2.6400e-003	3.3400e-003	1.0000e-005	5.5800e-003	1.0000e-005	5.6000e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	0.8071	0.8071	1.6000e-004	0.0000	0.8110
Maximum	1.5000e-004	2.6400e-003	3.3400e-003	1.0000e-005	5.5800e-003	1.0000e-005	5.6000e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	0.8071	0.8071	1.6000e-004	0.0000	0.8110

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	62.50	50.28	-35.77	0.00	14.55	94.12	16.42	14.49	93.75	29.41	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2.91

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	4.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5400e-003	0.0000	1.5400e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4000e-004	4.2200e-003	2.0500e-003	0.0000		1.7000e-004	1.7000e-004		1.5000e-004	1.5000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	3.4000e-004	4.2200e-003	2.0500e-003	0.0000	1.5400e-003	1.7000e-004	1.7100e-003	1.7000e-004	1.5000e-004	3.2000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	6.0000e-005	1.0900e-003	4.2000e-004	0.0000	4.9800e-003	0.0000	4.9800e-003	5.1000e-004	0.0000	5.3000e-004	0.0000	0.3791	0.3791	1.0000e-005	0.0000	0.3796

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Annual

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0000e-004	0.0000	6.0000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-005	1.5500e-003	2.9300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	9.0000e-005	1.5500e-003	2.9300e-003	0.0000	6.0000e-004	1.0000e-005	6.1000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	2.4300e-003	0.0000	2.4300e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0564	0.0564	0.0000	0.0000	0.0564
Total	6.0000e-005	1.0900e-003	4.2000e-004	0.0000	4.9800e-003	0.0000	4.9800e-003	5.1000e-004	0.0000	5.3000e-004	0.0000	0.3791	0.3791	1.0000e-005	0.0000	0.3796

MWD Representative O&M Activity A Patrol Road Grading - Moderate (O&M 1)
San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.91	126,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Moderate (O&M Activity Code No. 1).

Land Use - No specific project selected. Moderate-Level Maintenance (2 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Summer

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	63360	31680
tblAreaCoating	Area_Nonresidential_Interior	190080	95040
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	6.00	1.00
tblGrading	AcresOfGrading	0.50	2.91
tblLandUse	LandUseSquareFeet	0.00	126,720.00
tblLandUse	LotAcreage	0.00	2.91
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8078	10.5575	4.9773	0.0179	13.9876	0.3450	14.3325	1.4720	0.3177	1.7897	0.0000	1,797.883 3	1,797.883 3	0.3454	0.0000	1,806.518 2
Maximum	0.8078	10.5575	4.9773	0.0179	13.9876	0.3450	14.3325	1.4720	0.3177	1.7897	0.0000	1,797.883 3	1,797.883 3	0.3454	0.0000	1,806.518 2

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3003	5.2258	6.7410	0.0179	12.1051	0.0255	12.1306	1.2687	0.0251	1.2938	0.0000	1,797.883 3	1,797.883 3	0.3454	0.0000	1,806.518 2
Maximum	0.3003	5.2258	6.7410	0.0179	12.1051	0.0255	12.1306	1.2687	0.0251	1.2938	0.0000	1,797.883 3	1,797.883 3	0.3454	0.0000	1,806.518 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	62.83	50.50	-35.44	0.00	13.46	92.60	15.36	13.81	92.11	27.71	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2.91

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	4.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0861	0.0000	3.0861	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	3.0861	0.3353	3.4214	0.3332	0.3085	0.6417		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0197	0.6068	0.1254	2.0800e-003	1.9422	4.3600e-003	1.9465	0.2048	4.1700e-003	0.2090		219.1612	219.1612	9.1500e-003		219.3900
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1225	2.1269	0.8832	8.1500e-003	10.9015	9.6400e-003	10.9111	1.1388	9.1900e-003	1.1480		854.3961	854.3961	0.0403		855.4025

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2036	0.0000	1.2036	0.1300	0.0000	0.1300			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	1.2036	0.0159	1.2194	0.1300	0.0159	0.1458	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0373	1.4780	0.2181	4.7100e-003	3.6355	4.4000e-003	3.6399	0.3809	4.2100e-003	0.3851		499.6249	499.6249	0.0270		500.2989
Vendor	0.0197	0.6068	0.1254	2.0800e-003	1.9422	4.3600e-003	1.9465	0.2048	4.1700e-003	0.2090		219.1612	219.1612	9.1500e-003		219.3900
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.1225	2.1269	0.8832	8.1500e-003	10.9015	9.6400e-003	10.9111	1.1388	9.1900e-003	1.1480		854.3961	854.3961	0.0403		855.4025

MWD Representative O&M Activity A Patrol Road Grading - Moderate (O&M 1)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.91	126,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Moderate (O&M Activity Code No. 1).

Land Use - No specific project selected. Moderate-Level Maintenance (2 mile/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Winter

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	63360	31680
tblAreaCoating	Area_Nonresidential_Interior	190080	95040
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	6.00	1.00
tblGrading	AcresOfGrading	0.50	2.91
tblLandUse	LandUseSquareFeet	0.00	126,720.00
tblLandUse	LotAcreage	0.00	2.91
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.8102	10.5728	4.9253	0.0176	13.9876	0.3451	14.3326	1.4720	0.3178	1.7898	0.0000	1,766.4553	1,766.4553	0.3480	0.0000	1,775.1544
Maximum	0.8102	10.5728	4.9253	0.0176	13.9876	0.3451	14.3326	1.4720	0.3178	1.7898	0.0000	1,766.4553	1,766.4553	0.3480	0.0000	1,775.1544

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3027	5.2410	6.6891	0.0176	12.1051	0.0256	12.1307	1.2687	0.0252	1.2939	0.0000	1,766.4553	1,766.4553	0.3480	0.0000	1,775.1544
Maximum	0.3027	5.2410	6.6891	0.0176	12.1051	0.0256	12.1307	1.2687	0.0252	1.2939	0.0000	1,766.4553	1,766.4553	0.3480	0.0000	1,775.1544

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	62.64	50.43	-35.81	0.00	13.46	92.58	15.36	13.81	92.08	27.71	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2.91

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	12.00	4.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0861	0.0000	3.0861	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	3.0861	0.3353	3.4214	0.3332	0.3085	0.6417		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0204	0.6120	0.1381	2.0400e-003	1.9422	4.3900e-003	1.9466	0.2048	4.2000e-003	0.2090		214.7207	214.7207	9.9300e-003		214.9690
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1249	2.1421	0.8312	7.8400e-003	10.9015	9.7300e-003	10.9112	1.1388	9.2800e-003	1.1480		822.9681	822.9681	0.0428		824.0386

MWD Representative O Activity A Patrol Road Grading - Moderate (O 1) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2036	0.0000	1.2036	0.1300	0.0000	0.1300			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	1.2036	0.0159	1.2194	0.1300	0.0159	0.1458	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0390	1.4859	0.2495	4.5800e-003	3.6355	4.4600e-003	3.6399	0.3809	4.2700e-003	0.3851		486.5974	486.5974	0.0293		487.3289
Vendor	0.0204	0.6120	0.1381	2.0400e-003	1.9422	4.3900e-003	1.9466	0.2048	4.2000e-003	0.2090		214.7207	214.7207	9.9300e-003		214.9690
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.1249	2.1421	0.8312	7.8400e-003	10.9015	9.7300e-003	10.9112	1.1388	9.2800e-003	1.1480		822.9681	822.9681	0.0428		824.0386

MWD Representative O&M Activity A Patrol Road Grading - Low (O&M 1)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	6.55	285,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Low (O&M Activity Code No. 1).

Land Use - No specific project selected. Low-Level Maintenance (4.5 miles/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Annual

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	1.00
tblGrading	AcresOfGrading	0.50	6.55
tblLandUse	LandUseSquareFeet	0.00	285,120.00
tblLandUse	LotAcreage	0.00	6.55
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	3.7000e-004	4.5400e-003	2.2300e-003	1.0000e-005	5.5800e-003	1.7000e-004	5.7500e-003	6.0000e-004	1.6000e-004	7.5000e-004	0.0000	0.5547	0.5547	1.4000e-004	0.0000	0.5583
Maximum	3.7000e-004	4.5400e-003	2.2300e-003	1.0000e-005	5.5800e-003	1.7000e-004	5.7500e-003	6.0000e-004	1.6000e-004	7.5000e-004	0.0000	0.5547	0.5547	1.4000e-004	0.0000	0.5583

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.1000e-004	1.8700e-003	3.1100e-003	1.0000e-005	3.4600e-003	1.0000e-005	3.4700e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	0.5547	0.5547	1.4000e-004	0.0000	0.5583
Maximum	1.1000e-004	1.8700e-003	3.1100e-003	1.0000e-005	3.4600e-003	1.0000e-005	3.4700e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	0.5547	0.5547	1.4000e-004	0.0000	0.5583

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	70.27	58.81	-39.46	0.00	37.99	94.12	39.65	38.33	93.75	49.33	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.55

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	6.00	4.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.4700e-003	0.0000	3.4700e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4000e-004	4.2200e-003	2.0500e-003	0.0000		1.7000e-004	1.7000e-004		1.5000e-004	1.5000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	3.4000e-004	4.2200e-003	2.0500e-003	0.0000	3.4700e-003	1.7000e-004	3.6400e-003	3.8000e-004	1.5000e-004	5.3000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282
Total	2.0000e-005	3.2000e-004	1.9000e-004	0.0000	2.1100e-003	0.0000	2.1100e-003	2.2000e-004	0.0000	2.3000e-004	0.0000	0.1268	0.1268	0.0000	0.0000	0.1269

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Annual

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.3500e-003	0.0000	1.3500e-003	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-005	1.5500e-003	2.9300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314
Total	9.0000e-005	1.5500e-003	2.9300e-003	0.0000	1.3500e-003	1.0000e-005	1.3600e-003	1.5000e-004	1.0000e-005	1.6000e-004	0.0000	0.4280	0.4280	1.4000e-004	0.0000	0.4314

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282
Total	2.0000e-005	3.2000e-004	1.9000e-004	0.0000	2.1100e-003	0.0000	2.1100e-003	2.2000e-004	0.0000	2.3000e-004	0.0000	0.1268	0.1268	0.0000	0.0000	0.1269

MWD Representative O&M Activity A Patrol Road Grading - Low (O&M 1)
San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	6.55	285,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Low (O&M Activity Code No. 1).

Land Use - No specific project selected. Low-Level Maintenance (4.5 miles/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Summer

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	1.00
tblGrading	AcresOfGrading	0.50	6.55
tblLandUse	LandUseSquareFeet	0.00	285,120.00
tblLandUse	LotAcreage	0.00	6.55
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.7378	9.0585	4.4894	0.0125	11.5504	0.3402	11.8905	1.2314	0.3131	1.5445	0.0000	1,230.453 4	1,230.453 4	0.3164	0.0000	1,238.362 5
Maximum	0.7378	9.0585	4.4894	0.0125	11.5504	0.3402	11.8905	1.2314	0.3131	1.5445	0.0000	1,230.453 4	1,230.453 4	0.3164	0.0000	1,238.362 5

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2303	3.7268	6.2531	0.0125	7.3132	0.0207	7.3338	0.7739	0.0205	0.7943	0.0000	1,230.453 4	1,230.453 4	0.3164	0.0000	1,238.362 5
Maximum	0.2303	3.7268	6.2531	0.0125	7.3132	0.0207	7.3338	0.7739	0.0205	0.7943	0.0000	1,230.453 4	1,230.453 4	0.3164	0.0000	1,238.362 5

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	68.79	58.86	-39.29	0.00	36.68	93.92	38.32	37.15	93.47	48.57	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.55

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	6.00	4.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9463	0.0000	6.9463	0.7500	0.0000	0.7500			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	6.9463	0.3353	7.2816	0.7500	0.3085	1.0586		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0197	0.6068	0.1254	2.0800e-003	1.9422	4.3600e-003	1.9465	0.2048	4.1700e-003	0.2090		219.1612	219.1612	9.1500e-003		219.3900
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0525	0.6278	0.3952	2.7600e-003	4.6041	4.8000e-003	4.6089	0.4814	4.5700e-003	0.4860		286.9662	286.9662	0.0112		287.2468

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7091	0.0000	2.7091	0.2925	0.0000	0.2925			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	2.7091	0.0159	2.7249	0.2925	0.0159	0.3084	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0197	0.6068	0.1254	2.0800e-003	1.9422	4.3600e-003	1.9465	0.2048	4.1700e-003	0.2090		219.1612	219.1612	9.1500e-003		219.3900
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0525	0.6278	0.3952	2.7600e-003	4.6041	4.8000e-003	4.6089	0.4814	4.5700e-003	0.4860		286.9662	286.9662	0.0112		287.2468

MWD Representative O&M Activity A Patrol Road Grading - Low (O&M 1)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	6.55	285,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity A Patrol Road Grading - Low (O&M Activity Code No. 1).

Land Use - No specific project selected. Low-Level Maintenance (4.5 miles/day). Assumed average roadway width of 12 feet.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Winter

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	1.00
tblGrading	AcresOfGrading	0.50	6.55
tblLandUse	LandUseSquareFeet	0.00	285,120.00
tblLandUse	LotAcreage	0.00	6.55
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.7385	9.0648	4.4540	0.0124	11.5504	0.3402	11.8906	1.2314	0.3131	1.5445	0.0000	1,219.0329	1,219.0329	0.3169	0.0000	1,226.9551
Maximum	0.7385	9.0648	4.4540	0.0124	11.5504	0.3402	11.8906	1.2314	0.3131	1.5445	0.0000	1,219.0329	1,219.0329	0.3169	0.0000	1,226.9551

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2310	3.7330	6.2177	0.0124	7.3132	0.0207	7.3339	0.7739	0.0205	0.7944	0.0000	1,219.0329	1,219.0329	0.3169	0.0000	1,226.9551
Maximum	0.2310	3.7330	6.2177	0.0124	7.3132	0.0207	7.3339	0.7739	0.0205	0.7944	0.0000	1,219.0329	1,219.0329	0.3169	0.0000	1,226.9551

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	68.72	58.82	-39.60	0.00	36.68	93.91	38.32	37.15	93.46	48.57	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2020	1/1/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.55

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	6.00	4.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9463	0.0000	6.9463	0.7500	0.0000	0.7500			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	6.9463	0.3353	7.2816	0.7500	0.3085	1.0586		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0204	0.6120	0.1381	2.0400e-003	1.9422	4.3900e-003	1.9466	0.2048	4.2000e-003	0.2090		214.7207	214.7207	9.9300e-003		214.9690
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0532	0.6341	0.3599	2.6500e-003	4.6041	4.8300e-003	4.6089	0.4814	4.6000e-003	0.4860		275.5457	275.5457	0.0118		275.8393

MWD Representative O Activity A Patrol Road Grading - Low (O 1) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7091	0.0000	2.7091	0.2925	0.0000	0.2925			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	2.7091	0.0159	2.7249	0.2925	0.0159	0.3084	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0204	0.6120	0.1381	2.0400e-003	1.9422	4.3900e-003	1.9466	0.2048	4.2000e-003	0.2090		214.7207	214.7207	9.9300e-003		214.9690
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0532	0.6341	0.3599	2.6500e-003	4.6041	4.8300e-003	4.6089	0.4814	4.6000e-003	0.4860		275.5457	275.5457	0.0118		275.8393

MWD Representative O&M Activity B Erosion Control (O&M 6)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity B Erosion Control (O&M Activity Code No. 6).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Annual

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Architectural Coating -

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	1.00	3.00
tblGrading	AcresOfGrading	1.50	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Annual

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	1.9300e-003	0.0243	0.0145	5.0000e-005	0.0329	8.1000e-004	0.0337	3.4500e-003	7.7000e-004	4.2100e-003	0.0000	4.4011	4.4011	6.4000e-004	0.0000	4.4171
Maximum	1.9300e-003	0.0243	0.0145	5.0000e-005	0.0329	8.1000e-004	0.0337	3.4500e-003	7.7000e-004	4.2100e-003	0.0000	4.4011	4.4011	6.4000e-004	0.0000	4.4171

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	8.2000e-004	0.0152	0.0177	5.0000e-005	0.0326	1.4000e-004	0.0328	3.4200e-003	1.4000e-004	3.5600e-003	0.0000	4.4011	4.4011	6.4000e-004	0.0000	4.4171
Maximum	8.2000e-004	0.0152	0.0177	5.0000e-005	0.0326	1.4000e-004	0.0328	3.4200e-003	1.4000e-004	3.5600e-003	0.0000	4.4011	4.4011	6.4000e-004	0.0000	4.4171

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	57.51	37.25	-22.12	0.00	0.70	82.72	2.67	0.87	81.82	15.44	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/3/2020	5	3	
2	Grading - Earthwork	Grading	1/4/2020	1/8/2020	5	3	
3	Building Construction 1 - Concrete masonry curb and ditch	Building Construction	1/9/2020	1/10/2020	5	2	
4	Building Construction 2 - Finish work	Building Construction	1/11/2020	1/12/2020	5	2	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Earthwork	Skid Steer Loaders	1	8.00	65	0.37
Grading - Earthwork	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Concrete masonry curb and ditch	Pumps	1	8.00	84	0.74
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Earthwork	2	9.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Concrete masonry	1	12.00	2.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7000e-004	0.0000	3.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	9.4900e-003	2.7200e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.8000e-004	2.8000e-004	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817
Total	7.1000e-004	9.4900e-003	2.7200e-003	1.0000e-005	3.7000e-004	3.0000e-004	6.7000e-004	4.0000e-005	2.8000e-004	3.2000e-004	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	4.0000e-005	1.4000e-003	3.0000e-004	0.0000	4.0000e-003	1.0000e-005	4.0100e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	0.4435	0.4435	2.0000e-005	0.0000	0.4440
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	1.0000e-004	2.1900e-003	7.7000e-004	0.0000	9.3100e-003	1.0000e-005	9.3200e-003	9.7000e-004	1.0000e-005	9.9000e-004	0.0000	0.7523	0.7523	3.0000e-005	0.0000	0.7531

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6000e-004	2.6200e-003	5.2700e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817
Total	1.6000e-004	2.6200e-003	5.2700e-003	1.0000e-005	1.4000e-004	2.0000e-005	1.6000e-004	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.6000e-004	1.2000e-004	0.0000	1.6600e-003	0.0000	1.6600e-003	1.7000e-004	0.0000	1.8000e-004	0.0000	0.2241	0.2241	1.0000e-005	0.0000	0.2245
Vendor	4.0000e-005	1.4000e-003	3.0000e-004	0.0000	4.0000e-003	1.0000e-005	4.0100e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	0.4435	0.4435	2.0000e-005	0.0000	0.4440
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	1.0000e-004	2.1900e-003	7.7000e-004	0.0000	9.3100e-003	1.0000e-005	9.3200e-003	9.7000e-004	1.0000e-005	9.9000e-004	0.0000	0.7523	0.7523	3.0000e-005	0.0000	0.7531

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3.3 Grading - Earthwork - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3000e-004	4.7500e-003	5.5000e-003	1.0000e-005		2.7000e-004	2.7000e-004		2.5000e-004	2.5000e-004	0.0000	0.6817	0.6817	2.2000e-004	0.0000	0.6872
Total	4.3000e-004	4.7500e-003	5.5000e-003	1.0000e-005	0.0000	2.7000e-004	2.7000e-004	0.0000	2.5000e-004	2.5000e-004	0.0000	0.6817	0.6817	2.2000e-004	0.0000	0.6872

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.5200e-003	2.3000e-004	0.0000	3.3200e-003	0.0000	3.3300e-003	3.5000e-004	0.0000	3.5000e-004	0.0000	0.4483	0.4483	3.0000e-005	0.0000	0.4489
Vendor	6.0000e-005	1.8700e-003	4.0000e-004	1.0000e-005	5.3300e-003	1.0000e-005	5.3400e-003	5.6000e-004	1.0000e-005	5.8000e-004	0.0000	0.5914	0.5914	3.0000e-005	0.0000	0.5920
Worker	7.0000e-005	5.0000e-005	5.2000e-004	0.0000	5.4700e-003	0.0000	5.4800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.1269	0.1269	0.0000	0.0000	0.1270
Total	1.7000e-004	3.4400e-003	1.1500e-003	1.0000e-005	0.0141	1.0000e-005	0.0142	1.4800e-003	1.0000e-005	1.5000e-003	0.0000	1.1666	1.1666	6.0000e-005	0.0000	1.1679

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-004	3.7800e-003	5.8700e-003	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.6817	0.6817	2.2000e-004	0.0000	0.6872
Total	1.8000e-004	3.7800e-003	5.8700e-003	1.0000e-005	0.0000	8.0000e-005	8.0000e-005	0.0000	8.0000e-005	8.0000e-005	0.0000	0.6817	0.6817	2.2000e-004	0.0000	0.6872

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.5200e-003	2.3000e-004	0.0000	3.3200e-003	0.0000	3.3300e-003	3.5000e-004	0.0000	3.5000e-004	0.0000	0.4483	0.4483	3.0000e-005	0.0000	0.4489
Vendor	6.0000e-005	1.8700e-003	4.0000e-004	1.0000e-005	5.3300e-003	1.0000e-005	5.3400e-003	5.6000e-004	1.0000e-005	5.8000e-004	0.0000	0.5914	0.5914	3.0000e-005	0.0000	0.5920
Worker	7.0000e-005	5.0000e-005	5.2000e-004	0.0000	5.4700e-003	0.0000	5.4800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.1269	0.1269	0.0000	0.0000	0.1270
Total	1.7000e-004	3.4400e-003	1.1500e-003	1.0000e-005	0.0141	1.0000e-005	0.0142	1.4800e-003	1.0000e-005	1.5000e-003	0.0000	1.1666	1.1666	6.0000e-005	0.0000	1.1679

3.4 Building Construction 1 - Concrete masonry curb and**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-004	3.5300e-003	3.7600e-003	1.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	0.5652	0.5652	3.0000e-005	0.0000	0.5661
Total	4.2000e-004	3.5300e-003	3.7600e-003	1.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	0.5652	0.5652	3.0000e-005	0.0000	0.5661

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	5.1000e-004	8.0000e-005	0.0000	1.1100e-003	0.0000	1.1100e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.1494	0.1494	1.0000e-005	0.0000	0.1496
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	6.0000e-005	5.0000e-005	4.7000e-004	0.0000	4.8700e-003	0.0000	4.8700e-003	5.1000e-004	0.0000	5.1000e-004	0.0000	0.1128	0.1128	0.0000	0.0000	0.1129
Total	8.0000e-005	8.7000e-004	6.2000e-004	0.0000	6.8700e-003	0.0000	6.8700e-003	7.2000e-004	0.0000	7.3000e-004	0.0000	0.3608	0.3608	1.0000e-005	0.0000	0.3612

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-004	2.3500e-003	4.0600e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.5652	0.5652	3.0000e-005	0.0000	0.5661
Total	1.2000e-004	2.3500e-003	4.0600e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.5652	0.5652	3.0000e-005	0.0000	0.5661

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	5.1000e-004	8.0000e-005	0.0000	1.1100e-003	0.0000	1.1100e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.1494	0.1494	1.0000e-005	0.0000	0.1496
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	6.0000e-005	5.0000e-005	4.7000e-004	0.0000	4.8700e-003	0.0000	4.8700e-003	5.1000e-004	0.0000	5.1000e-004	0.0000	0.1128	0.1128	0.0000	0.0000	0.1129
Total	8.0000e-005	8.7000e-004	6.2000e-004	0.0000	6.8700e-003	0.0000	6.8700e-003	7.2000e-004	0.0000	7.3000e-004	0.0000	0.3608	0.3608	1.0000e-005	0.0000	0.3612

Unmitigated Construction On-Site

[illegible]

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	2.2000e-003	0.0000	2.2000e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	2.2000e-003	0.0000	2.2000e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MWD Representative O&M Activity B Erosion Control (O&M 6)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity B Erosion Control (O&M Activity Code No. 6).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Architectural Coating -

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	1.00	3.00
tblGrading	AcresOfGrading	1.50	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5506	7.7494	4.4707	0.0135	10.3009	0.2117	10.4923	1.0784	0.2115	1.2549	0.0000	1,374.0504	1,374.0504	0.2327	0.0000	1,379.0853
Maximum	0.5506	7.7494	4.4707	0.0135	10.3009	0.2117	10.4923	1.0784	0.2115	1.2549	0.0000	1,374.0504	1,374.0504	0.2327	0.0000	1,379.0853

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2339	4.7473	4.7314	0.0135	10.3009	0.0649	10.3658	1.0784	0.0643	1.1427	0.0000	1,374.0504	1,374.0504	0.2327	0.0000	1,379.0853
Maximum	0.2339	4.7473	4.7314	0.0135	10.3009	0.0649	10.3658	1.0784	0.0643	1.1427	0.0000	1,374.0504	1,374.0504	0.2327	0.0000	1,379.0853

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	57.52	38.74	-5.83	0.00	0.00	69.35	1.21	0.00	69.58	8.94	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/3/2020	5	3	
2	Grading - Earthwork	Grading	1/4/2020	1/8/2020	5	3	
3	Building Construction 1 - Concrete masonry curb and ditch	Building Construction	1/9/2020	1/10/2020	5	2	
4	Building Construction 2 - Finish work	Building Construction	1/11/2020	1/12/2020	5	2	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Earthwork	Skid Steer Loaders	1	8.00	65	0.37
Grading - Earthwork	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Concrete masonry curb and ditch	Pumps	1	8.00	84	0.74
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Earthwork	2	9.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Concrete masonry	1	12.00	2.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2475	0.0000	0.2475	0.0267	0.0000	0.0267			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.2475	0.2022	0.4497	0.0267	0.1861	0.2128		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0747	1.4239	0.5306	5.3700e-003	6.7870	8.4500e-003	6.7955	0.7107	8.0600e-003	0.7188		563.0885	563.0885	0.0248		563.7080

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0965	0.0000	0.0965	0.0104	0.0000	0.0104			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0965	0.0108	0.1073	0.0104	0.0108	0.0212	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0747	1.4239	0.5306	5.3700e-003	6.7870	8.4500e-003	6.7955	0.7107	8.0600e-003	0.7188		563.0885	563.0885	0.0248		563.7080

3.3 Grading - Earthwork - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876
Total	0.2894	3.1675	3.6697	5.1700e-003	0.0000	0.1791	0.1791	0.0000	0.1648	0.1648		500.9372	500.9372	0.1620		504.9876

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.1134	2.2305	0.8009	8.3200e-003	10.3009	0.0123	10.3132	1.0784	0.0118	1.0901		873.1132	873.1132	0.0394		874.0977

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876
Total	0.1205	2.5168	3.9115	5.1700e-003	0.0000	0.0526	0.0526	0.0000	0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	0.0394	1.2136	0.2508	4.1600e-003	3.8843	8.7300e-003	3.8931	0.4096	8.3500e-003	0.4180		438.3224	438.3224	0.0183		438.7799
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.1134	2.2305	0.8009	8.3200e-003	10.3009	0.0123	10.3132	1.0784	0.0118	1.0901		873.1132	873.1132	0.0394		874.0977

3.4 Building Construction 1 - Concrete masonry curb and**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	3.5290	3.7626	6.5800e-003		0.2072	0.2072		0.2072	0.2072		623.0346	623.0346	0.0373		623.9664
Total	0.4232	3.5290	3.7626	6.5800e-003		0.2072	0.2072		0.2072	0.2072		623.0346	623.0346	0.0373		623.9664

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.0878	0.8381	0.6751	3.9700e-003	7.5068	4.5300e-003	7.5113	0.7825	4.3000e-003	0.7868		411.7323	411.7323	0.0177		412.1749

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1206	2.3461	4.0564	6.5800e-003		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	623.0346	623.0346	0.0373		623.9664
Total	0.1206	2.3461	4.0564	6.5800e-003		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	623.0346	623.0346	0.0373		623.9664

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0124	0.4927	0.0727	1.5700e-003	1.2118	1.4700e-003	1.2133	0.1270	1.4000e-003	0.1284		166.5416	166.5416	8.9900e-003		166.7663
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0655	0.0420	0.5397	1.3600e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		135.6101	135.6101	4.1400e-003		135.7136
Total	0.0878	0.8381	0.6751	3.9700e-003	7.5068	4.5300e-003	7.5113	0.7825	4.3000e-003	0.7868		411.7323	411.7323	0.0177		412.1749

3.5 Building Construction 2 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876
Total	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	4.8301	2.9400e-003	4.8331	0.5016	2.8100e-003	0.5044		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0675	1.3098	0.4779	4.8600e-003	8.4632	5.5600e-003	8.4687	0.8806	5.3000e-003	0.8859		510.4689	510.4689	0.0246		511.0844

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876
Total	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	4.8301	2.9400e-003	4.8331	0.5016	2.8100e-003	0.5044		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0675	1.3098	0.4779	4.8600e-003	8.4632	5.5600e-003	8.4687	0.8806	5.3000e-003	0.8859		510.4689	510.4689	0.0246		511.0844

MWD Representative O&M Activity B Erosion Control (O&M 6)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity B Erosion Control (O&M Activity Code No. 6).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Winter

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Architectural Coating -

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	1.00	3.00
tblGrading	AcresOfGrading	1.50	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative O Activity B Erosion Control (O 6) - San Bernardino-South Coast County, Winter

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.5522	7.7609	4.4450	0.0132	10.3009	0.2118	10.4924	1.0784	0.2115	1.2550	0.0000	1,346.014 4	1,346.014 4	0.2343	0.0000	1,351.117 0
Maximum	0.5522	7.7609	4.4450	0.0132	10.3009	0.2118	10.4924	1.0784	0.2115	1.2550	0.0000	1,346.014 4	1,346.014 4	0.2343	0.0000	1,351.117 0

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2365	4.7645	4.6867	0.0132	10.3009	0.0650	10.3659	1.0784	0.0644	1.1428	0.0000	1,346.014 4	1,346.014 4	0.2343	0.0000	1,351.117 0
Maximum	0.2365	4.7645	4.6867	0.0132	10.3009	0.0650	10.3659	1.0784	0.0644	1.1428	0.0000	1,346.014 4	1,346.014 4	0.2343	0.0000	1,351.117 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	57.18	38.61	-5.44	0.00	0.00	69.31	1.21	0.00	69.55	8.94	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation - Clear and grub	Site Preparation	1/1/2020	1/3/2020	5	3	
2	Grading - Earthwork	Grading	1/4/2020	1/8/2020	5	3	
3	Building Construction 1 - Concrete masonry curb and ditch	Building Construction	1/9/2020	1/10/2020	5	2	
4	Building Construction 2 - Finish work	Building Construction	1/11/2020	1/12/2020	5	2	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation - Clear and grub	Graders	1	8.00	187	0.41
Grading - Earthwork	Skid Steer Loaders	1	8.00	65	0.37
Grading - Earthwork	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Concrete masonry curb and ditch	Pumps	1	8.00	84	0.74
Building Construction 2 - Finish work	Skid Steer Loaders	1	8.00	65	0.37
Building Construction 2 - Finish work	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation - Clear and grub	1	6.00	6.00	6.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Earthwork	2	9.00	8.00	12.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Concrete masonry	1	12.00	2.00	4.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Finish work	2	6.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - Clear and grub - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2475	0.0000	0.2475	0.0267	0.0000	0.0267			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.2475	0.2022	0.4497	0.0267	0.1861	0.2128		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0764	1.4353	0.5121	5.2000e-003	6.7870	8.5100e-003	6.7955	0.7107	8.1200e-003	0.7189		545.1052	545.1052	0.0265		545.7668

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0965	0.0000	0.0965	0.0104	0.0000	0.0104			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0965	0.0108	0.1073	0.0104	0.0108	0.0212	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0764	1.4353	0.5121	5.2000e-003	6.7870	8.5100e-003	6.7955	0.7107	8.1200e-003	0.7189		545.1052	545.1052	0.0265		545.7668

3.3 Grading - Earthwork - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876
Total	0.2894	3.1675	3.6697	5.1700e-003	0.0000	0.1791	0.1791	0.0000	0.1648	0.1648		500.9372	500.9372	0.1620		504.9876

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.1159	2.2477	0.7752	8.0500e-003	10.3009	0.0124	10.3133	1.0784	0.0119	1.0902		845.0771	845.0771	0.0421		846.1294

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876
Total	0.1205	2.5168	3.9115	5.1700e-003	0.0000	0.0526	0.0526	0.0000	0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0408	1.2239	0.2762	4.0700e-003	3.8843	8.7800e-003	3.8931	0.4096	8.3900e-003	0.4180		429.4414	429.4414	0.0199		429.9379
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.1159	2.2477	0.7752	8.0500e-003	10.3009	0.0124	10.3133	1.0784	0.0119	1.0902		845.0771	845.0771	0.0421		846.1294

3.4 Building Construction 1 - Concrete masonry curb and**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	3.5290	3.7626	6.5800e-003		0.2072	0.2072		0.2072	0.2072		623.0346	623.0346	0.0373		623.9664
Total	0.4232	3.5290	3.7626	6.5800e-003		0.2072	0.2072		0.2072	0.2072		623.0346	623.0346	0.0373		623.9664

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.0887	0.8455	0.5958	3.7700e-003	7.5068	4.5600e-003	7.5113	0.7825	4.3300e-003	0.7868		391.2095	391.2095	0.0184		391.6682

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1206	2.3461	4.0564	6.5800e-003		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	623.0346	623.0346	0.0373		623.9664
Total	0.1206	2.3461	4.0564	6.5800e-003		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	623.0346	623.0346	0.0373		623.9664

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0130	0.4953	0.0832	1.5300e-003	1.2118	1.4900e-003	1.2133	0.1270	1.4200e-003	0.1284		162.1992	162.1992	9.7500e-003		162.4430
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0655	0.0442	0.4436	1.2200e-003	5.3239	8.8000e-004	5.3248	0.5531	8.1000e-004	0.5539		121.6500	121.6500	3.6300e-003		121.7408
Total	0.0887	0.8455	0.5958	3.7700e-003	7.5068	4.5600e-003	7.5113	0.7825	4.3300e-003	0.7868		391.2095	391.2095	0.0184		391.6682

3.5 Building Construction 2 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876
Total	0.2894	3.1675	3.6697	5.1700e-003		0.1791	0.1791		0.1648	0.1648		500.9372	500.9372	0.1620		504.9876

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	4.8301	2.9800e-003	4.8331	0.5016	2.8500e-003	0.5044		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0689	1.3187	0.4572	4.6900e-003	8.4632	5.6100e-003	8.4688	0.8806	5.3500e-003	0.8859		492.5836	492.5836	0.0263		493.2408

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876
Total	0.1205	2.5168	3.9115	5.1700e-003		0.0526	0.0526		0.0526	0.0526	0.0000	500.9372	500.9372	0.1620		504.9876

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	4.8301	2.9800e-003	4.8331	0.5016	2.8500e-003	0.5044		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0689	1.3187	0.4572	4.6900e-003	8.4632	5.6100e-003	8.4688	0.8806	5.3500e-003	0.8859		492.5836	492.5836	0.0263		493.2408

MWD Representative O&M Activity C Erosion Control (O&M 11)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity C Erosion Control (O&M Activity Code No. 11).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

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Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	7.8000e-004	9.8000e-003	4.7800e-003	2.0000e-005	8.3400e-003	3.4000e-004	8.6800e-003	8.7000e-004	3.1000e-004	1.1900e-003	0.0000	1.3661	1.3661	3.0000e-004	0.0000	1.3737
Maximum	7.8000e-004	9.8000e-003	4.7800e-003	2.0000e-005	8.3400e-003	3.4000e-004	8.6800e-003	8.7000e-004	3.1000e-004	1.1900e-003	0.0000	1.3661	1.3661	3.0000e-004	0.0000	1.3737

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	2.7000e-004	4.4700e-003	6.5400e-003	2.0000e-005	8.1200e-003	2.0000e-005	8.1400e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	1.3661	1.3661	3.0000e-004	0.0000	1.3737
Maximum	2.7000e-004	4.4700e-003	6.5400e-003	2.0000e-005	8.1200e-003	2.0000e-005	8.1400e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	1.3661	1.3661	3.0000e-004	0.0000	1.3737

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	65.38	54.39	-36.82	0.00	2.64	94.12	6.22	2.30	93.55	26.89	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Clean-up	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Hanging Gate	Site Preparation	1/3/2020	1/3/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation/Clean-up	Graders	1	8.00	187	0.41
Site Preparation/Clean-up	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hanging Gate	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation/Clean-up	2	9.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Hanging Gate	0	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation/Clean-up - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7000e-004	0.0000	3.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9000e-004	8.4300e-003	4.0900e-003	1.0000e-005		3.4000e-004	3.4000e-004		3.1000e-004	3.1000e-004	0.0000	0.8559	0.8559	2.8000e-004	0.0000	0.8628
Total	6.9000e-004	8.4300e-003	4.0900e-003	1.0000e-005	3.7000e-004	3.4000e-004	7.1000e-004	4.0000e-005	3.1000e-004	3.5000e-004	0.0000	0.8559	0.8559	2.8000e-004	0.0000	0.8628

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.0100e-003	1.5000e-004	0.0000	2.2200e-003	0.0000	2.2200e-003	2.3000e-004	0.0000	2.4000e-004	0.0000	0.2989	0.2989	2.0000e-005	0.0000	0.2993
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	8.0000e-005	1.3500e-003	5.7000e-004	0.0000	6.7600e-003	0.0000	6.7600e-003	7.0000e-004	0.0000	7.2000e-004	0.0000	0.4820	0.4820	2.0000e-005	0.0000	0.4826

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4000e-004	0.0000	1.4000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-004	3.1000e-003	5.8600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.8559	0.8559	2.8000e-004	0.0000	0.8628
Total	1.8000e-004	3.1000e-003	5.8600e-003	1.0000e-005	1.4000e-004	2.0000e-005	1.6000e-004	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.8559	0.8559	2.8000e-004	0.0000	0.8628

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.0100e-003	1.5000e-004	0.0000	2.2200e-003	0.0000	2.2200e-003	2.3000e-004	0.0000	2.4000e-004	0.0000	0.2989	0.2989	2.0000e-005	0.0000	0.2993
Vendor	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.0986	0.0986	0.0000	0.0000	0.0987
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	8.0000e-005	1.3500e-003	5.7000e-004	0.0000	6.7600e-003	0.0000	6.7600e-003	7.0000e-004	0.0000	7.2000e-004	0.0000	0.4820	0.4820	2.0000e-005	0.0000	0.4826

3.3 Hanging Gate - 2020**Unmitigated Construction On-Site**

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282
Total	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282

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Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282
Total	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	1.2200e-003	0.0000	1.2200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0282	0.0282	0.0000	0.0000	0.0282

MWD Representative O&M Activity C Erosion Control (O&M 11)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity C Erosion Control (O&M Activity Code No. 11).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

MWD Representative O Activity C Erosion Control (O 11) - San Bernardino-South Coast County, Summer

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.7692	9.7510	4.7070	0.0149	7.7588	0.3411	8.0999	0.8112	0.3140	1.1252	0.0000	1,487.8586	1,487.8586	0.3308	0.0000	1,496.1285
Maximum	0.7692	9.7510	4.7070	0.0149	7.7588	0.3411	8.0999	0.8112	0.3140	1.1252	0.0000	1,487.8586	1,487.8586	0.3308	0.0000	1,496.1285

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2616	4.4192	6.4707	0.0149	7.5324	0.0217	7.5541	0.7868	0.0214	0.8082	0.0000	1,487.8586	1,487.8586	0.3308	0.0000	1,496.1285
Maximum	0.2616	4.4192	6.4707	0.0149	7.5324	0.0217	7.5541	0.7868	0.0214	0.8082	0.0000	1,487.8586	1,487.8586	0.3308	0.0000	1,496.1285

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	65.98	54.68	-37.47	0.00	2.92	93.65	6.74	3.01	93.19	28.18	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Clean-up	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Hanging Gate	Site Preparation	1/3/2020	1/3/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation/Clean-up	Graders	1	8.00	187	0.41
Site Preparation/Clean-up	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hanging Gate	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation/Clean-up	2	9.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Hanging Gate	0	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation/Clean-up - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3712	0.0000	0.3712	0.0401	0.0000	0.0401			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	0.3712	0.3353	0.7065	0.0401	0.3085	0.3486		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0838	1.3203	0.6128	5.2000e-003	7.3876	5.7800e-003	7.3934	0.7711	5.5100e-003	0.7766		544.3714	544.3714	0.0257		545.0128

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1448	0.0000	0.1448	0.0156	0.0000	0.0156			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	0.1448	0.0159	0.1606	0.0156	0.0159	0.0315	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0249	0.9854	0.1454	3.1400e-003	2.4236	2.9400e-003	2.4266	0.2539	2.8100e-003	0.2567		333.0832	333.0832	0.0180		333.5326
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0838	1.3203	0.6128	5.2000e-003	7.3876	5.7800e-003	7.3934	0.7711	5.5100e-003	0.7766		544.3714	544.3714	0.0257		545.0128

3.3 Hanging Gate - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

MWD Representative O Activity C Erosion Control (O 11) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

MWD Representative O&M Activity C Erosion Control (O&M 11)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity C Erosion Control (O&M Activity Code No. 11).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

MWD Representative O Activity C Erosion Control (O 11) - San Bernardino-South Coast County, Winter

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	2.00
tblGrading	AcresOfGrading	1.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	9.00
tblTripsAndVMT	WorkerTripNumber	0.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.7707	9.7604	4.6622	0.0147	7.7588	0.3412	8.1000	0.8112	0.3141	1.1253	0.0000	1,466.483 3	1,466.483 3	0.3323	0.0000	1,474.791 7
Maximum	0.7707	9.7604	4.6622	0.0147	7.7588	0.3412	8.1000	0.8112	0.3141	1.1253	0.0000	1,466.483 3	1,466.483 3	0.3323	0.0000	1,474.791 7

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.2631	4.4287	6.4259	0.0147	7.5324	0.0217	7.5541	0.7868	0.0214	0.8082	0.0000	1,466.483 3	1,466.483 3	0.3323	0.0000	1,474.791 7
Maximum	0.2631	4.4287	6.4259	0.0147	7.5324	0.0217	7.5541	0.7868	0.0214	0.8082	0.0000	1,466.483 3	1,466.483 3	0.3323	0.0000	1,474.791 7

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	65.86	54.63	-37.83	0.00	2.92	93.64	6.74	3.01	93.18	28.18	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Clean-up	Site Preparation	1/1/2020	1/2/2020	5	2	
2	Hanging Gate	Site Preparation	1/3/2020	1/3/2020	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation/Clean-up	Graders	1	8.00	187	0.41
Site Preparation/Clean-up	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Hanging Gate	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation/Clean-up	2	9.00	2.00	8.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Hanging Gate	0	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation/Clean-up - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3712	0.0000	0.3712	0.0401	0.0000	0.0401			0.0000			0.0000
Off-Road	0.6853	8.4307	4.0942	9.7400e-003		0.3353	0.3353		0.3085	0.3085		943.4872	943.4872	0.3051		951.1158
Total	0.6853	8.4307	4.0942	9.7400e-003	0.3712	0.3353	0.7065	0.0401	0.3085	0.3486		943.4872	943.4872	0.3051		951.1158

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0853	1.3297	0.5681	5.0000e-003	7.3876	5.8300e-003	7.3935	0.7711	5.5600e-003	0.7767		522.9961	522.9961	0.0272		523.6760

MWD Representative O Activity C Erosion Control (O 11) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1448	0.0000	0.1448	0.0156	0.0000	0.0156			0.0000			0.0000
Off-Road	0.1778	3.0990	5.8579	9.7400e-003		0.0159	0.0159		0.0159	0.0159	0.0000	943.4872	943.4872	0.3051		951.1158
Total	0.1778	3.0990	5.8579	9.7400e-003	0.1448	0.0159	0.1606	0.0156	0.0159	0.0315	0.0000	943.4872	943.4872	0.3051		951.1158

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0260	0.9906	0.1664	3.0600e-003	2.4236	2.9800e-003	2.4266	0.2539	2.8500e-003	0.2568		324.3983	324.3983	0.0195		324.8859
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0853	1.3297	0.5681	5.0000e-003	7.3876	5.8300e-003	7.3935	0.7711	5.5600e-003	0.7767		522.9961	522.9961	0.0272		523.6760

3.3 Hanging Gate - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

MWD Representative O Activity C Erosion Control (O 11) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

MWD Representative O&M Activity D Erosion Control (O&M 15)

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity D Erosion Control (O&M Activity Code No. 15).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Annual

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	100.00	8.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblGrading	AcresOfGrading	2.00	0.70
tblGrading	AcresOfGrading	2.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Annual

tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	5.00	6.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	5.8900e-003	0.0683	0.0354	1.0000e-004	0.0628	2.4900e-003	0.0653	6.5800e-003	2.2900e-003	8.8700e-003	0.0000	9.3703	9.3703	2.2500e-003	0.0000	9.4266
Maximum	5.8900e-003	0.0683	0.0354	1.0000e-004	0.0628	2.4900e-003	0.0653	6.5800e-003	2.2900e-003	8.8700e-003	0.0000	9.3703	9.3703	2.2500e-003	0.0000	9.4266

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	2.1000e-003	0.0290	0.0503	1.0000e-004	0.0624	1.7000e-004	0.0626	6.5300e-003	1.7000e-004	6.6900e-003	0.0000	9.3703	9.3703	2.2500e-003	0.0000	9.4266
Maximum	2.1000e-003	0.0290	0.0503	1.0000e-004	0.0624	1.7000e-004	0.0626	6.5300e-003	1.7000e-004	6.6900e-003	0.0000	9.3703	9.3703	2.2500e-003	0.0000	9.4266

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	64.35	57.49	-42.07	0.00	0.72	93.17	4.24	0.76	92.58	24.58	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2020	1/4/2020	5	4	
2	Grading	Grading	1/5/2020	1/10/2020	5	4	
3	Building Construction 1 - Install riprap	Building Construction	1/11/2020	1/22/2020	5	8	
4	Building Construction 2 - Concrete	Building Construction	1/12/2020	1/17/2020	5	4	
5	Building Construction 3 - Finish work	Building Construction	1/18/2020	1/23/2020	5	4	

Acres of Grading (Site Preparation Phase): 0.7

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Install riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction 3 - Finish work	Graders	1	8.00	187	0.41

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Install floor	1	9.00	6.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Concrete pour	0	18.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3 - Finish work	1	6.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.8000e-004	0.0000	2.8000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	9.4900e-003	2.7200e-003	1.0000e-005		3.0000e-004	3.0000e-004		2.8000e-004	2.8000e-004	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817
Total	7.1000e-004	9.4900e-003	2.7200e-003	1.0000e-005	2.8000e-004	3.0000e-004	5.8000e-004	3.0000e-005	2.8000e-004	3.1000e-004	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1000e-004	0.0000	1.1000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6000e-004	2.6200e-003	5.2700e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817
Total	1.6000e-004	2.6200e-003	5.2700e-003	1.0000e-005	1.1000e-004	2.0000e-005	1.3000e-004	1.0000e-005	2.0000e-005	3.0000e-005	0.0000	0.8746	0.8746	2.8000e-004	0.0000	0.8817

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847
Total	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	3.6500e-003	0.0000	3.6500e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0846	0.0846	0.0000	0.0000	0.0847

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6500e-003	0.0321	0.0143	4.0000e-005		1.2000e-003	1.2000e-003		1.1100e-003	1.1100e-003	0.0000	3.5123	3.5123	1.1400e-003	0.0000	3.5407
Total	2.6500e-003	0.0321	0.0143	4.0000e-005	4.6000e-004	1.2000e-003	1.6600e-003	5.0000e-005	1.1100e-003	1.1600e-003	0.0000	3.5123	3.5123	1.1400e-003	0.0000	3.5407

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411
Total	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8000e-004	0.0000	1.8000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0000e-004	0.0119	0.0230	4.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	3.5123	3.5123	1.1400e-003	0.0000	3.5407
Total	7.0000e-004	0.0119	0.0230	4.0000e-005	1.8000e-004	7.0000e-005	2.5000e-004	2.0000e-005	7.0000e-005	9.0000e-005	0.0000	3.5123	3.5123	1.1400e-003	0.0000	3.5407

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411
Total	7.0000e-005	6.0000e-005	5.8000e-004	0.0000	6.0800e-003	0.0000	6.0800e-003	6.3000e-004	0.0000	6.3000e-004	0.0000	0.1410	0.1410	0.0000	0.0000	0.1411

3.4 Building Construction 1 - Install riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.4000e-004	8.4200e-003	9.1200e-003	1.0000e-005		5.3000e-004	5.3000e-004		4.9000e-004	4.9000e-004	0.0000	1.0914	1.0914	3.5000e-004	0.0000	1.1002
Total	8.4000e-004	8.4200e-003	9.1200e-003	1.0000e-005		5.3000e-004	5.3000e-004		4.9000e-004	4.9000e-004	0.0000	1.0914	1.0914	3.5000e-004	0.0000	1.1002

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7400e-003	7.9000e-004	1.0000e-005	0.0107	3.0000e-005	0.0107	1.1300e-003	3.0000e-005	1.1500e-003	0.0000	1.1828	1.1828	5.0000e-005	0.0000	1.1841
Worker	1.8000e-004	1.4000e-004	1.4000e-003	0.0000	0.0146	0.0000	0.0146	1.5200e-003	0.0000	1.5200e-003	0.0000	0.3383	0.3383	1.0000e-005	0.0000	0.3386
Total	3.0000e-004	3.8800e-003	2.1900e-003	1.0000e-005	0.0253	3.0000e-005	0.0253	2.6500e-003	3.0000e-005	2.6700e-003	0.0000	1.5211	1.5211	6.0000e-005	0.0000	1.5227

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8000e-004	5.4200e-003	9.3700e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.0914	1.0914	3.5000e-004	0.0000	1.1002
Total	2.8000e-004	5.4200e-003	9.3700e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.0914	1.0914	3.5000e-004	0.0000	1.1002

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7400e-003	7.9000e-004	1.0000e-005	0.0107	3.0000e-005	0.0107	1.1300e-003	3.0000e-005	1.1500e-003	0.0000	1.1828	1.1828	5.0000e-005	0.0000	1.1841
Worker	1.8000e-004	1.4000e-004	1.4000e-003	0.0000	0.0146	0.0000	0.0146	1.5200e-003	0.0000	1.5200e-003	0.0000	0.3383	0.3383	1.0000e-005	0.0000	0.3386
Total	3.0000e-004	3.8800e-003	2.1900e-003	1.0000e-005	0.0253	3.0000e-005	0.0253	2.6500e-003	3.0000e-005	2.6700e-003	0.0000	1.5211	1.5211	6.0000e-005	0.0000	1.5227

3.5 Building Construction 2 - Concrete grout - 2020**Unmitigated Construction On-Site**

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	7.8000e-004	1.7000e-004	0.0000	2.2200e-003	1.0000e-005	2.2300e-003	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.2464	0.2464	1.0000e-005	0.0000	0.2467
Worker	2.2000e-004	1.7000e-004	1.7500e-003	0.0000	0.0183	0.0000	0.0183	1.9000e-003	0.0000	1.9000e-003	0.0000	0.4229	0.4229	1.0000e-005	0.0000	0.4232
Total	2.4000e-004	9.5000e-004	1.9200e-003	0.0000	0.0205	1.0000e-005	0.0205	2.1400e-003	1.0000e-005	2.1400e-003	0.0000	0.6693	0.6693	2.0000e-005	0.0000	0.6699

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	7.8000e-004	1.7000e-004	0.0000	2.2200e-003	1.0000e-005	2.2300e-003	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.2464	0.2464	1.0000e-005	0.0000	0.2467
Worker	2.2000e-004	1.7000e-004	1.7500e-003	0.0000	0.0183	0.0000	0.0183	1.9000e-003	0.0000	1.9000e-003	0.0000	0.4229	0.4229	1.0000e-005	0.0000	0.4232
Total	2.4000e-004	9.5000e-004	1.9200e-003	0.0000	0.0205	1.0000e-005	0.0205	2.1400e-003	1.0000e-005	2.1400e-003	0.0000	0.6693	0.6693	2.0000e-005	0.0000	0.6699

3.6 Building Construction 3 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.5000e-004	0.0127	3.6300e-003	1.0000e-005		4.0000e-004	4.0000e-004		3.7000e-004	3.7000e-004	0.0000	1.1661	1.1661	3.8000e-004	0.0000	1.1756
Total	9.5000e-004	0.0127	3.6300e-003	1.0000e-005		4.0000e-004	4.0000e-004		3.7000e-004	3.7000e-004	0.0000	1.1661	1.1661	3.8000e-004	0.0000	1.1756

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.2000e-004	1.3000e-004	0.0000	1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.1971	0.1971	1.0000e-005	0.0000	0.1973
Worker	6.0000e-005	5.0000e-005	4.7000e-004	0.0000	4.8700e-003	0.0000	4.8700e-003	5.1000e-004	0.0000	5.1000e-004	0.0000	0.1128	0.1128	0.0000	0.0000	0.1129
Total	8.0000e-005	6.7000e-004	6.0000e-004	0.0000	6.6500e-003	0.0000	6.6500e-003	7.0000e-004	0.0000	7.0000e-004	0.0000	0.3099	0.3099	1.0000e-005	0.0000	0.3102

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2000e-004	3.4900e-003	7.0300e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.1661	1.1661	3.8000e-004	0.0000	1.1756
Total	2.2000e-004	3.4900e-003	7.0300e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.1661	1.1661	3.8000e-004	0.0000	1.1756

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.2000e-004	1.3000e-004	0.0000	1.7800e-003	0.0000	1.7800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.1971	0.1971	1.0000e-005	0.0000	0.1973
Worker	6.0000e-005	5.0000e-005	4.7000e-004	0.0000	4.8700e-003	0.0000	4.8700e-003	5.1000e-004	0.0000	5.1000e-004	0.0000	0.1128	0.1128	0.0000	0.0000	0.1129
Total	8.0000e-005	6.7000e-004	6.0000e-004	0.0000	6.6500e-003	0.0000	6.6500e-003	7.0000e-004	0.0000	7.0000e-004	0.0000	0.3099	0.3099	1.0000e-005	0.0000	0.3102

MWD Representative O&M Activity D Erosion Control (O&M 15)

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity D Erosion Control (O&M Activity Code No. 15).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Summer

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	100.00	8.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblGrading	AcresOfGrading	2.00	0.70
tblGrading	AcresOfGrading	2.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

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tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	5.00	6.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.0922	12.8613	5.9994	0.0167	15.8631	0.4822	16.0069	1.6541	0.4436	1.7868	0.0000	1,616.452 2	1,616.452 2	0.5029	0.0000	1,629.025 5
Maximum	1.0922	12.8613	5.9994	0.0167	15.8631	0.4822	16.0069	1.6541	0.4436	1.7868	0.0000	1,616.452 2	1,616.452 2	0.5029	0.0000	1,629.025 5

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3137	4.7827	9.4789	0.0167	15.8631	0.0266	15.8788	1.6541	0.0266	1.6694	0.0000	1,616.452 2	1,616.452 2	0.5029	0.0000	1,629.025 5
Maximum	0.3137	4.7827	9.4789	0.0167	15.8631	0.0266	15.8788	1.6541	0.0266	1.6694	0.0000	1,616.452 2	1,616.452 2	0.5029	0.0000	1,629.025 5

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	71.28	62.81	-58.00	0.00	0.00	94.48	0.80	0.00	94.00	6.57	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2020	1/4/2020	5	4	
2	Grading	Grading	1/5/2020	1/10/2020	5	4	
3	Building Construction 1 - Install riprap	Building Construction	1/11/2020	1/22/2020	5	8	
4	Building Construction 2 - Concrete	Building Construction	1/12/2020	1/17/2020	5	4	
5	Building Construction 3 - Finish work	Building Construction	1/18/2020	1/23/2020	5	4	

Acres of Grading (Site Preparation Phase): 0.7

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Install riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction 3 - Finish work	Graders	1	8.00	187	0.41

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1. Install rim on	1	9.00	6.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2. Concrete about	0	18.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3. Finish work	1	6.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1856	0.0000	0.1856	0.0200	0.0000	0.0200			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.1856	0.2022	0.3878	0.0200	0.1861	0.2061		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0724	0.0000	0.0724	7.8200e-003	0.0000	7.8200e-003			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0724	0.0108	0.0832	7.8200e-003	0.0108	0.0186	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1856	0.0000	0.1856	0.0200	0.0000	0.0200			0.0000			0.0000
Off-Road	1.0594	12.8403	5.7296	0.0160		0.4817	0.4817		0.4432	0.4432		1,548.647 1	1,548.647 1	0.5009		1,561.168 7
Total	1.0594	12.8403	5.7296	0.0160	0.1856	0.4817	0.6673	0.0200	0.4432	0.4632		1,548.647 1	1,548.647 1	0.5009		1,561.168 7

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0724	0.0000	0.0724	7.8200e-003	0.0000	7.8200e-003			0.0000			0.0000
Off-Road	0.2809	4.7617	9.2090	0.0160		0.0262	0.0262		0.0262	0.0262	0.0000	1,548.6471	1,548.6471	0.5009		1,561.1687
Total	0.2809	4.7617	9.2090	0.0160	0.0724	0.0262	0.0986	7.8200e-003	0.0262	0.0340	0.0000	1,548.6471	1,548.6471	0.5009		1,561.1687

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568

3.4 Building Construction 1 - Install riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0787	0.9417	0.5928	4.1400e-003	6.9062	7.2000e-003	6.9134	0.7221	6.8700e-003	0.7289		430.4494	430.4494	0.0168		430.8701

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0296	0.9102	0.1881	3.1200e-003	2.9133	6.5400e-003	2.9198	0.3072	6.2600e-003	0.3135		328.7418	328.7418	0.0137		329.0849
Worker	0.0491	0.0315	0.4048	1.0200e-003	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		101.7076	101.7076	3.1000e-003		101.7852
Total	0.0787	0.9417	0.5928	4.1400e-003	6.9062	7.2000e-003	6.9134	0.7221	6.8700e-003	0.7289		430.4494	430.4494	0.0168		430.8701

3.5 Building Construction 2 - Concrete grout - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0982	0.0631	0.8095	2.0400e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		203.4151	203.4151	6.2100e-003		203.5704
Total	0.1081	0.3664	0.8722	3.0800e-003	8.9569	3.5000e-003	8.9604	0.9321	3.3000e-003	0.9354		312.9957	312.9957	0.0108		313.2654

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0982	0.0631	0.8095	2.0400e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		203.4151	203.4151	6.2100e-003		203.5704
Total	0.1081	0.3664	0.8722	3.0800e-003	8.9569	3.5000e-003	8.9604	0.9321	3.3000e-003	0.9354		312.9957	312.9957	0.0108		313.2654

3.6 Building Construction 3 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0426	0.3244	0.3325	1.7200e-003	3.6330	2.6200e-003	3.6357	0.3790	2.4900e-003	0.3815		177.3857	177.3857	6.6500e-003		177.5518

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Summer

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.8500e-003	0.3034	0.0627	1.0400e-003	0.9711	2.1800e-003	0.9733	0.1024	2.0900e-003	0.1045		109.5806	109.5806	4.5800e-003		109.6950
Worker	0.0328	0.0210	0.2698	6.8000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		67.8051	67.8051	2.0700e-003		67.8568
Total	0.0426	0.3244	0.3325	1.7200e-003	3.6330	2.6200e-003	3.6357	0.3790	2.4900e-003	0.3815		177.3857	177.3857	6.6500e-003		177.5518

MWD Representative O&M Activity D Erosion Control (O&M 15)

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.70	30,492.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	7			Operational Year	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Representative O&M Activity D Erosion Control (O&M Activity Code No. 15).

Land Use - No specific project selected. Assumed an average work area of 0.70 acres.

Construction Phase - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

Off-road Equipment - See 3.0 Construction Detail.

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

Trips and VMT - See 3.0 Construction Detail.

On-road Fugitive Dust - 98% Paved Worker, Vendor, and Hauling.

Grading - Assumed acres to be disturbed is equal to the average total work area estimate.

Vehicle Trips - No operational emissions estimated.

Construction Off-road Equipment Mitigation - Tier 4 Interim. Water Exposed Area, Frequency: 3 times per day.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	1.00	4.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	100.00	8.00
tblConstructionPhase	NumDays	100.00	4.00
tblConstructionPhase	NumDays	100.00	4.00
tblGrading	AcresOfGrading	2.00	0.70
tblGrading	AcresOfGrading	2.00	0.70
tblLandUse	LandUseSquareFeet	0.00	30,492.00
tblLandUse	LotAcreage	0.00	0.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripLength	6.90	16.00
tblTripsAndVMT	VendorTripNumber	5.00	6.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	VendorTripNumber	5.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	9.00
tblTripsAndVMT	WorkerTripNumber	13.00	18.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.0922	12.8624	5.9514	0.0166	15.8631	0.4822	16.0070	1.6541	0.4436	1.7868	0.0000	1,609.472 1	1,609.472 1	0.5027	0.0000	1,622.039 1
Maximum	1.0922	12.8624	5.9514	0.0166	15.8631	0.4822	16.0070	1.6541	0.4436	1.7868	0.0000	1,609.472 1	1,609.472 1	0.5027	0.0000	1,622.039 1

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	0.3137	4.7838	9.4308	0.0166	15.8631	0.0266	15.8789	1.6541	0.0266	1.6694	0.0000	1,609.472 1	1,609.472 1	0.5027	0.0000	1,622.039 1
Maximum	0.3137	4.7838	9.4308	0.0166	15.8631	0.0266	15.8789	1.6541	0.0266	1.6694	0.0000	1,609.472 1	1,609.472 1	0.5027	0.0000	1,622.039 1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	71.28	62.81	-58.46	0.00	0.00	94.48	0.80	0.00	94.00	6.57	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2020	1/4/2020	5	4	
2	Grading	Grading	1/5/2020	1/10/2020	5	4	
3	Building Construction 1 - Install riprap	Building Construction	1/11/2020	1/22/2020	5	8	
4	Building Construction 2 - Concrete	Building Construction	1/12/2020	1/17/2020	5	4	
5	Building Construction 3 - Finish work	Building Construction	1/18/2020	1/23/2020	5	4	

Acres of Grading (Site Preparation Phase): 0.7

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1 - Install riprap	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2 - Concrete	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction 3 - Finish work	Graders	1	8.00	187	0.41

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	6.00	0.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1 - Install floor	1	9.00	6.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2 - Concrete pour	0	18.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3 - Finish work	1	6.00	2.00	0.00	14.70	16.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1856	0.0000	0.1856	0.0200	0.0000	0.0200			0.0000			0.0000
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003	0.1856	0.2022	0.3878	0.0200	0.1861	0.2061		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0724	0.0000	0.0724	7.8200e-003	0.0000	7.8200e-003			0.0000			0.0000
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003	0.0724	0.0108	0.0832	7.8200e-003	0.0108	0.0186	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1856	0.0000	0.1856	0.0200	0.0000	0.0200			0.0000			0.0000
Off-Road	1.0594	12.8403	5.7296	0.0160		0.4817	0.4817		0.4432	0.4432		1,548.647 1	1,548.647 1	0.5009		1,561.168 7
Total	1.0594	12.8403	5.7296	0.0160	0.1856	0.4817	0.6673	0.0200	0.4432	0.4632		1,548.647 1	1,548.647 1	0.5009		1,561.168 7

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0724	0.0000	0.0724	7.8200e-003	0.0000	7.8200e-003			0.0000			0.0000
Off-Road	0.2809	4.7617	9.2090	0.0160		0.0262	0.0262		0.0262	0.0262	0.0000	1,548.6471	1,548.6471	0.5009		1,561.1687
Total	0.2809	4.7617	9.2090	0.0160	0.0724	0.0262	0.0986	7.8200e-003	0.0262	0.0340	0.0000	1,548.6471	1,548.6471	0.5009		1,561.1687

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704

3.4 Building Construction 1 - Install riprap - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004
Total	0.2095	2.1052	2.2797	3.1100e-003		0.1331	0.1331		0.1225	0.1225		300.7685	300.7685	0.0973		303.2004

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0798	0.9511	0.5398	3.9800e-003	6.9062	7.2400e-003	6.9134	0.7221	6.9100e-003	0.7290		413.3185	413.3185	0.0176		413.7590

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004
Total	0.0696	1.3546	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.7685	300.7685	0.0973		303.2004

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0306	0.9179	0.2072	3.0600e-003	2.9133	6.5800e-003	2.9198	0.3072	6.3000e-003	0.3135		322.0810	322.0810	0.0149		322.4534
Worker	0.0492	0.0332	0.3327	9.2000e-004	3.9929	6.6000e-004	3.9936	0.4148	6.1000e-004	0.4154		91.2375	91.2375	2.7200e-003		91.3056
Total	0.0798	0.9511	0.5398	3.9800e-003	6.9062	7.2400e-003	6.9134	0.7221	6.9100e-003	0.7290		413.3185	413.3185	0.0176		413.7590

3.5 Building Construction 2 - Concrete grout - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0983	0.0663	0.6653	1.8300e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		182.4750	182.4750	5.4500e-003		182.6112
Total	0.1085	0.3723	0.7344	2.8500e-003	8.9569	3.5100e-003	8.9604	0.9321	3.3100e-003	0.9354		289.8353	289.8353	0.0104		290.0956

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0983	0.0663	0.6653	1.8300e-003	7.9858	1.3200e-003	7.9871	0.8297	1.2100e-003	0.8309		182.4750	182.4750	5.4500e-003		182.6112
Total	0.1085	0.3723	0.7344	2.8500e-003	8.9569	3.5100e-003	8.9604	0.9321	3.3100e-003	0.9354		289.8353	289.8353	0.0104		290.0956

3.6 Building Construction 3 - Finish work - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154
Total	0.4758	6.3256	1.8145	6.6300e-003		0.2022	0.2022		0.1861	0.1861		642.7187	642.7187	0.2079		647.9154

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0430	0.3281	0.2908	1.6300e-003	3.6330	2.6300e-003	3.6357	0.3790	2.5000e-003	0.3815		168.1853	168.1853	6.7900e-003		168.3549

MWD Representative O Activity D Erosion Control (O 15) - San Bernardino-South Coast County, Winter

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154
Total	0.1082	1.7444	3.5158	6.6300e-003		0.0108	0.0108		0.0108	0.0108	0.0000	642.7187	642.7187	0.2079		647.9154

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0102	0.3060	0.0691	1.0200e-003	0.9711	2.1900e-003	0.9733	0.1024	2.1000e-003	0.1045		107.3603	107.3603	4.9700e-003		107.4845
Worker	0.0328	0.0221	0.2218	6.1000e-004	2.6619	4.4000e-004	2.6624	0.2766	4.0000e-004	0.2770		60.8250	60.8250	1.8200e-003		60.8704
Total	0.0430	0.3281	0.2908	1.6300e-003	3.6330	2.6300e-003	3.6357	0.3790	2.5000e-003	0.3815		168.1853	168.1853	6.7900e-003		168.3549

Appendix F

Biological Resources Reports

Appendix F-1

Vegetation Mapping Report

**VEGETATION COMMUNITY AND
LAND COVER MAPPING REPORT**
for the
**Western San Bernardino County Operating Region
Distribution System Infrastructure Protection Program**

Prepared for:

**The Metropolitan Water District
of Southern California**

PO Box 54153

Los Angeles, California 90054-0153

Contact: Jennifer Harriger

Prepared by:

DUDEK

31878 Camino Capistrano, Suite 200

San Juan Capistrano, California 92675

Contact: Ryan Henry

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Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

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Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

1 INTRODUCTION

The Metropolitan Water District of Southern California (Metropolitan) is in the process of developing a Distribution System Infrastructure Protection Program (DSIPP, or proposed program) for their facilities in the Western San Bernardino County Operating Region. Preparation of a program environmental impact report (PEIR) in compliance with the California Environmental Quality Act (CEQA) for the DSIPP is currently underway and will address future operations and maintenance (O&M) activities that will include minor repairs to existing infrastructure and construction of Capital Investment Plan (CIP) infrastructure or activities associated with O&M activities. Additionally, the PEIR will support regional permit approvals for potential impacts to jurisdictional waters and wetlands associated with implementation of the DSIPP, through the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife (CDFW).¹

The Western San Bernardino County Operating Region comprises Metropolitan's conveyance and distribution system pipelines and appurtenant structures, right-of-way (ROW), and patrol roads within western portion of San Bernardino County, California (see Figure 1). The Western San Bernardino County Operating Region includes 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and vacuum valves. The pipelines included in this phase of the proposed program include the Inland Feeder, Upper Feeder, Rialto Pipeline, Etiwanda Pipeline, and Yorba Linda Feeder. Only the portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region, with the exception of a section of the Upper Feeder, from Station 680+00 to Station 728+50. This section of the Upper Feeder is in Riverside County and is included in the Western San Bernardino County Operating Region. Figure 2 illustrates the pipeline locations within the Western San Bernardino County Operating Region. For purposes of the CEQA analysis and this vegetation community and land cover mapping report, an approximately 9,512-acre study area was established that included a 500-foot buffer to the outside of all O&M work areas, CIP locations and footprints, facilities and structures, and patrol roads (Figure 3).

This report presents the methodology and results of vegetation community and land cover mapping conducted by Dudek between September and December 2015. Maps illustrating the vegetation communities and land cover types throughout the study area are included in Appendix A. In addition to this report's text and accompanying maps, a program CD-ROM has

¹ The California Department of Fish and Game (CDFG) was officially renamed the California Department of Fish and Wildlife (CDFW) effective January 2013. In this document, CDFG is cited for any data, documents, or coordination prior to 2013 and CDFW is cited for any data, documents, or coordination since January 1, 2013.

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

been created that contains GIS data (shapefiles) developed using Esri's ArcGIS software, associated metadata, report text, and maps (included as Appendix B to this report).

1.1 Statement of Purpose

This mapping effort is intended to support the analysis of both direct and indirect impacts to vegetation communities and land covers that may result from implementing the DSIPP for the Western San Bernardino County Operating Region. The specific goals of the mapping effort are as follows:

1. Provide Metropolitan with a baseline vegetation community and land cover map from which O&M activity planning and management decisions can be made.
2. Create a vegetation community and land cover map to serve as a baseline for a CEQA-level analysis of impacts at the program level or project level, where required.
3. Support future O&M management decisions.
4. Help determine future needs for site-specific and/or program-related vegetation community and land cover mapping.

This mapping effort is intended to provide a complete assessment of the vegetation communities and land covers throughout the study area. Details regarding the approach to addressing vegetation communities and land covers for the Western San Bernardino County Operating Region PEIR are provided in Section 1.2.



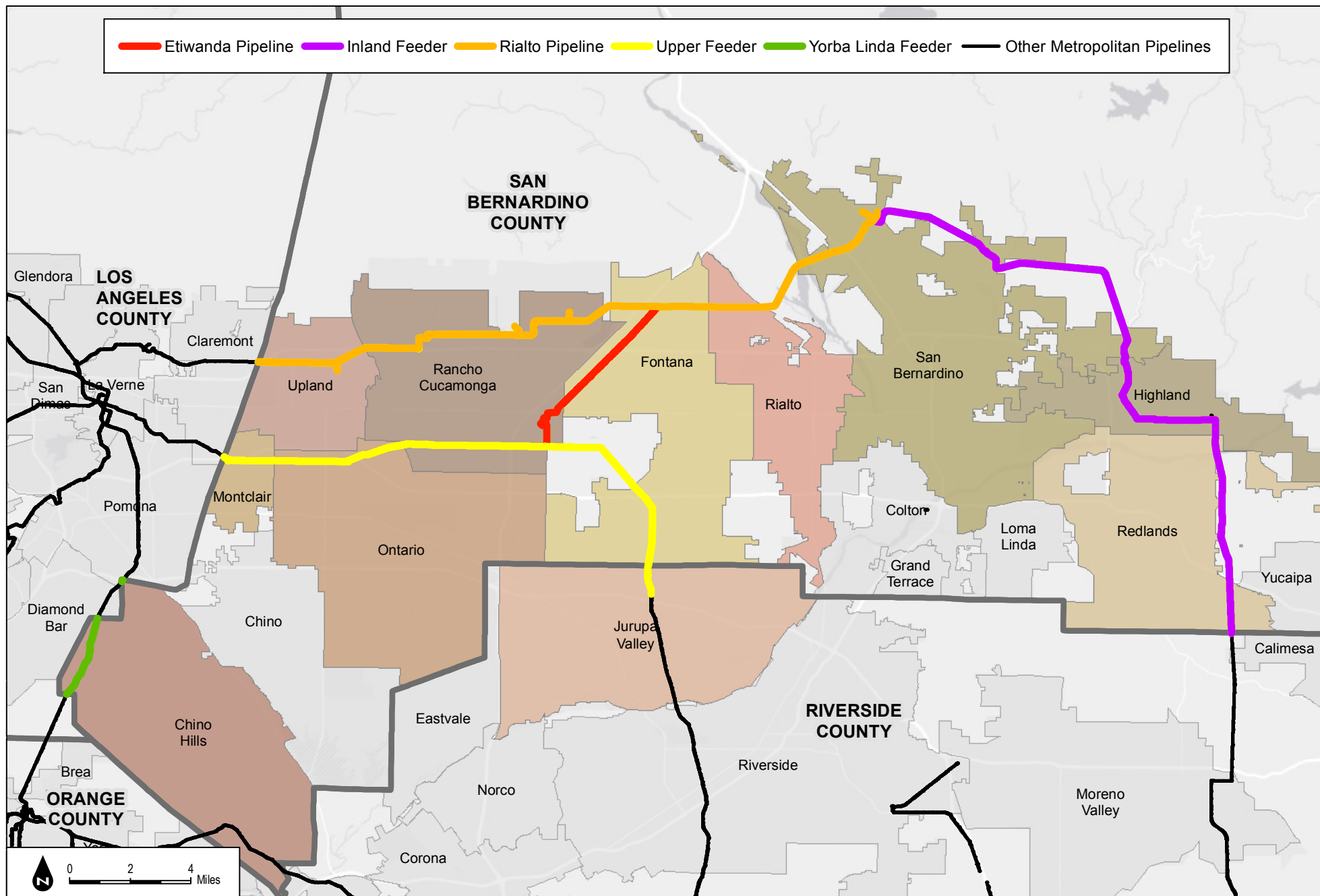
— Western San Bernardino County Operating Region
 — Other Metropolitan Pipelines

SOURCE: ArcGIS Online Basemap

FIGURE 1
 Regional Location Map

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

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SOURCE: ArcGIS Online Basemap

FIGURE 2
Western San Bernardino County Operating Region Pipeline Locations

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for the Western San Bernardino County DSIPP**

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Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

1.2 Approach

Dudek's approach to mapping the vegetation communities and land covers within the study area is based on the following objectives:

1. Identify components that will be evaluated at the CEQA program level and the project level, including Metropolitan patrol roads, facilities and structures, CIP locations and footprints, and ROW.
2. Identify existing conservation planning and mapping efforts within the ROW and study area.
3. Use existing vegetation community and land cover mapping data to create a baseline map in GIS for the study area.
4. Rely on photographic interpretation of aerial imagery to rapidly assess vegetation community and land cover areas to create an updated, comprehensive map in GIS for the study area.
5. Conduct limited field checks to verify photographic interpretations.

A critical first step in Dudek's approach was to develop a complete and comprehensive baseline of digital information within a program-specific GIS database. Starting with the identification of the program components, Dudek GIS specialists created a dataset of all roads, ROW limits, facilities, structures, construction footprints, and the study area boundary. Previous large-scale vegetation mapping efforts and current aerial photography were also identified as key datasets for the GIS database. Dudek used the CDFW's Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (CDFG 2009) and List of Vegetation Alliances and Associations, also referred to as the Natural Communities List (CDFG 2010), to unify the previous mapping classifications and create an updated, comprehensive resource to map the entire study area.

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

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Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

2 METHODS

Vegetation community and land cover mapping was accomplished via a combination of aerial photograph interpretation and field checks for accuracy. True-color aerial photography flown in 2015 at a 1-inch pixel resolution was obtained for the region by Dudek in August 2015. Other geographic data compiled for the baseline included GIS files located within Dudek's in-house database. Dudek biologists Britney Strittmater, Erin Bergman, Johanna Page, and Mikael Romich used these resources to conduct the vegetation community and land cover mapping. Dudek GIS specialist Spenser Lucarelli compiled the information into a program-specific GIS coverage and provided figures using ArcGIS software. Dudek program manager Ryan Henry conducted in-depth quality assurance/quality control of the vegetation community and land cover extents and GIS dataset attributions, as well as preparing the mapping results.

Dudek's mapping effort (mapping) was conducted in five phases: (1) data and literature review, (2) GIS database development, (3) aerial photograph review, (4) field mapping, and (5) data interpretation and analysis.

2.1 Data and Literature Review

Dudek conducted an extensive data and literature review of available vegetation community mapping resources throughout San Bernardino County, as well as portions of Riverside and San Diego counties. Dudek reviewed available relevant data on vegetation communities and land covers to determine which resources were applicable and of appropriate quality for use during the current mapping effort. A summary of the previous mapping efforts and the vegetation community/land cover classification system developed for this program is provided in this section.

2.1.1 Previous Mapping Efforts

Dudek identified three key sources of existing vegetation community and land cover data that included various portions within or adjacent to the study area:

- Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg; USFS 2013)
- Southern California Association of Governments Zoning/Land Use for San Bernardino County (SCAG 2011)
- Vegetation Alliances of Western Riverside County (Klein and Evens 2006)

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

- Vegetation Community Mapping for the County of San Bernardino Flood Control District (Dudek 2015)
- Vegetation and Jurisdictional Waters Mapping for the Western San Bernardino County DSIPP (AECOM 2015)

These previous mapping efforts were conducted at different scales, covered different areas, and used different classification standards. Table 1 summarizes the previous mapping efforts that were used as a baseline for this analysis (collectively referred to as “previous mapping efforts”). Brief descriptions of each mapping effort are provided following the table.

Table 1
Previous Vegetation Community and Land Cover Mapping Efforts

Mapping Effort	Classification System Used	Area/County
Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg; USFS 2013)	CalVeg: A Classification of California Vegetation (USFS 1981); crosswalks to National Vegetation Classification System (Grossman et al. 1998)	San Bernardino County (also covers Orange and Riverside counties; CalVeg Zone 7 in U.S. Forest Service (USFS) Region 5)
Southern California Association of Governments (SCAG) Zoning/Land Use for San Bernardino County (SCAG 2011)	Modified Anderson Land Use Classification (AIS 1990)	San Bernardino County
Vegetation Alliances of Western Riverside County (Klein and Evens 2006)	National Vegetation Classification System (Grossman et al. 1998)	Riverside County
Vegetation Community Mapping for the County of San Bernardino Flood Control District (Dudek 2015)	List of Vegetation Alliances and Associations (CDFG 2010)	100-foot buffer around San Bernardino County Flood Control facility maintenance areas within San Bernardino County
Vegetation and jurisdictional waters mapping for the Western San Bernardino County DSIPP (AECOM 2015)	Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986)	500-foot buffer around CIP and single-occurrence O&M activities throughout the Western San Bernardino County Operating Region

Classification and Assessment with Landsat of Visible Ecological Groupings (USFS 2013)

The U.S. Forest Service (USFS), Region 5 Ecology Group, initiated the Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg) in 1978 as a means to group existing vegetation stands (versus potential natural vegetation) using a statewide, standard classification and naming convention. The standards and procedures were established at the national and regional levels. Originally, color-infrared satellite imagery and field verification were used to identify “formation” categories (forest, woodland, chaparral, shrubs and herbaceous, and non-vegetated units) based on distinctions calculated among canopy reflectance

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values used in the Landsat satellite. The CalVeg classification system conforms to the upper levels of the National Vegetation Classification System hierarchy (Grossman et al. 1998).

Southern California Association of Governments Zoning/Land Use (SCAG 2011)

The Southern California Association of Governments (SCAG) maintains countywide datasets of zoning and land use information to support regional planning and analysis. The purpose of the dataset is to aid in forecasting land supply and demand for the SCAG region. The land use definitions and descriptions were developed by Aerial Information Systems Inc. using a Modified Anderson Land Use/Land Cover (LU/LC) Classification system (Anderson et al. 1976). This original classification uses a hierarchical system that consists of 9 land cover categories (urban or built-up, agricultural, range, forest, water, wetland, barren, tundra, and perennial snow and ice), and 37 subcategories (which include varieties of each category, such as cropland and pasture, orchards, groves, vineyards, and nurseries). Aerial Information Systems Inc. created the original LU/LC data layer in 1990 and has performed region-wide updates to the LU dataset including Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties in 1993, 2000, 2005, 2008, and 2011. All of the datasets were completed using Esri GIS software and included a combination of interactive photo-interpretation techniques and field survey verifications. The database contains approximately 105 land use categories with a minimum mapping unit of 2 acres.

Vegetation Alliances of Western Riverside County (Klein and Evens 2006)

Klein and Evens created this vegetation mapping effort in 2005 (updated in 2006) for the California Native Plant Society and Aerial Information Systems Inc. under contract to CDFG in order to produce an alliance-level classification and map of 1.26 million acres in the western portion of Riverside County. The goal of the mapping effort was to provide data for future management of the plant communities in the region and help establish a monitoring basis for the vegetation and habitats within the Western Riverside County Multi-Species Habitat Conservation Plan area. Vegetation mapping was assessed quantitatively through field surveys, data analysis, and a floristically based classification system based on the National Vegetation Classification System (Grossman et al. 1998) to the alliance level (and association level if possible).

Vegetation Community Mapping for the County of San Bernardino Flood Control District (Dudek 2015)

Dudek conducted vegetation community and land cover mapping from March 2013 through April 2015 to support preparation of an environmental impact report (EIR) for long-term programmatic permits for the routine maintenance of flood control and transportation facilities

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for the County of San Bernardino Flood Control District. The study area that was evaluated encompassed approximately 5,000 acres and included the outer extent of all maintenance activities, plus a 100-foot buffer. Vegetation community and land cover mapping was accomplished via a combination of aerial photograph interpretation (flown in 2009) and field mapping using the Natural Communities List (CDFG 2010). Mapping was conducted at the alliance level and association level where feasible. The information was compiled into a GIS coverage and maps were prepared for data interpretation and analysis.

Vegetation and Jurisdictional Waters Mapping for the Western San Bernardino County DSIPP (AECOM 2015)

AECOM completed a formal jurisdictional delineation of wetlands and waters, as well as limited vegetation community and land cover mapping, from 2014 through 2015 for the Western San Bernardino County DSIPP. A study area that encompassed all CIP and single-occurrence O&M work areas, including a 100-foot buffer for jurisdictional waters/wetlands and a 500-foot buffer for vegetation communities/land covers, was evaluated. Resource mapping was conducted through field surveys and aerial photograph interpretation, following the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986). The vegetation and jurisdictional waters maps were prepared to support regional permit approvals for potential impacts to jurisdictional waters and wetlands through the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and CDFW.

Other Data Sources

The following additional data sources were compiled into the program-specific GIS database: aerial photography, U.S. Geological Survey topographic quadrangles, base topography, local habitat conservation plan boundaries, jurisdictional and land cover boundaries (city, county, and parks), existing facility data and ownership/ROW boundaries, and Metropolitan maintenance yard locations (for use in determining the routes/intersections that would be used by maintenance vehicles).

2.1.2 Program Vegetation Community and Land Cover Classification System

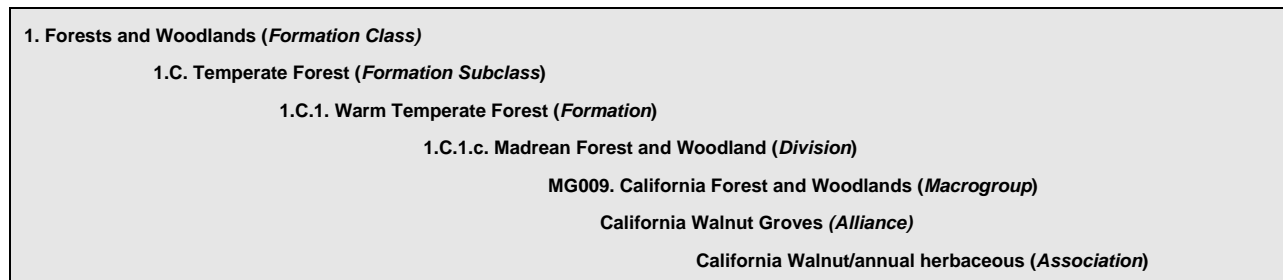
In September 2010, CDFG published the Natural Communities List (CDFG 2010) based on the second edition of the Manual of California Vegetation (Sawyer et al. 2009), which is the California expression of the National Vegetation Classification System developed by The Nature Conservancy (Grossman et al. 1998). These classification texts focus on a quantified, hierarchical approach that includes both floristic (plant species) and physiognomic (community structure and form) factors as currently observed (as opposed to predicting climax or successional stages). Implementation of the National Vegetation Classification System in California is aided by publications of the California

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Native Plant Society, including field data forms. The principal vegetation sampling forms are the relevé and rapid assessment protocols for which the California Native Plant Society publishes field data forms and protocols (CNPS 2007). The system was designed to apply an updated uniform hierarchical structure to the state's vegetation types that again followed quantifiable classification rules in alliance and association groups. The Natural Communities List contains global and state rarity ranks based on the NatureServe Standard Heritage Program methodology (NatureServe 2009). The conservation status of a vegetation community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global, N = national, and S = subnational).

In the Natural Communities List (CDFG 2010), physiognomies are described in the upper levels of the classification hierarchy, whereas floristics are described by the lower two levels.² The floristic levels are alliances and associations, and the upper levels are described as formations and divisions. Figure 4 provides an example of the hierarchy used in the Natural Communities List, including the community hierarchy in parentheses.

Figure 4 Example Hierarchy of the Natural Communities List



Source: CDFG 2010.

“Alliance” represents a level of uniformity in plant structure and dominant species in the uppermost layer. The alliance is a representation of broad-scale environmental differences that result in distinguishable vegetation communities in terms of overall structure and dominant species. “Associations” take into account more detailed floristic patterns, including species that co-occur with the dominant of the uppermost layer. As such, associations “reflect more localized differences related to microclimate and soil” (Sawyer and Keeler-Wolf 1995).

Most of the natural communities in the study area were mapped using the Natural Communities List (CDFG 2010). Descriptions of vegetation communities found within the study area that were

² Physiognomic classifications are based on the physiognomy (i.e., the set of functional and morphological attributes) of the dominant plants in the community. Floristic classifications take, as the basis for defining community types, the taxonomic identity of the plants in the community (IAVS 2014).

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not sufficiently described in the Natural Communities List (CDFG 2010) were supplemented with information from the List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG 2003), Orange County Land Cover/Habitat Classification System (Gray and Bramlet 1992; Jones & Stokes 1993), and Vegetation Alliances of Western Riverside County (Klein and Evens 2006). Non-natural land covers (including disturbed habitat, urban, and developed) and unvegetated communities or land covers (including open water and unvegetated streams) were classified using Orange County Land Cover/Habitat Classification System habitat types. When a vegetation community or land cover mapped in the study area was not listed in the Natural Communities List (CDFG 2010), the community was referred to as a mapping unit (e.g., Mexican Elderberry–(Mulefat) Mapping Unit).

2.2 GIS Database Development

A project-specific GIS project file (mxd format) was created using ArcGIS software. Several layers were compiled into the GIS project file, starting with the project features. Dudek obtained the following GIS data from Metropolitan and applied appropriate buffers to establish the project impact footprint for the purposes of analyzing future CIP project, single-occurrence O&M activity, and routine O&M activity impacts:

- Metropolitan ROW (polygon; variable size)
- Patrol roads (line; 12-foot buffer on both sides of patrol road centerlines for a total width of 24 feet)
- Construction footprints (polygon; variable size)
- Metropolitan Distribution System without ROW (line; 30-foot buffer on both sides of system centerlines for a total width of 60 feet)

A standard 500-foot buffer was applied to the outside of each of these features to establish the vegetation mapping survey area GIS layer. This layer served as the foundation for delineating the extent of the vegetation community and land cover mapping effort and encompassed approximately 9,512 acres.

Dudek GIS specialists then incorporated the existing, available vegetation community and land cover data. Digital, vector-based boundaries of vegetation communities and land covers from the previous mapping efforts (AECOM 2015; Dudek 2015; SCAG 2011) were compiled into one program-specific GIS layer (“WSB DSIPP 500ft Programmatic Land Cover”). The datasets were merged and the following rankings, in order of priority, were applied to address areas of overlap between the datasets: AECOM (2015), Dudek (2015), and then SCAG (2011).

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To support the mapping effort, Dudek obtained the most recent color ortho-rectified aerial photography of San Bernardino County (and adjacent areas) at 1-foot pixel resolution from Eagle Aerial Imaging. Additionally, the USFS CalVeg Region 7 dataset (2013) was uploaded to the GIS project file for reference, viewing, and editing the project-specific land cover GIS layer.

Since a majority of the study area occurs in an urban setting, the SCAG dataset for San Bernardino County represented the most accurate delineation of land covers, particularly urban and non-urban commercial/industrial/institutional boundaries. The SCAG dataset is based on zoning and land use parcel information. As a result, gaps exist in the dataset where there are transportation routes. Dudek converted these open gaps to a generic “transportation” land cover. Additionally, several SCAG land cover categories were grouped and categorized for disturbed and developed land covers. Table 2 provides a summary of the data conversion from the SCAG datasets to the program vegetation community and land cover classification system. This modified SCAG (2011) dataset was then intersected with the AECOM (2015) and Dudek (2015) datasets, which took precedence.

Table 2
Summary of SCAG Land Cover Data Conversions

SCAG Land Cover (2011)	WSB Mapping Subtype	WSB Mapping Name
Non-Natural Land Covers/Unvegetated Communities (WSB Mapping Type)		
Water Storage Facilities; Water Transfer Facilities	Basins and Watercourses	Basins Mapping Unit
Improved Flood Waterways and Structures		Flood Control Channels Mapping Unit
		Unvegetated Channels Mapping Unit
Water; Water Undifferentiated	Water	Open Water Mapping Unit
Agriculture; Non-Irrigated Cropland; Other Agriculture	Agriculture	Dairies, Stockyards, and Stables Mapping Unit
Irrigated Cropland and Improved Pasture Land		
Horse Ranches; Poultry Operations		Nurseries Mapping Unit
Nurseries		Orchard and Vineyard Mapping Unit
Abandoned Orchards and Vineyards; Orchards and Vineyards		Other Agriculture Mapping Unit
Attended Pay Public Parking Facilities; Commercial Storage; Duplexes, Triplexes, and 2- or 3-Unit Condominiums and Townhouses; High Density Single Family Residential; Low Density Single Family Residential; Low-Rise Apartments, Condominiums, and Townhouses; Medium-Rise Apartments and Condominiums; Mixed Multi-Family Residential; Mixed Urban; Multi-Family Residential; Non-Attended Public Parking Facilities; Other Residential; Rural Res. Low Den.; Rural Residential High Density; Single Family Residential; Trailer Parks and Mobile Home Courts, High Density; Urban Vacant	Developed	Disturbed Mapping Unit
		Mined Areas Mapping Unit

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Table 2
Summary of SCAG Land Cover Data Conversions

SCAG Land Cover (2011)	WSB Mapping Subtype	WSB Mapping Name
Chemical Processing; Colleges and Universities; Commercial and Services; Communication and Utility Facilities; Education – K-12; Electrical Power Facilities; Elementary Schools; Facilities; Fire Stations; General Office Use; Government Offices; Heavy Industrial; Hotels and Motels; Industrial; Junior High Schools; Light Industrial; Light Manufacturing, Assembly, and Industrial Services; Low- to Medium-Rise Major Office Use; Maintenance Yards; Major Medical Health Care Facilities; Major Metal Processing; Manufacturing; Manufacturing, Assembly, and Industrial Services; Mixed Commercial and Industrial; Modern Strip Development; Natural Gas and Petroleum Facilities; Older Strip Development; Open Storage; Other Commercial; Other Public Facilities; Other Special Use Facilities; Police and Sheriff Stations; Pre-Schools/Day Care Centers; Regional Shopping Center; Religious Facilities; Retail Centers Non-Strip with Contiguous Interconnected Off-Street Parking; Retail Stores and Commercial Services; Senior High Schools; Special Care Facilities; Utility Facilities; Wholesaling and Warehousing		Non-urban commercial/industrial/institutional
Airports; Bus Terminals and Yards; Freeways and Major Roads; Mixed Transportation; Park & Ride Lots; Railroads; Transportation; Transportation, Communications, and Utilities; Truck Terminals		Ornamental Landscaping Mapping Unit
Beach Parks; Cemeteries; Commercial Recreation; Developed Local Parks and Recreation; Developed Regional Parks and Recreation; Golf Courses; Local Parks and Recreation (1990 database only); Other Open Space and Recreation; Regional Parks and Recreation (1990 database only)		Transportation Mapping Unit
Mineral Extraction – Oil and Gas		Urban and Commercial Mapping Unit
Open Space and Recreation; Open Space Not Developable; Under Construction; Unknown; Vacant; Vacant Undifferentiated; Vacant With Limited Improvements; Wildlife Preserves and Sanctuaries	No Equivalent – Required Field Evaluation	No Equivalent – Required Field Evaluation

Table 3 provides a breakdown of the baseline vegetation dataset within the study area.

Table 3
Summary of Baseline Vegetation Dataset within the Study Area

Mapping Effort	Acres	Percent of Study Area
AECOM (2015)	109	1.1%
Klein and Evens (2006)	139	1.5%
Dudek (2015)	487	5.1%
SCAG – San Bernardino County (2011)	8,776	92.3%
Total	9,511	100.00%

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2.3 Aerial Photograph Review

The aerial photograph review was conducted in two phases. The first phase included a review of current aerial photographs to make preliminary determinations on vegetation communities and land covers in non-urban areas and identify locations that required field verification or checks for making determinations. Areas that did not require field verification were reviewed in the office using GIS software following the field verifications using heads-up digitizing in ArcGIS at a 1:1,000 (1 inch = 83 feet) to 1:3,000 scale (1 inch = 250 feet). Dudek biologists conducted aerial interpretation of vegetation communities that encompassed the entire study area using true-color aerial photographs with a 1-inch resolution. The study area was divided into 17 grid cells (each covering an area of approximately 2.5 by 5 miles), each of which was assigned to a Dudek biologist to map. Vegetation communities and land cover types were initially digitized and annotated by Dudek biologists using ArcGIS graphics tools. Biologists were able to map vegetation communities and land covers to the appropriate habitat alliance, association, or mapping unit subtype. Minimum mapping units were used to standardize the mapping protocol among biologists and establish an appropriate scale for the mapping effort. The minimum mapping units used during the mapping effort are summarized in Table 4.

Table 4
Vegetation Community and Land Cover Minimum Mapping Units

Minimum Mapping Unit	Category	Example Vegetation Communities / Land Cover Types
2.2 acres	Cool temperate and warm temperate forest communities	California Juniper Alliance, California Walnut Alliance, Coast Live Oak Alliance, and Eucalyptus Semi-Natural Stands
	Shrubland communities – coastal scrub	Black Sage Alliance, Brittle Bush Alliance, Brittle Bush Disturbance Mapping Unit, California Buckwheat–Brittle Bush Association, California Buckwheat Alliance, California Buckwheat Disturbance Mapping Unit, California Sagebrush–(California Buckwheat)–Annual Grass–Herb Mapping Unit, California Sagebrush–Black Sage Alliance, California Sagebrush–California Buckwheat Disturbance Mapping Unit, California Sagebrush Alliance, California Sagebrush Disturbance Mapping Unit, Coyote Brush Alliance, and Deer Weed Alliance
	Shrubland communities – mixed chaparral	Birch Leaf Mountain Mahogany Alliance, Chamise–Black Sage Alliance, Chamise–California Buckwheat Association, Chamise–California Buckwheat Disturbance Mapping Unit, Chamise Alliance, Hoary Leaf Ceanothus Alliance, Holly Leaf Cherry Chaparral Alliance, Laurel Sumac–California Sagebrush Association, Laurel Sumac Alliance, Laurel Sumac Disturbance Mapping Unit, Scrub Oak–Chamise Association, Scrub Oak Alliance, and Sugarbush Alliance

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Minimum Mapping Unit	Category	Example Vegetation Communities / Land Cover Types
	Herbaceous communities – annual grassland	Upland Mustards Semi-Natural Stands, Annual Grassland Mapping Unit, Ruderal Grassland Mapping Unit, and Western Ragweed Meadows Alliance
	Non-natural land covers/unvegetated communities	Agriculture (all), Developed (all)
1.0 acre	All sensitive/rare upland communities	Basket Bush Alliance, Brittle Bush–California Buckwheat Mapping Unit, California Sycamore Alliance, California Walnut Alliance, Holly Leaf Cherry Chaparral Alliance, Scale Broom Alliance, and White Sage Alliance
	All riparian forest and riparian scrub communities	Arroyo Willow Alliance, Arroyo Willow/Mulefat Association, California Sycamore Alliance, Coast Live Oak–Arroyo Willow Association, Mulefat Alliance, Scale Broom Alliance, Tamarisk Thickets Semi-Natural Stands, White Alder Alliance, Willow Riparian Scrub Mapping Unit
	All other wetland communities	Freshwater Emergent Wetland (all)

Biologists focused on updating/correcting the non-urban land covers within the SCAG Zoning/Land Use San Bernardino County dataset. Obvious errors and/or omissions (e.g., developed/urban land uses mapped as natural, vegetated communities) observed during the aerial interpretation and field checks were corrected. Most of these changes were made by intersecting the SCAG Zoning/Land Use datasets that contained more recent non-natural land covers (primarily developed areas).

2.4 Field Mapping

Prior to initiating the field mapping effort, a field manual was created that included the classification system and mapping protocols to ensure that data collection was uniform, replicable, and reliable among surveyors. The field manual provided regional maps, explicit mapping methods, vegetation community descriptions, and minimum mapping units for each vegetation type. Field maps were printed at a 1:2,400 scale (1 inch = 200 feet) for each area of investigation within the study area. The study area boundary and outlines of the baseline vegetation community and land cover polygons (with centrally labeled vegetation codes) were printed on aerial photographs.

In the field, the Dudek vegetation mapping team conducted field verification of the areas of concern or areas that were difficult to identify during the initial aerial photographic review. All mapping was done directly in the field onto the same aerial photographic base used during the aerial interpretation. Dominant plant species were used to determine the appropriate vegetation community or land cover. Each polygon was labeled according to the appropriate habitat alliance, association, or subtype depending on the location using the Natural Communities List

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(CDFG 2010) or vegetation community acronyms. Annual grasslands and coastal sage scrub communities that were dominated by annual, non-native species were mapped with a “disturbed” or “disturbance” modifier directly onto the true-color aerial.

2.5 Data Interpretation and Analysis

Once the field mapping and aerial interpretation phases were complete, the boundaries of the vegetation communities and land uses were converted into geo-referenced polyline features within ArcGIS. The vegetation community and land cover mapping provided by AECOM (2015) and Dudek (2015) were also incorporated into the GIS database. Dudek GIS specialists confirmed the accuracy of the digitized vegetation communities and performed edge-matching between sheets via heads-up digitizing. Dudek converted the polylines into polygons and performed a spatial join to link the vegetation polygons with the vegetation code attribution. All map grids were then combined into one GIS layer.

An in-depth GIS analysis was performed on the dataset for quality assurance/quality control. Duplicate and overlapping polygons were corrected. Vegetation community and land cover attributions were rechecked and corrected, as appropriate. The analysis also included the removal of vegetation communities outside the project boundary, verifying name and code attributions, merging adjacent polygons with the same attribution between grid sheets, and confirming or editing the AECOM (2015) and Dudek (2015) mapping products to match the extent and detail of the overall vegetation community/land cover database.

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3 RESULTS

A majority of the study area occurs within developed and urban areas of San Bernardino County. However, there are large intact pieces of open areas that support natural upland and aquatic vegetation communities. During the mapping effort, easily identifiable land cover mapping units included transportation, urban and commercial, ornamental landscaping, non-urban commercial/industrial/institutional, orchard and vineyard, flood control structures, and disturbed or barren. In general, most vegetation communities were difficult to identify by aerial photographs alone, especially the coastal scrub and mixed chaparral alliances and associations. Color, texture, and pattern cues based on aerial photograph interpretation were moderately reliable for the generic mapping units for annual grassland, ruderal grassland, and willow riparian scrub. Because of these relatively low confidence ratings based on aerial photograph interpretation alone, greater emphasis was placed on a commitment to field-verifying vacant, open space areas in the northeastern portion of the study area and within 500 feet of future CIP project and single-occurrence O&M activity locations. Locations of field verifications were based on accessibility and location to nearby paved roads and developed areas.

The Natural Communities List (CDFG 2010) organizes alliances and their associations within three life forms, referred to as formation classes, as follows: first are vegetation types dominated or characterized by trees (forest and woodlands); then by shrubs (shrubland); and then by herbaceous plants (herbaceous). The mapped vegetation communities were grouped by formation class. Because the Natural Communities List (CDFG 2010) does not classify non-natural land covers or unvegetated communities, a fourth group was added for organizational purposes: non-natural land covers/unvegetated communities.

- Forest and Woodlands Alliances and Stands
 - Cool Temperate Forest
 - Riparian Forest
 - Warm Temperate Forest
- Shrubland Alliances and Stands
 - Coastal Scrub
 - Mixed Chaparral
 - Riparian Scrub
- Herbaceous Alliances and Stands
 - Annual Grassland

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- Freshwater Emergent Wetland
- Non-Natural Land Covers/Unvegetated Communities
 - Agriculture
 - Basins and Watercourses
 - Developed
 - Water

Table 5 provides a summary of acreages for each vegetation community alliance/association and land cover identified. Vegetation communities listed in the table generally include alliances and associations, as well as general mapping units. Maps depicting the distribution of habitat types and subtypes are provided in Appendix A. Each vegetation polygon is provided in the GIS data, which is included on a CD-ROM in Appendix B.

Descriptions of the vegetation communities and land covers are organized by the three formation classes and the fourth category, non-natural land covers/unvegetated communities, and then by formation. Within each formation, the alliances and associations are organized alphabetically followed by mapping units. Unless noted otherwise, the vegetation alliance and associations are included in the Natural Communities List (CDFG 2010).

3.1 Forest and Woodlands Alliances and Stands

There are 147.44 acres of habitat in the forest and woodlands alliances and stands, including three general formation or habitat types: cool temperate forest, riparian forest, and warm temperate forest. The forest and woodlands alliances and stands represent approximately 1.6% of the study area. The following sections describe the forest and woodlands communities that were mapped in the study area.

3.1.1 Cool Temperate Forest

Eucalyptus Semi-Natural Stands

The eucalyptus semi-natural stands (*Eucalyptus* [*globulus*, *camaldulensis*] semi-natural woodland stands) typically includes one or more *Eucalyptus* species that dominate the tree canopy. The tree layer forms an open to intermittent canopy at 30–50 feet (10–15 meters) in height with an understory that usually has a variety of herbaceous species at moderate to high cover. Tree and shrub species that may intermix at low to moderate cover include coast live oak (*Quercus agrifolia*), date palm (*Phoenix dactylifera*), pepper tree species (*Schinus* ssp.), and salt-cedar species (*Tamarix* ssp.).

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3.1.2 Riparian Forest

California Sycamore Alliance

The California sycamore alliance (*Platanus racemosa* woodland alliance) includes California sycamore (*Platanus racemosa*) as the dominant or co-dominant tree in the canopy. This alliance forms an open to intermittent tree canopy less than 115 feet (35 meters) high, with an open to intermittent shrub layer and sparse or grassy ground layer (Sawyer et al. 2009). Species associated with the alliance include white alder (*Alnus rhombifolia*), California walnut (*Juglans californica*), coast live oak, valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), California laurel (*Umbellularia californica*), arroyo willow (*Salix lasiolepis*), Goodding's willow (*S. gooddingii*), and red willow (*S. laevigata*) (Sawyer et al. 2009; NatureServe 2009; Holland 1986).

Coast Live Oak–Arroyo Willow Association

The coast live oak–arroyo willow association (*Quercus agrifolia*–*Salix lasiolepis* association) includes coast live oak as the dominant tree in the overstory. Arroyo willow dominates the open shrub understory with other less common species including coyotebrush (*Baccharis pilularis*), mulefat (*B. salicifolia*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and poison oak (*Toxicodendron diversilobum*). The sparse herbaceous understory is composed of a variety of grasses and forbs including Cuman ragweed (*Ambrosia psilostachya*), black mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), and soft brome (*B. hordeaceus*).

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Table 5
Summary of Vegetation Communities and Land Covers in the Study Area

Formation or Generalized Habitat Type	Alliance Name (CDFG 2010)	WSB DSIPP Mapping Name	Map Label	Acres
<i>Forest and Woodlands Alliances and Stands</i>				147.44
Cool Temperate Forest	Eucalyptus groves	Eucalyptus Semi-Natural Stands	EUC	40.29
<i>Cool Temperate Forest Subtotal</i>				40.29
Riparian Forest	California sycamore woodlands	California Sycamore Alliance	SYC	20.67
	Coast live oak woodlands	Coast Live Oak–Arroyo Willow Association	CLOA	8.83
	White alder groves	White Alder Alliance	WAG	24.72
<i>Riparian Forest Subtotal</i>				54.22
Warm Temperate Forest	California juniper woodlands	California Juniper Alliance	CAJU	15.53
	California walnut woodlands	California Walnut Alliance	WG	0.35
	Coast live oak woodlands	Coast Live Oak Alliance	CLOW	37.06
<i>Warm Temperate Forest Subtotal</i>				52.94
<i>Shrubland Alliances and Stands</i>				1,974.48
Coastal Scrub	Black sage scrub	Black Sage Alliance	BSS	14.16
	Brittle bush scrub	Brittle Bush Alliance	BS	122.19
		Brittle Bush–California Buckwheat Mapping Unit	BBWS	54.28
		Brittle Bush Disturbance Mapping Unit	dBBS	13.39
	California buckwheat scrub	California Buckwheat Alliance	BWS	337.28
		California Buckwheat–Brittle Bush Association	BWBS	18.27
		California Buckwheat–California Sagebrush Mapping Unit	BWCS	1.23
		California Buckwheat Disturbance Mapping Unit	dBWS	221.45
	California sagebrush–	California Sagebrush–Black Sage Alliance	SBBS	1.35

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Table 5
Summary of Vegetation Communities and Land Covers in the Study Area

Formation or Generalized Habitat Type	Alliance Name (CDFG 2010)	WSB DSIPP Mapping Name	Map Label	Acres
	black sage scrub			
	California sagebrush–California buckwheat scrub	California Sagebrush–(California Buckwheat)–Annual Grass-Herb Mapping Unit	SBWG	17.11
		California Sagebrush–California Buckwheat Disturbance Mapping Unit	dSBWS	193.65
	California sagebrush scrub	California Sagebrush Alliance	SBS	138.18
		California Sagebrush Disturbance Mapping Unit	dSBS	12.04
		White Sage Alliance	WSS	1.62
	Coyote brush scrub	Coyote Brush Alliance	CBSS	2.41
	Deer weed scrub	Deer Weed Alliance	DWS	7.85
<i>Coastal Scrub Subtotal</i>				<i>1,156.47</i>
Mixed Chaparral	Basket bush thickets	Basket Bush Alliance	BBT	6.26
	Birch leaf mountain mahogany chaparral	Birch Leaf Mountain Mahogany Alliance	BMMCH	20.55
	Chamise–black sage chaparral	Chamise–Black Sage Alliance	CMSC	13.91
	Chamise chaparral	Chamise Alliance	CCH	98.73
		Chamise–California Buckwheat Association	CBWCH	37.82
		Chamise–California Buckwheat Disturbance Mapping Unit	dCBWCH	3.32
	Hoary leaf ceanothus chaparral	Hoary Leaf Ceanothus Alliance	HCC	1.29
	Holly leaf cherry chaparral	Holly Leaf Cherry Chaparral Alliance	HLCC	2.90
	Laurel sumac scrub	Laurel Sumac Alliance	LSSC	10.37
		Laurel Sumac–California Sagebrush Association	LSCS	5.50
		Laurel Sumac Disturbance Mapping Unit	dLSSC	4.22

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Table 5
Summary of Vegetation Communities and Land Covers in the Study Area

Formation or Generalized Habitat Type	Alliance Name (CDFG 2010)	WSB DSIPP Mapping Name	Map Label	Acres
	Scrub oak–chamise chaparral	Scrub Oak–Chamise Association	SOCC	6.20
	Scrub oak chaparral	Scrub Oak Alliance	SOCH	4.34
	Sugarbush chaparral	Sugarbush Alliance	SBCH	125.57
<i>Mixed Chaparral Subtotal</i>				<i>340.96</i>
Riparian Scrub	Arroyo willow thickets	Arroyo Willow Alliance	AWRF	2.44
		Arroyo Willow/Mulefat Association	SWS	6.40
	Mulefat thickets	Mulefat Alliance	MFS	17.54
	Scale broom scrub	Scale Broom Alliance	SBSC	413.84
		Scale Broom Disturbance Mapping Unit	dSBSC	36.37
	Tamarisk thickets	Tamarisk Thickets Semi-natural Stands	TTS	0.15
	No equivalent	Willow Riparian Scrub Mapping Unit	WRS	0.31
<i>Riparian Scrub Subtotal</i>				<i>477.05</i>
<i>Herbaceous Alliances and Stands</i>				<i>1,146.09</i>
Annual Grassland	Upland mustards	Upland Mustards Semi-Natural Stands	NNG	31.65
	Western ragweed meadows	Western Ragweed Meadows Alliance	WRME	2.44
	No equivalent	Annual Grassland Mapping Unit	AGL	578.65
		Ruderal Grassland Mapping Unit	RUD	473.15
<i>Annual Grassland Subtotal</i>				<i>1,085.88</i>
Freshwater Emergent Wetland	California bulrush marsh	California Bulrush Marsh Alliance	CBM	13.18
	Salt grass flats	Salt Grass Flats Alliance	SGF	37.00
	Baltic and Mexican rush marsh	Mexican Rush Marsh Association	MRM	10.02
<i>Freshwater Emergent Wetland Subtotal</i>				<i>60.20</i>

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Table 5
Summary of Vegetation Communities and Land Covers in the Study Area

Formation or Generalized Habitat Type	Alliance Name (CDFG 2010)	WSB DSIPP Mapping Name	Map Label	Acres
Non-Natural Land Covers/Unvegetated Communities				6,243.45
Agriculture	No equivalent	Dairies, Stockyards, and Stables Mapping Unit	DAST	10.00
		Nurseries Mapping Unit	NUR	5.22
		Orchard and Vineyard Mapping Unit	ORC	130.54
		Other Agriculture Mapping Unit	OTAG	116.35
Agriculture Subtotal				262.11
Basins and Watercourses	No equivalent	Basins Mapping Unit	BASN	198.65
		Flood Control Channels Mapping Unit	FCC	18.88
		Unvegetated Channel Mapping Unit	UVC	128.44
Basins and Watercourses Subtotal				345.97
Developed	No equivalent	Disturbed or Barren Mapping Unit	DIST	537.25
		Mined Areas Mapping Unit	MINE	53.32
		Non-Urban Commercial/Industrial/Institutional Mapping Unit	NCII	1,410.46
		Ornamental Landscaping Mapping Unit	ORN	350.12
		Transportation Mapping Unit	TRANS	1,334.92
		Urban and Commercial Mapping Unit	URBAN	1,924.97
Developed Subtotal				5,611.04
Water	No equivalent	Open Water Mapping Unit	OW	24.33
Water Subtotal				24.33
Total				9,511.45

CDFG = California Department of Fish and Game; WSB = Western San Bernardino; DSIPP = Distribution System Infrastructure Protection Program.

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White Alder Alliance

The white alder alliance (*Alnus rhombifolia* forest alliance) includes white alder as the dominant or co-dominant tree in the canopy. The alliance has an open to continuous tree canopy less than 105 feet (35 meters) in height with a sparse to continuous shrub canopy, and variable ground layer (Sawyer et al. 2009). Species associated with the alliance include bigleaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), California sycamore, Fremont cottonwood, Douglas-fir (*Pseudotsuga menziesii*), valley oak, and willow species (*Salix* spp.) (Sawyer et al. 2009).

3.1.3 Warm Temperate Forest

California Juniper Alliance

The California juniper alliance (*Juniperus californica* woodland alliance) includes California juniper (*Juniperus californica*) as the dominant or co-dominant tree in the canopy. The alliance has an open to continuous small tree and shrub canopy less than 15 feet (5 meters) in height, with a sparse or grassy herbaceous layer (Sawyer et al. 2009). Tree species associated with the alliance include singleleaf pinyon (*Pinus monophylla*), Parry pinyon (*Pinus quadrifolia*), blue oak (*Quercus douglasii*), and Joshua tree (*Yucca brevifolia*); shrub species associated with the alliance include desert agave (*Agave deserti*), big sagebrush (*Artemisia tridentata*), jointfir (*Ephedra* sp.), chaparral yucca (*Hesperoyucca whipplei* [*Yucca whipplei*]), California broomsage (*Lepidospartum squamatum*), and Parry's beargrass (*Nolina parryi*) (Sawyer et al. 2009).

California Walnut Alliance

The California walnut alliance (*Juglans californica* woodland alliance) includes California walnut as the dominant or co-dominant tree in the canopy. The alliance has an open to continuous tree canopy less than 50 feet (15 meters) in height, with a sparse to intermittent shrub layer and sparse herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include white alder, California ash (*Fraxinus dipetala*), toyon (*Heteromeles arbutifolia*), coast live oak, valley oak, arroyo willow, red willow, blue elderberry, and California laurel (Sawyer et al. 2009).

Coast Live Oak Alliance

The coast live oak alliance (*Quercus agrifolia* woodland alliance) includes coast live oak as the dominant or co-dominant tree in the canopy. The alliance has a continuous to open canopy less than 100 feet (30 meters) in height with a sparse to intermittent shrub canopy and sparse or grassy ground layer (Sawyer et al. 2009). Species associated with the alliance include bigleaf maple, blue oak, box elder (*Acer negundo*), California laurel, Engelmann oak (*Quercus*

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engelmannii), California sycamore, California walnut, valley oak, arroyo willow, California black oak (*Quercus kelloggii*), and Pacific madrone (*Arbutus menziesii*) (Sawyer et al. 2009). One association within this alliance was mapped within the study area and described above under the Riparian Forest habitat type: coast live oak–arroyo willow association.

3.2 Shrubland Alliances and Stands

There are 1,974.48 acres of habitat in the shrubland alliances and stands, including three general formations or habitat types: coastal scrub, mixed chaparral, and riparian scrub. The shrubland alliances and stands represent approximately 20.8% of the study area. The following sections describes the coastal scrub and chaparral communities that were mapped within the study area.

3.2.1 Coastal Scrub

Basket Bush Alliance

The basket bush alliance (*Rhus trilobata* provisional shrubland alliance) includes basket bush (skunkbush sumac) (*Rhus trilobata* (*Rhus aromatica*)) as the dominant or co-dominant shrub in the canopy. This alliance has an intermittent to continuous shrub canopy, which may be two-tiered and support low cover of emergent trees, and grassy or open herbaceous layer. Some species associated with the basket bush alliance include pine bush (*Ericameria pinifolia*), Wright's buckwheat (*Eriogonum wrightii*), holly-leaf redberry (*Rhamnus ilicifolia*), chaparral currant (*Ribes malvaceum*), blue elderberry, and poison oak.

Black Sage Alliance

The black sage alliance (*Salvia mellifera* shrubland alliance) includes black sage (*Salvia mellifera*) as the dominant or co-dominant shrub in the canopy. This alliance has a continuous or intermittent shrub canopy less than 7 feet (2 meters) in height with a variable ground layer (Sawyer et al. 2009). Species associated with the alliance include white sage, coyote brush, coast pricklypear (*Opuntia littoralis*), coastal (California) sagebrush (*Artemisia californica*), Eastern Mojave (California) buckwheat (*Eriogonum fasciculatum*), California brittlebush (*Encelia californica*), and laurel sumac (*Malosma laurina*) (Sawyer et al. 2009).

Brittle Bush Alliance

The brittle bush alliance (*Encelia farinosa* shrubland alliance) includes brittlebush (*Encelia farinosa*) as the dominant or co-dominant shrub in the canopy. This alliance has an open to intermittent shrub canopy less with a sparse ground layer of seasonal annuals (Sawyer et al. 2009). Some species associated with the brittle bush scrub alliance include burrobrush (*Ambrosia*

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dumosa), coastal sagebrush, Eastern Mojave buckwheat, chaparral yucca, and white sage (Sawyer et al. 2009). A variety of cactus species may be sparse to abundant (NatureServe 2009). Two mapping units within this alliance were mapped within the study area and described below: brittle bush–California buckwheat mapping unit and brittle bush disturbance mapping unit.

Brittle Bush–California Buckwheat Mapping Unit

The brittle bush–California buckwheat mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas within the brittle bush alliance that are co-dominated by brittlebush and Eastern Mojave buckwheat.

Brittle Bush Disturbance Mapping Unit

The brittle bush disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas dominated by brittlebush, but characterized by areas of disturbance.

California Buckwheat Alliance

The California buckwheat alliance (*Eriogonum fasciculatum* shrubland alliance) includes Eastern Mojave buckwheat as the dominant or co-dominant shrub in the canopy. This alliance has a continuous or intermittent shrub canopy less than 7 feet (2 meters) in height with a variable ground layer that may be grassy (Sawyer et al. 2009). Species associated with the alliance include coastal sagebrush, bush-mallow (*Malacothamnus* spp.), Menzies' goldenbush (*Isocoma menziesii* [*Isocoma veneta*]), coyotebrush, deer weed (*Acmispon glaber* [*Lotus scoparius*]), black sage, and white sage (Sawyer et al. 2009). One association and two mapping units within this alliance were mapped within the study area and described below: California buckwheat–brittle bush association, California buckwheat–California sagebrush mapping unit, and California buckwheat disturbance mapping unit.

California Buckwheat–Brittle Bush Association

The California buckwheat–brittle bush association (*Eriogonum fasciculatum*–*Encelia farinosa* association) typically includes Eastern Mojave buckwheat and brittlebush consistently present as co-dominants. The shrub layer has an open to intermittent canopy in two different strata, one up to 3 feet (1 meter) in height and the other up to 15 feet (5 meters) in height, with an open to continuous herbaceous layer (Klein and Evens 2006). Other species found within this association include coastal sagebrush and white sage, but often present at low cover (Klein and Evens 2006).

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California Buckwheat–California Sagebrush Mapping Unit

The California buckwheat–California sagebrush mapping unit is not recognized by the Natural Communities List (CDFG 2010). This association usually includes Eastern Mojave buckwheat and coastal sagebrush as co-dominants. The understory is characterized by a variety of annual forbs and grasses, including red brome (*Bromus madritensis*), stork's bill (*Erodium* spp.), and shortpod mustard (*Hirschfeldia incana*).

California Buckwheat Disturbance Mapping Unit

The California buckwheat disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas dominated by Eastern Mojave buckwheat, but characterized by areas of disturbance.

California Sagebrush Alliance

The California sagebrush alliance (*Artemisia californica* shrubland alliance) includes coastal (California) sagebrush as the dominant or co-dominant shrub in the canopy. This alliance has a continuous or intermittent shrub canopy less than 7 feet (2 meters) in height with a variable ground layer (Sawyer et al. 2009). Species associated with the alliance include black sage, white sage, California brittlebush, chaparral yucca, Menzies' goldenbush, coyotebrush, common deerweed, and poison oak (Sawyer et al. 2009; NatureServe 2009). One mapping unit within this alliance was mapped within the study area and is described below: California sagebrush disturbance mapping unit.

California Sagebrush Disturbance Mapping Unit

The California sagebrush disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas dominated by coastal sagebrush, but characterized by areas of disturbance.

California Sagebrush–Black Sage Scrub Alliance

The California sagebrush–black sage scrub alliance (*Artemisia californica*–*Salvia mellifera* scrub alliance) typically includes coastal sagebrush and black sage as co-dominant shrubs in the canopy. The shrub layer has an intermittent to continuous canopy in two different strata, one up to 7 feet (2 meters) in height and the other up to 15 feet (5 meters) in height, with an open to intermittent herbaceous layer (Klein and Evens 2006). Species found within this alliance include chamise (*Adenostoma fasciculatum*) and a variety of chaparral and coastal sage species that may intermix

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at lower cover, with native and non-native annual herbs occupying the herbaceous understory (Klein and Evens 2006).

California Sagebrush–California Buckwheat Scrub Alliance

The California sagebrush–California buckwheat scrub alliance (*Artemisia californica*–*Eriogonum fasciculatum* scrub alliance) includes coastal sagebrush and Eastern Mojave buckwheat as co-dominant shrubs in the canopy. This alliance has a two-tiered continuous or intermittent shrub canopy with most shrubs less than 7 feet (2 meters) in height while others reach up to 15 feet (5 meters) in height. This alliance has a seasonally present herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include chamise, orange bush monkeyflower (*Mimulus aurantiacus*), common deerweed, sugar sumac (sugarbush; *Rhus ovata*), and white sage (Sawyer et al. 2009). Two mapping units within this alliance were mapped within the study area and described below: California sagebrush–(California buckwheat)–annual grass–herb mapping unit and California sagebrush–California buckwheat disturbance mapping unit.

California Sagebrush–(California Buckwheat)–Annual Grass–Herb Mapping Unit

The California sagebrush–(California buckwheat)–annual grass–herb mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used in the Vegetation Alliances of Western Riverside County, California (Klein and Evens 2006) to differentiate areas dominated by coastal sagebrush with Eastern Mojave buckwheat occurring as a sub-dominant shrub, and various mixtures of annual grasses and forbs occurring at low to dense cover in the understory.

California Sagebrush–California Buckwheat Disturbance Mapping Unit

The California sagebrush–California buckwheat disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas co-dominated by coastal sagebrush and Eastern Mojave buckwheat, but characterized by areas of disturbance.

Coyote Brush Alliance

The coyote brush alliance (*Baccharis pilularis* shrubland alliance) includes coyotebrush as the dominant or co-dominant shrub in the canopy. This alliance has a variable shrub canopy less than 10 feet (3 meters) in height with a variable ground layer (Sawyer et al. 2009). Species associated with the alliance in Southern California include common deerweed, Eastern Mojave buckwheat, coastal sagebrush, and white sage (Sawyer et al. 2009).

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Deer Weed Alliance

The deer weed alliance (*Lotus scoparius* shrubland alliance) includes deerweed as the dominant or co-dominant shrub in the canopy. This alliance has an open to continuous shrub canopy, which is often two-tiered, and less than 6 feet (2 meters) in height with a sparse ground layer (Sawyer et al. 2009). Species associated with the alliance include chamise, coastal sagebrush, coyotebrush, jointfir, narrowleaf goldenbush (*Ericameria linearifolia*), California yerba santa (*Eriodictyon californicum*), Eastern Mojave buckwheat, common sandaster (*Corethrogyne filaginifolia* [*Lessingia filaginifolia*]), yellowstem bushmallow (*Malacothamnus densiflorus*), sugar sumac, rock gooseberry (*Ribes quercetorum*), and white sage (Sawyer et al. 2009).

White Sage Alliance

The white sage alliance (*Salvia apiana* shrubland alliance) includes white sage as dominant or co-dominant shrub in the canopy. The alliance has an intermittent to continuous, two-tiered shrub canopy less than 6 feet (2 meters) in height with a variable herbaceous layer (Sawyer et al. 2009). Some species associated with the alliance include coastal sagebrush, orange bush monkeyflower, brittlebush, rabbitbrush species (*Ericameria* spp.), Eastern Mojave buckwheat, chaparral yucca, Menzies' goldenbush, Mendocino bushmallow (*Malacothamnus fasciculatus*), laurel sumac, and sumac species (*Rhus* spp.) (Sawyer et al. 2009).

3.2.2 Mixed Chaparral

Birch Leaf Mountain Mahogany Alliance

The birch leaf mountain mahogany alliance (*Cercocarpus montanus* shrubland alliance) is dominated or co-dominated by birch leaf mountain mahogany. This alliance has an open to continuous shrub canopy less than 15 feet (5 meters) in height and a sparse or grassy herbaceous layer (Sawyer et al. 2009). Birch leaf mountain mahogany has a 30% minimum relative shrub cover with many co-occurring species, including chamise (*Adenostoma fasciculatum*), Eastwood's manzanita (*Arctostaphylos glandulosa*), bigberry manzanita (*Arctostaphylos glauca*), coastal sagebrush, ceanothus species (*Ceanothus* spp.), Eastern Mojave buckwheat, chaparral yucca, toyon, laurel sumac, and holly-leaf redberry (Sawyer et al. 2009).

Chamise Alliance

The chamise alliance (*Adenostoma fasciculatum* shrubland alliance) includes 12 associations, most of which are described by Gordon and White (1994). This alliance is dominated by chamise and has an intermittent to continuous shrub canopy less than 13 feet (4 meters) in height and a sparse to intermittent herbaceous layer (Sawyer et al. 2009). This alliance is dense with a very

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sparse understory (Cheng 2004) and has an average chamise cover of 77% with many co-occurring species, including Eastwood's manzanita, ceanothus species, black sage, chaparral yucca, and scrub oak (*Quercus berberidifolia*) (Sawyer et al. 2009; Gordon and White 1994; Borchert et al. 2004). One association and one mapping unit within this alliance were mapped within the study area and are described below: chamise–California buckwheat association and chamise–California buckwheat disturbance mapping unit.

Chamise–California Buckwheat Association

The chamise–California buckwheat association (*Adenostoma fasciculatum*–*Eriogonum fasciculatum* association) is consistently co-dominated by chamise and Eastern Mojave buckwheat. The shrub layer has an open to intermittent canopy that often supports an intermix of black sage, bigberry manzanita, brittlebush, and sugar sumac at low cover (Klein and Evens 2006).

Chamise–California Buckwheat Disturbance Mapping Unit

The chamise–California buckwheat disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas co-dominated by chamise and Eastern Mojave buckwheat, but characterized by areas of disturbance.

Chamise–Black Sage Alliance

The chamise–black sage alliance (*Adenostoma fasciculatum* shrubland alliance) is co-dominated by chamise and black sage, and has an intermittent to continuous shrub canopy less than 9 feet (3 meters) in height and a sparse herbaceous layer (Sawyer et al. 2009). This alliance has an average chamise and black sage cover of 50% with many co-occurring species, including coastal sagebrush, hoaryleaf ceanothus (*Ceanothus crassifolius*), deerbrush (*Ceanothus integrerrimus*), Eastern Mojave buckwheat, chaparral yucca, common deerweed, laurel sumac, and sugar sumac (Sawyer et al. 2009; Gordon and White 1994; Borchert et al. 2004).

Hoary Leaf Ceanothus Alliance

The hoary leaf ceanothus alliance (*Ceanothus crassifolius* shrubland alliance) is dominated or co-dominated by hoaryleaf ceanothus in the shrub canopy. The shrub layer has an intermittent to continuous canopy less than 11 feet (3.5 meters) in height and an open herbaceous layer (Sawyer et al. 2009). This association supports a dense shrub overstory with over 60% relative cover of many co-occurring species, including chamise, Eastwood's manzanita, chaparral whitethorn (*Ceanothus leucodermis*), birchleaf mountain-mahogany (*Cercocarpus betuloides*), orange bush monkeyflower, Eastern Mojave buckwheat, chaparral yucca, toyon, bush penstemon (*Keckiella antirrhinoides*), scrub oak, sugar sumac, and black sage (Sawyer et al. 2009; Gordon and White 1994).

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Holly Leaf Cherry Alliance

The holly leaf cherry alliance (*Prunus ilicifolia* shrubland alliance) is dominated or co-dominated by hollyleaf cherry (*Prunus ilicifolia*) in the shrub canopy. The shrub layer has an intermittent to continuous canopy less than 45 feet (15 meters) in height and a sparse herbaceous layer (Sawyer et al. 2009). This alliance supports a dense shrub overstory with over 30% relative cover of hollyleaf cherry and many co-occurring species, including chamise, Eastwood's manzanita, coastal sagebrush, bigpod ceanothus (*Ceanothus megacarpus*), birchleaf mountain-mahogany, Eastern Mojave buckwheat, California ash, toyon, bush penstemon (*Keckiella antirrhinoides*), scrub oak, sugar sumac, white sage, black sage, and poison oak (Sawyer et al. 2009; Gordon and White 1994).

Laurel Sumac Alliance

The laurel sumac alliance (*Malosma laurina* shrubland alliance) contains laurel sumac as either a dominant or co-dominant. The alliance has an open to continuous shrub canopy less than 15 feet (5 meters) in height with a sparse or grassy ground layer and sparse cover of emergent trees (Sawyer et al. 2009). Some species associated with the alliance include coastal sagebrush, orange bush monkeyflower, California brittlebush, Eastern Mojave buckwheat, and toyon (Sawyer et al. 2009). One association and one mapping unit within this alliance were mapped within the study area and are described below: laurel sumac–california sagebrush association and laurel sumac disturbance mapping unit.

Laurel Sumac–California Sagebrush Association

The laurel sumac–California sagebrush association (*Malosma laurina*–*Artemisia californica* association) occurs on gentle to steep northeast- and northwest-facing slopes. The association is dominated by laurel sumac and sub-dominated by coastal sagebrush. The shrub layer has an open to intermittent canopy, which supports two-tiered strata, and an open to intermittent herbaceous layer. Other species include white sage, bush-mallow, black sage, coyotebrush, and Mexican elderberry (*Sambucus mexicana*) (Keeler-Wolf and Evens 2006).

Laurel Sumac Disturbance Mapping Unit

The laurel sumac disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas dominated by laurel sumac, but characterized by areas of disturbance.

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Scrub Oak Alliance

The scrub oak alliance (*Quercus berberidifolia* shrubland alliance) is recognized by both the List of Terrestrial Natural Communities (CDFG 2003) and the Natural Communities List (CDFG 2010) and includes 13 associations, most of which are described by Gordon and White (1994). This shrub-dominated alliance is dominated or co-dominated by scrub oak, generally exceeding 60% cover. Scrub oak chaparral has a continuous shrub canopy less than 6 meters (20 feet) in height with a sparse herbaceous layer (Sawyer et al. 2009) and an open to intermittent herbaceous layer with infrequent emergent trees (Klein and Evens 2006). Chamise, honeysuckle (*Lonicera* sp.), birchleaf mountain-mahogany, and toyon are associated with the scrub oak chaparral alliance (Gordon and White 1994; Borchert et al. 2004). There may also be sparse, emergent California buckeye (*Aesculus californica*), coast live oak, California walnut, or foothill pine (*Pinus sabiniana*) (Sawyer et al. 2009). One association within this alliance was mapped within the study area and is described below: scrub oak–chamise association.

Scrub Oak–Chamise Association

The scrub oak–chamise association (*Quercus berberidifolia*–*Adenostoma fasciculatum* association) is co-dominated by scrub oak and chamise, and has an open to continuous shrub canopy less than 18 feet (6 meters) in height and a sparse herbaceous layer (Sawyer et al. 2009). This association has an average scrub oak and chamise cover of 50% with other species that may occur at low cover, including manzanitas (*Arctostaphylos* spp.), hoaryleaf ceanothus, chaparral whitethorn, birchleaf mountain-mahogany, toyon, and holly-leaf redberry (Sawyer et al. 2009; Gordon and White 1994; Borchert et al. 2004).

Sugarbush Alliance

The sugarbush alliance (*Rhus ovata* shrubland alliance) includes sugar sumac (sugarbush) as the dominant or co-dominant shrub in the canopy. This alliance has an open to continuous shrub canopy with most shrubs less than 15 feet (5 meters) in height and a sparse herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include chamise, coastal sagebrush, buck-horn cholla (*Cylindropuntia acanthocarpa*), California cholla (*C. californica*), Eastern Mojave buckwheat, toyon, California juniper (*Juniperus californica*), common deerweed, bush-mallow, laurel sumac, white sage, black sage, and poison oak (Sawyer et al. 2009).

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3.2.3 Riparian Scrub

Arroyo Willow Alliance

The arroyo willow alliance (*Salix lasiolepis* thickets alliance) includes arroyo willow as the dominant or co-dominant tree in the canopy. The alliance has an open to continuous tree canopy less than 65 feet (20 meters) in height with an open to intermittent shrub canopy and a variable ground layer (Sawyer et al. 2009). Species associated with the alliance include white alder, coyotebrush, mulefat, California sycamore, Fremont cottonwood, blue elderberry, and other willows (Sawyer et al. 2009). One association within this alliance was mapped within the study area and described below: arroyo willow/mulefat association.

Arroyo Willow/Mulefat Association

The arroyo willow/mulefat association (*Salix lasiolepis/Baccharis salicifolia* association) includes arroyo willow as the dominant species in the shrub or tree layer. Mulefat sub-dominates the shrub layer. The alliance has an open to continuous shrub layer that is often in two different strata, with low shrubs less than 7 feet (2 meters) in height and tall shrubs less than 30 feet (10 meters) in height, and an open herbaceous layer (Klein and Evens 2006). Other species associated with the association include blue elderberry and other willows.

Mulefat Alliance

The mulefat alliance (*Baccharis salicifolia* shrubland alliance) includes mulefat as the dominant or co-dominant shrub. The community has a continuous shrub canopy with two tiers at less than 7 feet (2 meters) and less than 15 feet (5 meters) in height, a tree layer that may be present at low cover, and a sparse herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include arroyo willow, sandbar willow, coastal sagebrush, coyotebrush, tree tobacco (*Nicotiana glauca*), and laurel sumac. Other tree species that may be present include California sycamore, Fremont cottonwood, oaks (*Quercus* spp.), and willows (Sawyer et al. 2009).

Scale Broom Alliance

The scale broom alliance (*Lepidospartum squamatum* shrubland alliance), also referred to as scalebroom scrub (floodplain sage scrub) by Jones & Stokes (1993), includes scalebroom as the dominant, co-dominant, or conspicuous shrub with Eastern Mojave buckwheat, California brickellbush (*Brickellia californica*), coastal sagebrush, mulefat, Menzies' goldenbush, Palmer's rabbitbrush (*Ericameria palmeri* var. *pachylepis*), laurel sumac, sweetbush (*Bebbia juncea*), sessileflower false goldenaster or hairy false goldenaster (*Heterotheca sessiliflora* ssp. *bolanderi* (*H. echiioides* ssp. *bolanderi*), *H. villosa*), chaparral yucca, Douglas' ragwort (*Senecio flaccidus*

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var. *douglasii*), and Coulter's matilija poppy (*Romneya coulteri*) (Jones & Stokes 1993). The community has an open to continuous shrub canopy less than 7 feet (2 meters) in height and a variable (grassy) herbaceous layer (Sawyer et al. 2009). Other common species associated with the alliance include tarragon (*Artemisia dracunculus*), California croton (*Croton californicus*), common deerweed, cudweed (*Gnaphalium* spp.), yellow pincushion (*Chaenactis glabriuscula*), coast pricklypear, giant wildrye (*Elymus condensatus*), and California goldfields (*Lasthenia californica*) (Jones & Stokes 1993). One mapping unit within this alliance was mapped within the study area and is described below: scale broom disturbance mapping unit.

Scale Broom Disturbance Mapping Unit

The scale broom disturbance mapping unit is not recognized by the Natural Communities List (CDFG 2010). This mapping unit was used to differentiate areas dominated by scalebroom, but characterized by areas of disturbance.

Tamarisk Thickets Semi-Natural Stands

The tamarisk thickets semi-natural stands (*Tamarix* spp. semi-natural shrubland stands) includes one of various *Tamarix* species as the dominant shrub in the canopy. This semi-natural stand has an open to continuous canopy less than 25 feet (8 meters) in height with a sparse ground layer (Sawyer et al. 2009). Species associated with the tamarisk thickets semi-natural stands include Fremont cottonwood or willow species (Sawyer et al. 2009).

Willow Riparian Scrub Mapping Unit

The willow riparian scrub mapping unit (also known as southern willow scrub) is recognized by the List of Terrestrial Natural Communities (CDFG 2003) and Jones & Stokes (1993), but not the Natural Communities List (CDFG 2010). According to Holland (1986), this community (southern willow scrub) has been described as a dense, broad-leaved, winter-deciduous riparian thicket dominated by several species of willow. Most stands are too dense to allow much understory development (Holland 1986). Species associated with the southern willow scrub alliance include scattered emergent Fremont cottonwood and California sycamore (Holland 1986).

3.3 Herbaceous Alliances and Stands

There are 1,146.09 acres of habitat in the herbaceous alliances and stands, including two general formations or habitat types: annual grassland and freshwater emergent wetland. Herbaceous alliances and stands represent approximately 12.0% of the study area. The following sections describe the herbaceous alliance and stand communities that were mapped within the study area.

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

3.3.1 Annual Grassland

Upland Mustards Semi-Natural Stands

The upland mustards semi-natural stands (*Brassica (nigra)* and other mustards semi-natural stands) is usually characterized by weedy, upland mustard species and is often associated with agriculture, but also found in wildland settings (Sawyer et al. 2009). This semi-natural stand is dominated by black mustard, field mustard (*Brassica rapa*), Asian mustard (*Brassica tournefortii*), shortpod mustard, Dyer's woad (*Isatis tinctoria*), and/or cultivated radish (*Raphanus sativus*) and has an open to continuous herbaceous canopy less than 10 feet (3 meters) in height (Sawyer et al. 2009).

Annual Grassland Mapping Unit

The annual grassland mapping unit is not recognized by the Natural Communities List (CDFG 2010). According to Jones & Stokes (1993), annual grassland is characterized primarily by annual grasses, including wild oats (*Avena* spp.), bromes (*Bromus* spp.), barleys, and fescues. Other common forbs include common fiddleneck (*Amsinckia intermedia*), cryptantha species (*Cryptantha* spp.), stork's bill (*Erodium* spp.), mustards, Maltese star-thistle (*Centaurea melitensis*), clustered tarweed (*Deinandra [Hemizonia] fasciculata*), cardoon (*Cynara cardunculus*), blessed milkthistle (*Silybum marianum*), pepperweed species (*Lepidium* spp.), dove weed (*Croton setiger*), and burclover (*Medicago polymorpha*) (Jones & Stokes 1993).

Ruderal Grassland Mapping Unit

The ruderal grassland mapping unit is not recognized by the Natural Communities List (CDFG 2010). According to Jones & Stokes (1993), ruderal grassland consists of early successional grasslands dominated by non-native, pioneering herbaceous plants and is associated with disturbed areas. This community is similar to annual grassland in that non-native species predominate over natives. However, the type of non-native species that dominate ruderal areas are generally forbs, as opposed to grasses, and include species in the genera *Centaurea*, *Brassica*, *Malva*, *Salsola*, *Croton*, *Amaranthus*, and *Atriplex* (Jones & Stokes 1993).

Western Ragweed Meadows Alliance

The western ragweed alliance (*Ambrosia psilostachya* provisional herbaceous alliance) includes Cuman (western) ragweed (*Ambrosia psilostachya*) as the dominant or co-dominant in the herbaceous layer. The alliance has an intermittent to continuous canopy less than 3 feet (1 meter) in height (Sawyer et al. 2009). Other common species associated with the alliance include soft brome, ripgut brome, Bermuda grass (*Cynodon dactylon*), stork's bill, mouse barley (*Hordeum*

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

murinum), Mexican rush (*Juncus mexicanus*), and blue-eyed grass (*Sisyrinchium bellum*) (Sawyer et al. 2009).

3.3.2 Freshwater Emergent Wetland

California Bulrush Alliance

The California bulrush alliance (*Schoenoplectus* [*Scirpus*] *californicus* herbaceous alliance) includes California bulrush (*Schoenoplectus* [*Scirpus*] *californicus*) as the dominant or co-dominant species in the herbaceous layer. The community has an intermittent to continuous cover typically less than 12 feet (4 meters) in height. Species associated with the alliance include alkali bulrush (*Bolboschoenus maritimus*), common water hyacinth (*Eichhornia crassipes*), western goldentop (*Euthamia occidentalis*), hardstem bulrush (*Schoenoplectus* [*Scirpus*] *acutus*), narrowleaf cattail (*Typha angustifolia*), southern cattail (*T. domingensis*), and broadleaf cattail (*T. latifolia*). Emergent shrubs such as common buttonbush (*Cephalanthus occidentalis*), California wildrose (*Rosa californica*), and arroyo willow may be present at low cover (Sawyer et al. 2009).

Mexican Rush Association

The Mexican rush association (*Juncus arcticus* (var. *balticus*) *mexicanus* herbaceous alliance) includes Mexican rush as the dominant species in the herbaceous layer. The community has an intermittent to continuous herbaceous cover typically less than 2 feet (0.5 meters) in height, and a sparse to open shrub layer (if present) typically less than 6 feet (2 meters) (Evens et al. 2006). Herbaceous species associated with the alliance include ripgut brome, Kentucky bluegrass (*Poa pratensis*), ragweed, and soft brome; emergent tree species associated with the alliance include black willow, red willow, arroyo willow, and tamarisk (Evens and San 2005).

Salt Grass Flats Alliance

The salt grass flats alliance (*Distichlis spicata* herbaceous alliance) includes saltgrass (*Distichlis spicata*) as the dominant or co-dominant species in the herbaceous layer. The community has an open to continuous cover typically less than 3 feet (1 meter) in height (Sawyer et al. 2009). Species associated with the alliance include beardless rabbitsfoot grass (*Polypogon viridis* [*Agrostis viridis*]), silverbur ragweed (*Ambrosia chamissonis*), yerba mansa (*Anemopsis californica*), triangle orache (*Atriplex prostrata*), ripgut brome, common brass buttons (*Cotula coronopifolia*), common spikerush (*Eleocharis palustris*), alkali seaheath (*Frankenia salina*), meadow barley (*Hordeum brachyantherum*), mouse barley, marsh Jaumea (*Jaumea carnosa*), spiny rush (*Juncus acutus*), broad-leaved pepperweed (*Lepidium latifolium*), Sandberg bluegrass (*Poa secunda*), Pacific swampfire (*Salicornia pacifica* [*virginica*]), and alkali sacaton

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

(*Sporobolus airoides*). Emergent shrubs such as saltbushes (*Atriplex* spp.), white-flowered rabbitbrush (*Ericameria albidia*), rubber rabbitbrush (*Ericameria nauseosa*), and Mojave seablite (*Suaeda nigra* [*Suaeda moquinii*]) may be present at low cover (Sawyer et al. 2009).

3.4 Non-Natural Land Covers/Unvegetated Communities

There are 6,243.45 acres of non-natural land covers/unvegetated communities, including four general formations or habitat types: agriculture, basins and watercourses, developed, and water. Non-natural land covers are characterized by limited native vegetation resulting in low-function ecological processes. Many have been altered from their natural states for human uses and provide little habitat and foraging potential for wildlife due to the lack of significant cover by native vegetation. Non-natural land covers represent approximately 65.6% of the study area. The following sections describe the non-natural land covers that were mapped within the study area.

3.4.1 Agriculture

Dairies, Stockyards, and Stables Mapping Unit

The dairies, stockyards, and stables mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The dairies, stockyards, and stables mapping unit refers to areas that have concentrated numbers of livestock. These areas typically have zero to low vegetation cover but may provide grain sources for birds.

Nurseries Mapping Unit

The nurseries mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The nurseries mapping unit refers to areas that are actively used to grow ornamental plant species for commercial landscaping purposes. These areas may provide roosting and foraging habitat for birds and habitat for small mammals (Gray and Bramlet 1992).

Orchard and Vineyard Mapping Unit

The orchard and vineyard mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The orchard and vineyard mapping unit, also identified by Gray and Bramlet (1992) as vineyards and orchards, refers to areas where food production and harvesting are actively being implemented (i.e., irrigated row and field crops). According to Gray and Bramlet (1992), these areas may support non-native grass species such as *Hordeum* spp. and *Avena* spp. These areas have little biological resource value due to the

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

limited habitat value provided for most native species. However, they may supply grain and water for native and migratory birds.

Other Agriculture Mapping Unit

The “other agriculture” mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993) and Gray and Bramlet (1992). The other agriculture mapping unit identifies areas where other types of food production and harvesting, including dryland field crops, are actively being conducted. These areas may also support non-native grass species and have little biological resource value due to the limited habitat value provided for most native species.

3.4.2 Basins and Watercourses

Basins Mapping Unit

The basins mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The basins mapping unit, also identified by Gray and Bramlet (1992) as spreading grounds and detention basins, typically refer to man-made, concrete-lined structures that were constructed to retain surface water for prolonged periods of time. These structures are often unvegetated but may support native and non-native riparian or upland vegetation communities.

Flood Control Channels Mapping Unit

The flood control channels mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993) and Gray and Bramlet (1992). Flood control channels are man-made structures, typically concrete lined, that are designed to convey low-frequency, high-volume surface water flows. Flood control channels are often unvegetated but may support other riparian and upland vegetation communities such as herbaceous riparian mapping units, willow riparian scrub mapping units, or mulefat alliance communities.

Unvegetated Channels Mapping Unit

The unvegetated channels mapping unit is not recognized by either the Natural Communities List (CDFG 2010) or Jones & Stokes (1993). Similar to flood control channels, unvegetated channels are man-made structures, typically concrete-lined, that are designed to convey low-frequency, high-volume surface water flows. This mapping unit does not support any vegetation.

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

3.4.3 Developed

Disturbed or Barren Mapping Unit

The disturbed or barren mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The disturbed or barren mapping unit, also identified by Gray and Bramlet as cleared or graded, refers to areas that lack vegetation but still retain a pervious surface, or that are dominated by a sparse cover of ruderal vegetation such as Maltese star-thistle, wild oat, black mustard, spiny sowthistle (*Sonchus asper*), and prickly lettuce (*Lactuca serriola*).

Mined Areas Mapping Unit

The mined areas mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993) and Gray and Bramlet (1992). The mined areas mapping unit refers to areas that are disturbed by sand and gravel or other mining activities. Some areas may impound surface water, which provides habitat for migrating waterfowl and other species (Gray and Bramlet 1992).

Non-Urban Commercial/Industrial/Institutional Mapping Unit

The non-urban commercial/industrial/institutional mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993) and Gray and Bramlet (1992). Non-urban commercial/industrial/institutional mapping units include lands that support commercial, industrial, and/or institutional structures. Typically, these areas are paved with impermeable surfaces that cannot support vegetation or habitat for species; however, non-native ornamental landscaping may occur within the mapping unit.

Ornamental Landscaping Mapping Unit

The ornamental landscaping mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). This land cover type, also identified by Gray and Bramlet (1992) as parks and ornamental plantings, consists of introduced plantings of exotic, and sometimes native, species as landscaping that is actively maintained.

Transportation Mapping Unit

The transportation mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993) and Gray and Bramlet (1992). This barren cover type consists of major paved vehicular access roads that lack vegetation.

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

Urban and Commercial Mapping Unit

The urban and commercial mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). The urban and commercial mapping unit, also identified by Gray and Bramlet (1992) as urban, describes areas occupied by residential and commercial structures, paving, and other impermeable surfaces that typically do not support vegetation or habitat for species; however, non-native ornamental landscaping may occur within the mapping unit.

3.4.4 Water

Open Water Mapping Unit

The open water mapping unit is not recognized by the Natural Communities List (CDFG 2010) but is described by Jones & Stokes (1993). Open water consists of standing water with no emergent vegetation. Open water is not considered a riparian habitat because it lacks hydrophytic vegetation. Open water can be regulated by CDFW, pursuant to Section 1602 of the California Fish and Game Code, and the U.S. Army Corps of Engineers, pursuant to Section 404 of the federal Clean Water Act (33 U.S.C. 1251 et seq.).

Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

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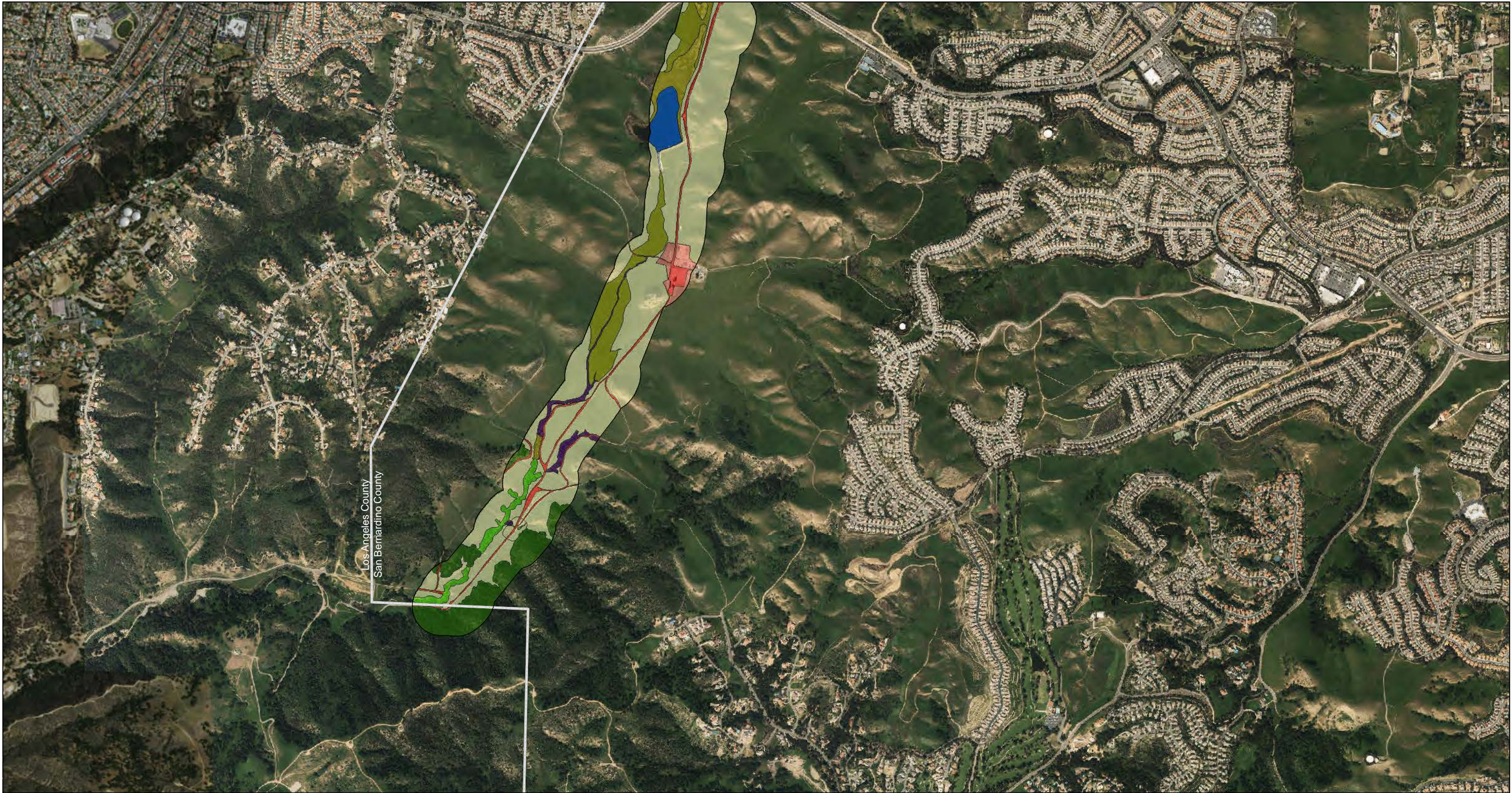
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Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County DSIPP

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APPENDIX A

*Mapbook of Vegetation Communities and Land
Covers within the Study Area*



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Riparian Forest

Warm Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Fresh Emergent Wetland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Basins and Watercourses

Developed

Water

Shrubland Alliances and Stands

Riparian Scrub

0

750

1,500

Feet

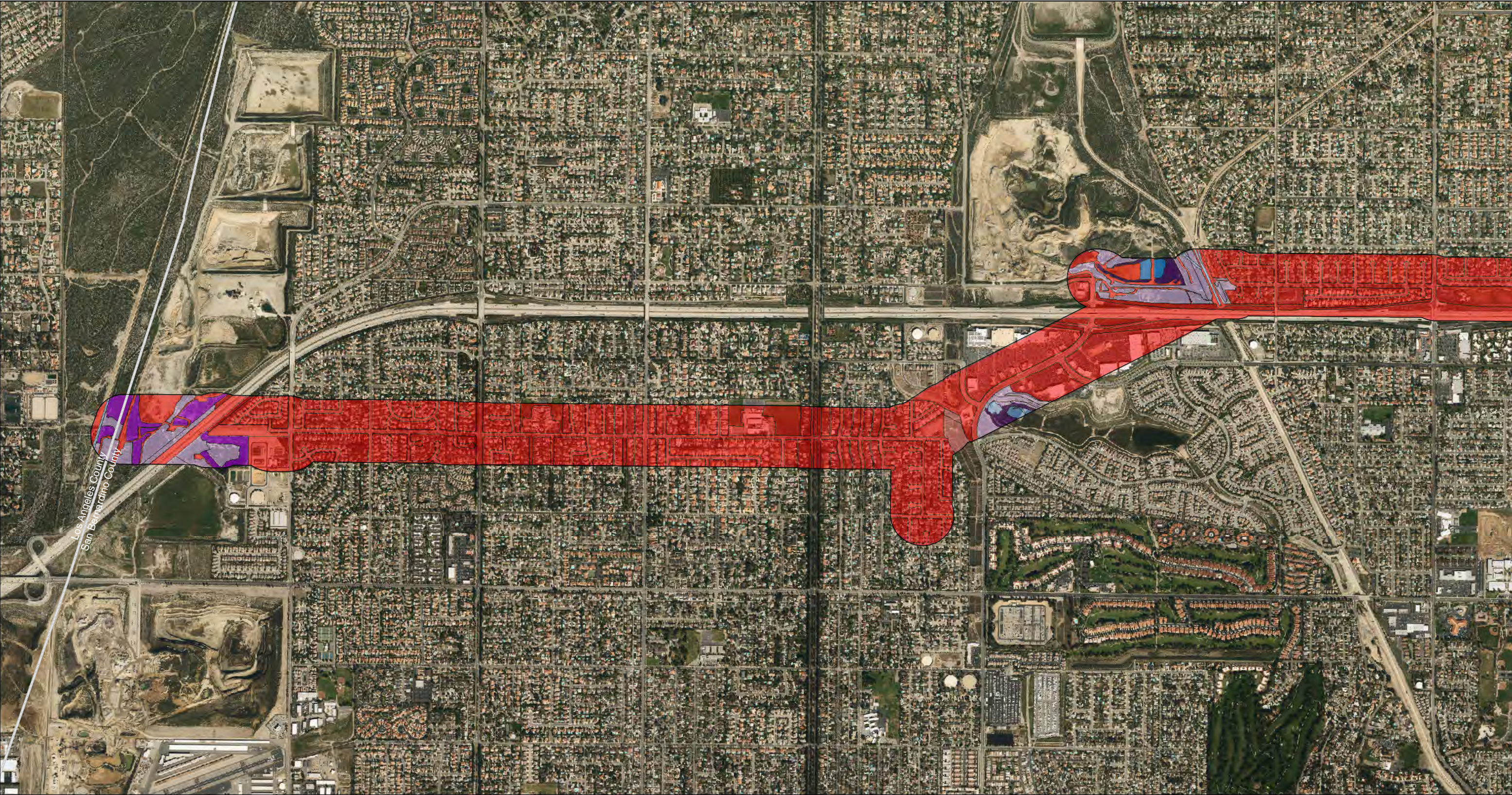
SOURCE: ArcGIS Online Basemap, Eagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid A7

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Agriculture

Basins and Watercourses

Developed

Water

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

N

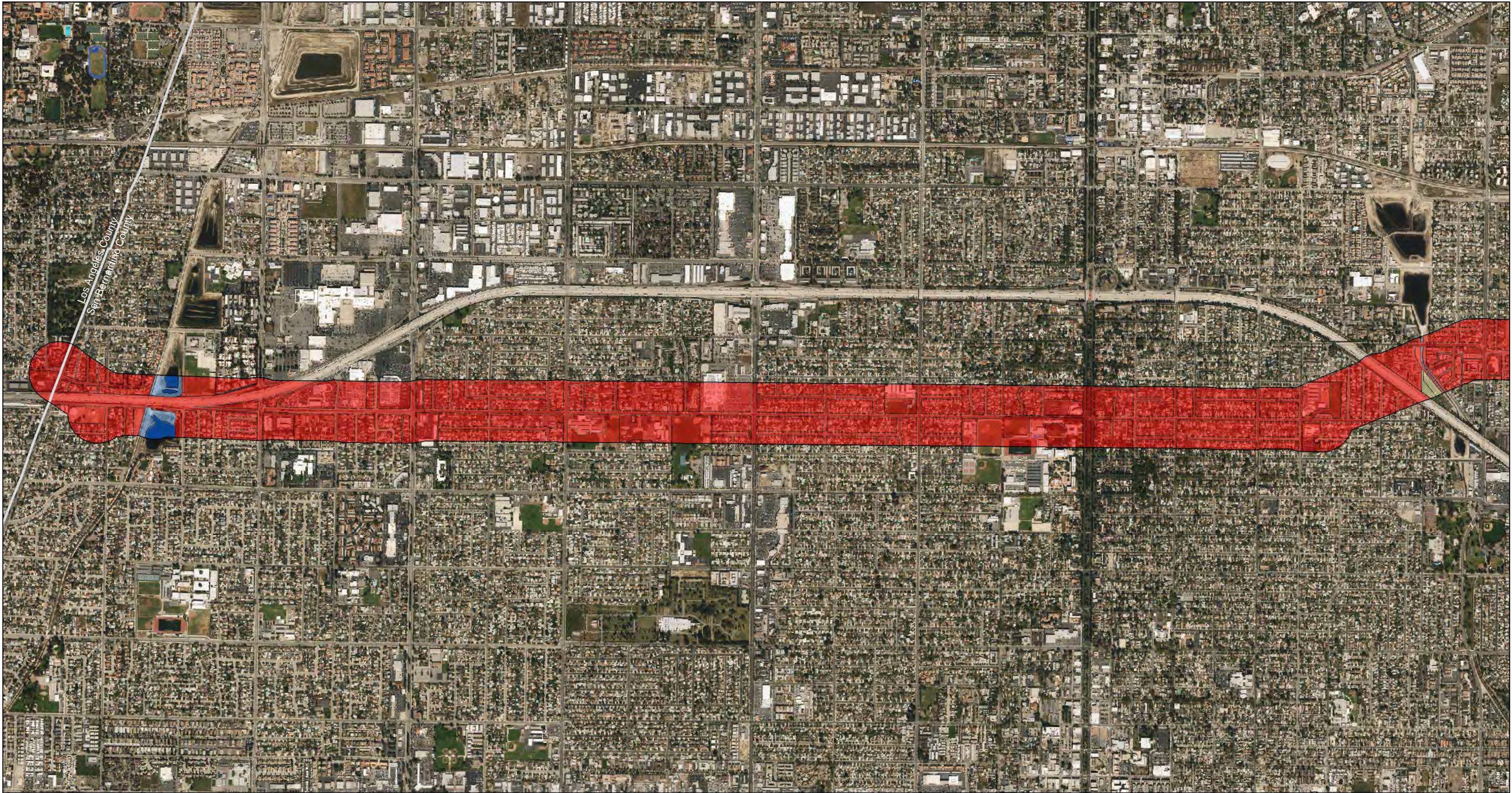
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid B3

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6
A7

B3
B5

C3
C5

D3
D4
D5
D6
D7

E2

F1
G2

H3
H4
H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Basins and Watercourses

Developed

Water

0

750

1,500

Feet

0

750

1,500

Feet

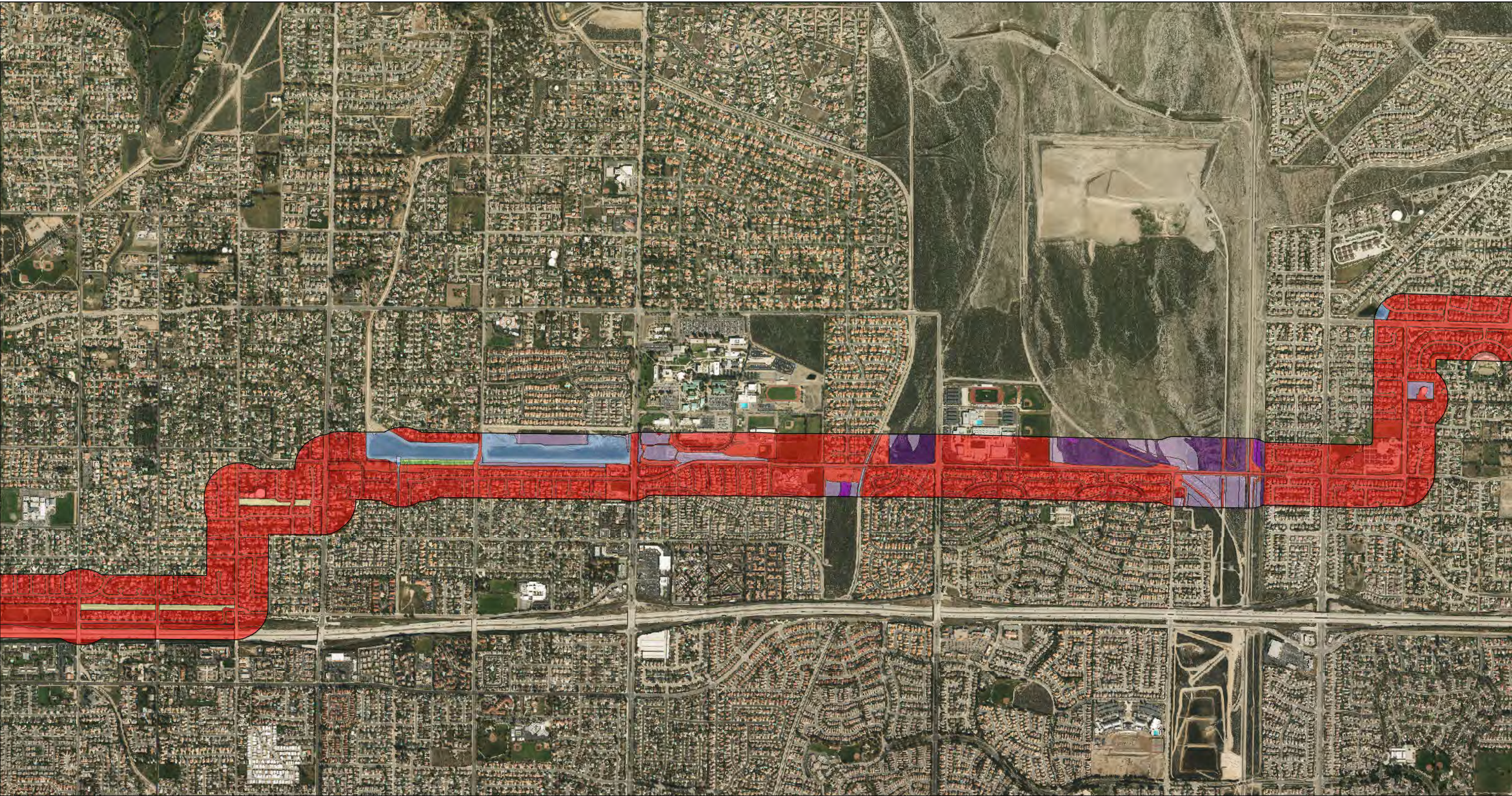
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid B5

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Shrubland Alliances and Stands

Coastal Scrub

Basins and Watercourses

Developed

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

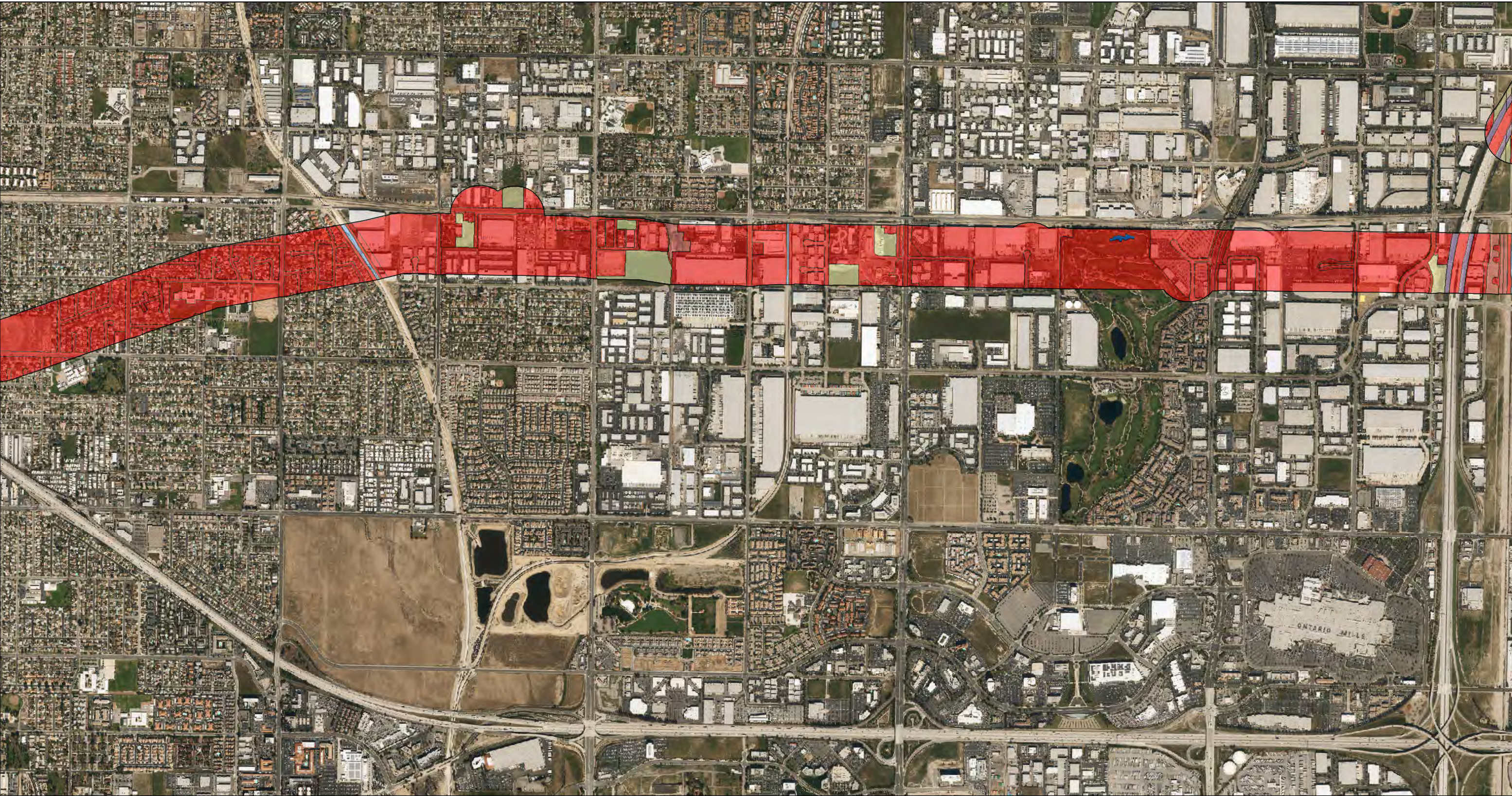
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid C3

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Herbaceous Alliances and Stands

Annual Grassland

Agriculture

Basins and Watercourses

Developed

Water

Shrubland Alliances and Stands

Coastal Scrub

0

750

1,500

Feet

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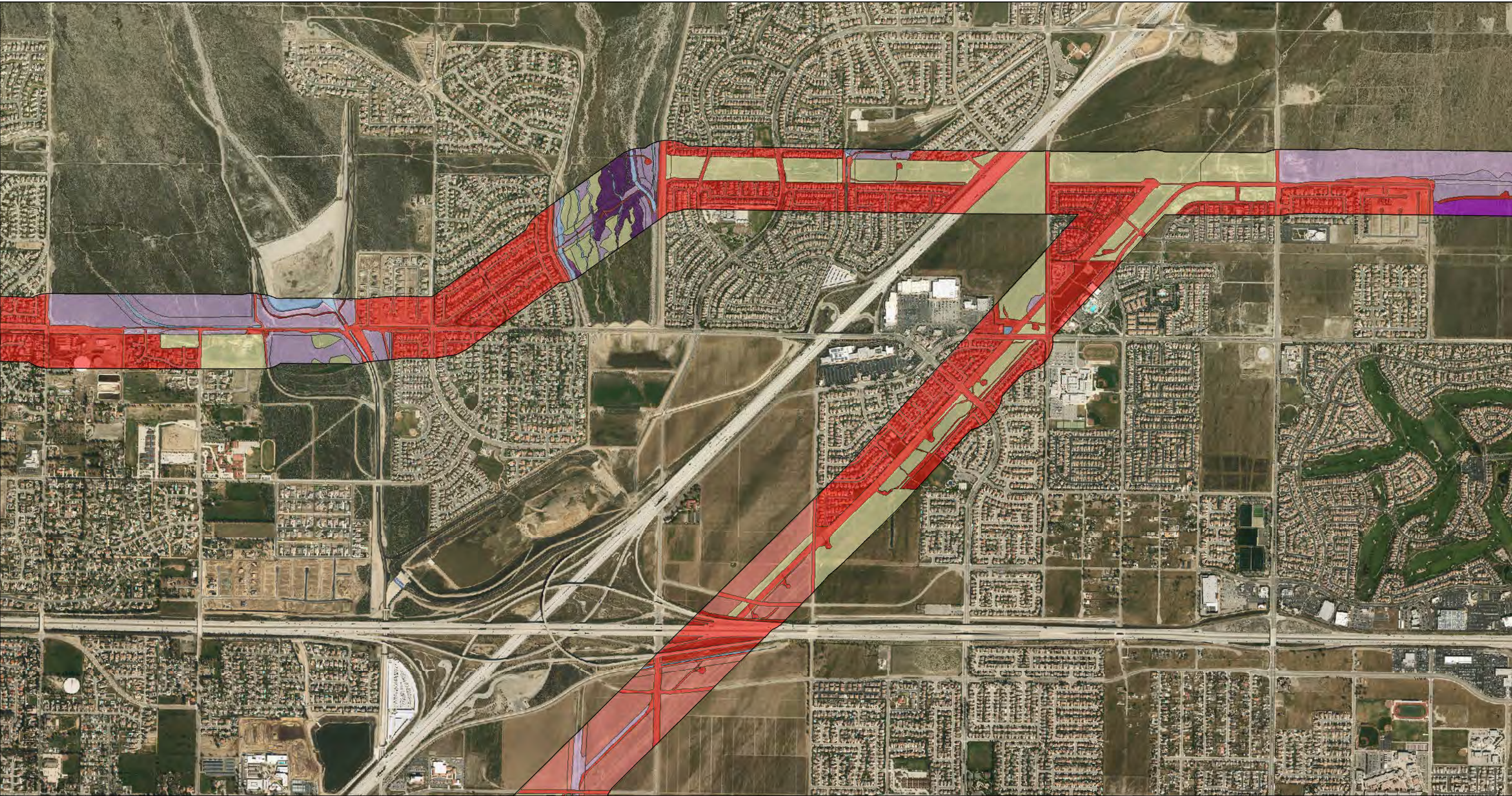
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

The Metropolitan Water District of Southern California

APPENDIX A

Grid C5

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Herbaceous Alliances and Stands

Annual Grassland

Agriculture

Basins and Watercourses

Developed

Coastal Scrub

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

2

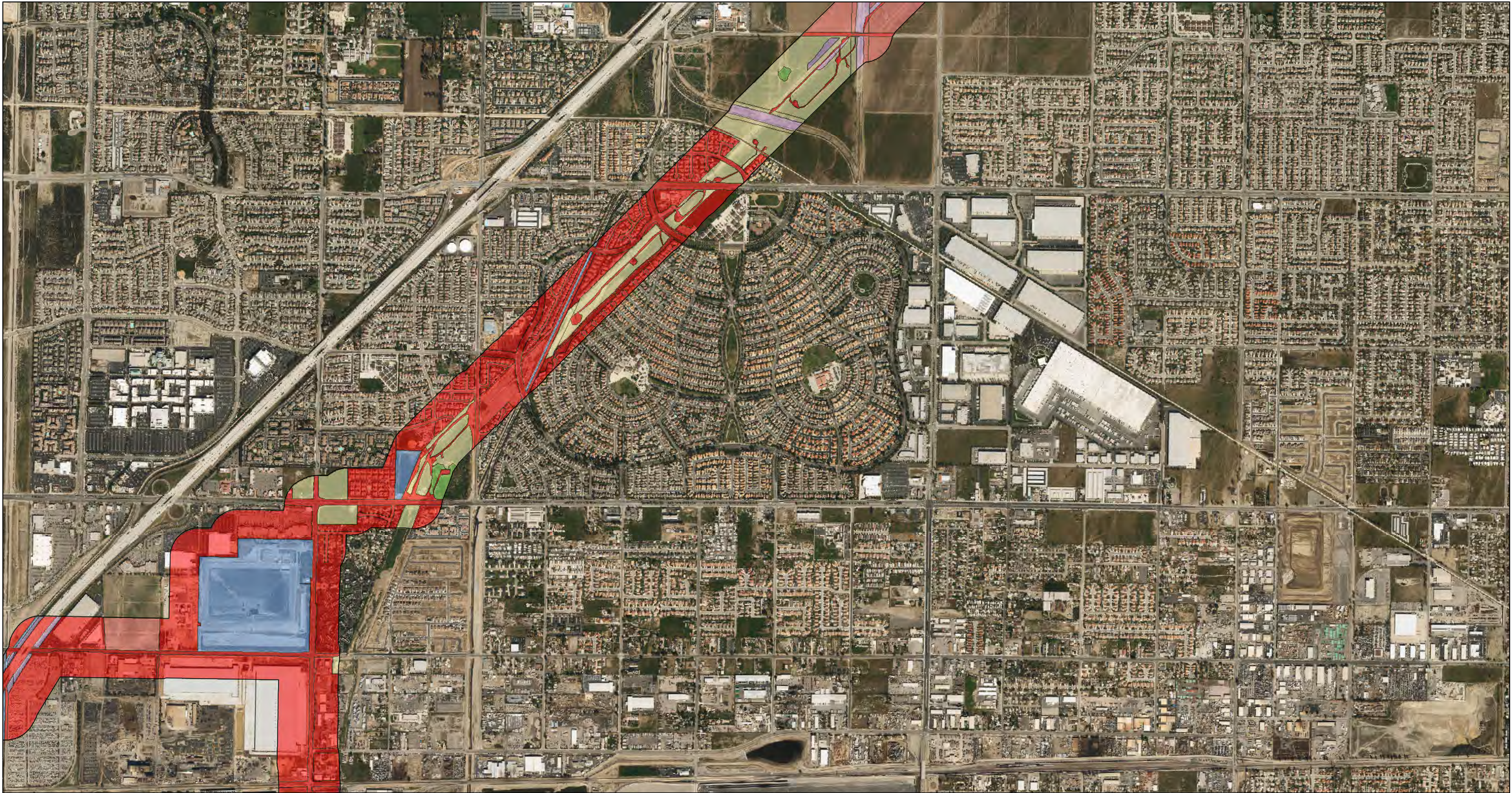
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid D3

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

E2

D6

D7

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

Riparian Scrub

07501,500

Feet

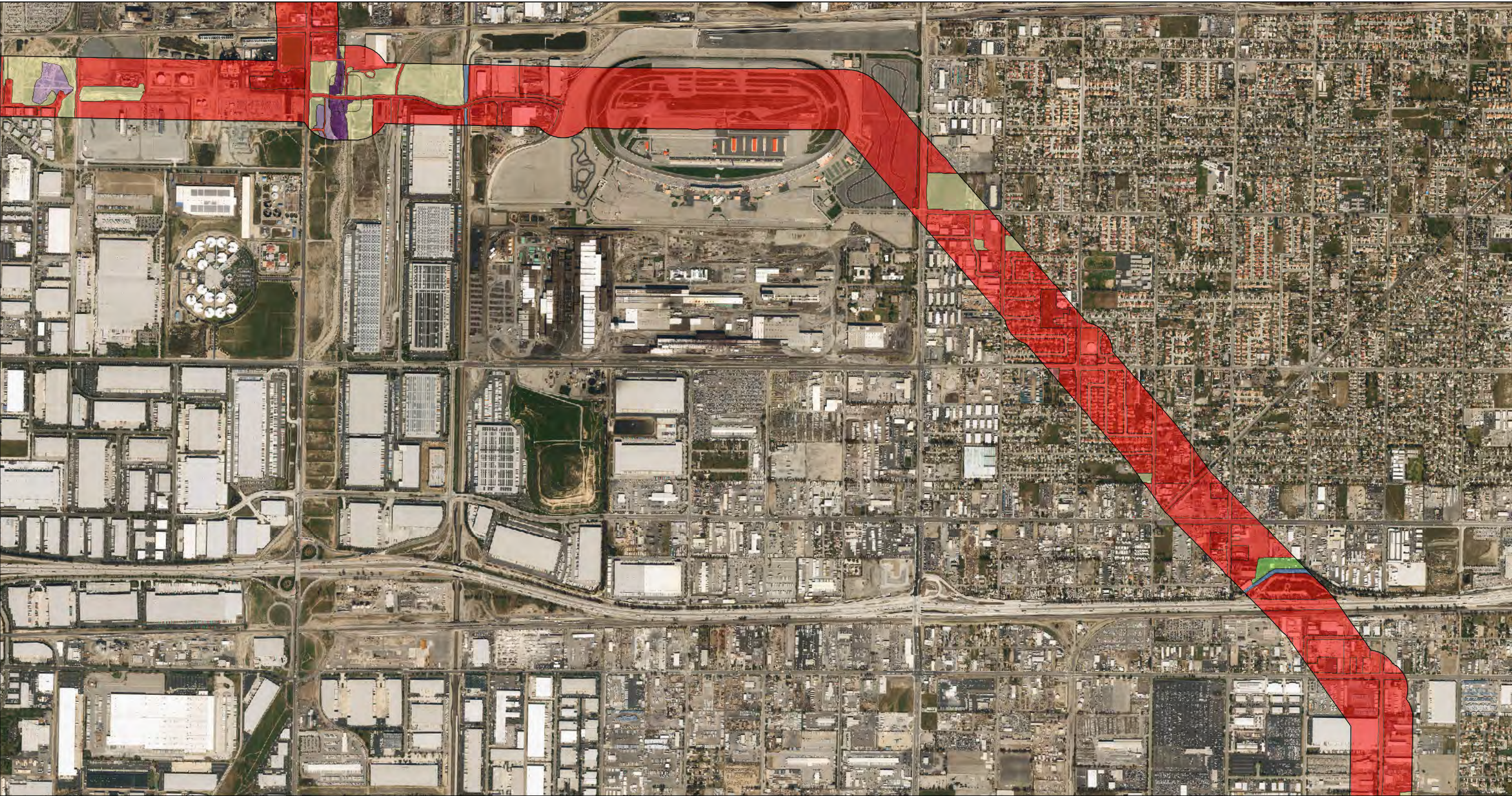
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APPENDIX A

Grid D4

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

Riparian Scrub

0

750

1,500

Feet

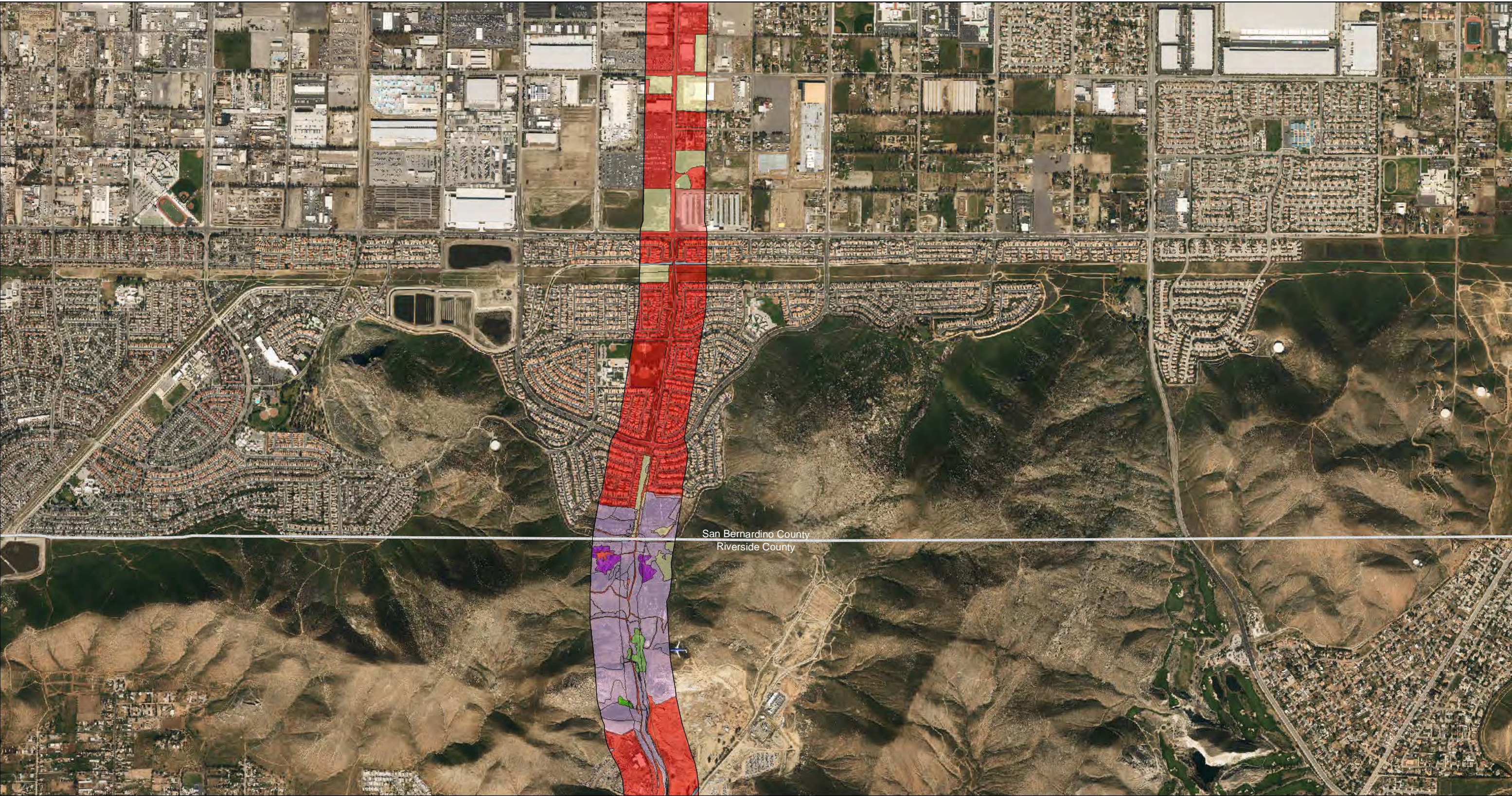
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid D5

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



San Bernardino County
Riverside County

A6
A7
B3
B5
C3
C5
D3
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D7
E2
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G2
H3
H4
H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Riparian Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

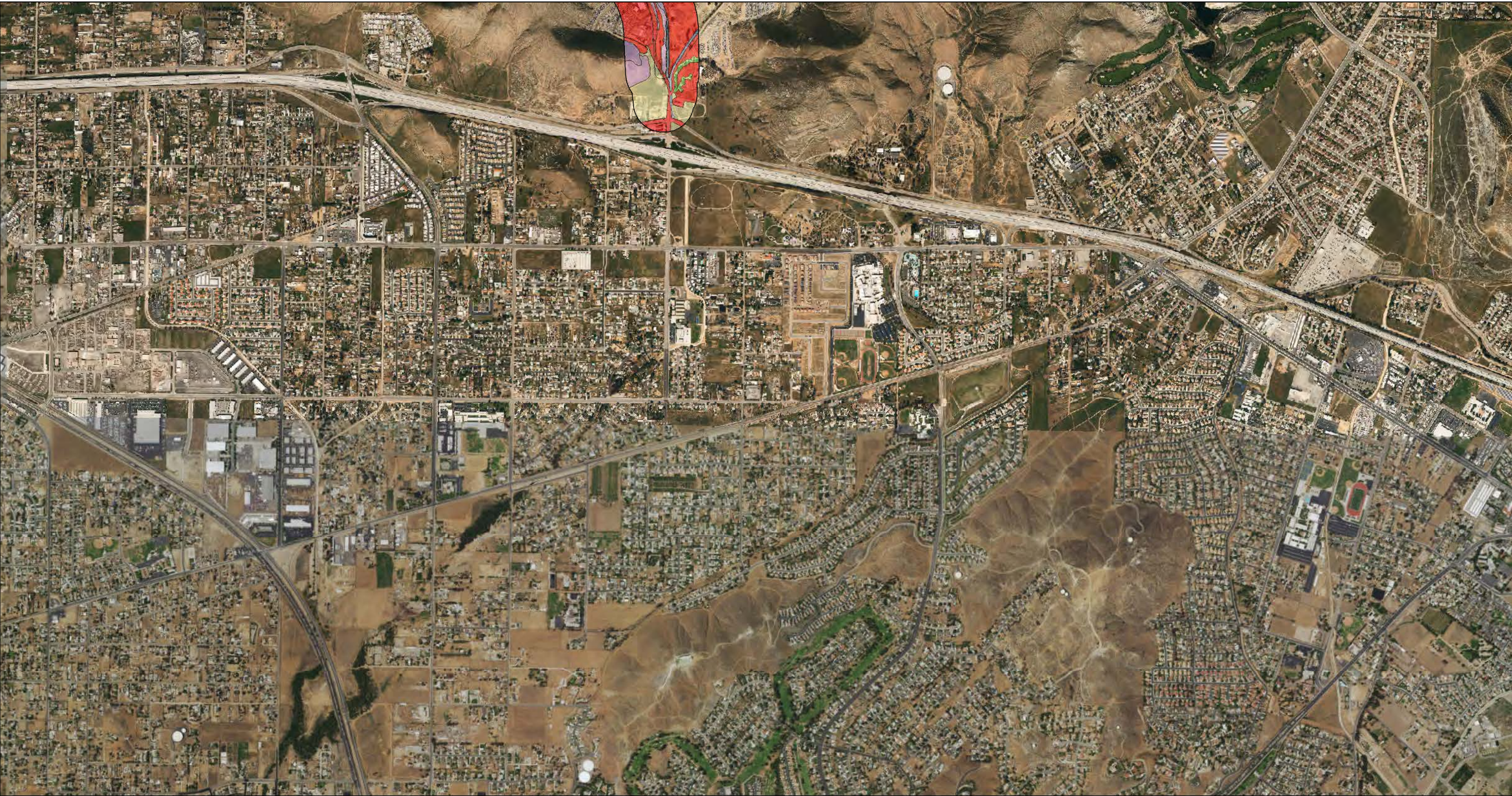
0 750 1,500 Feet

SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A
Grid D6

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Cool Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

0

750

1,500

Feet

0

750

1,500

Feet

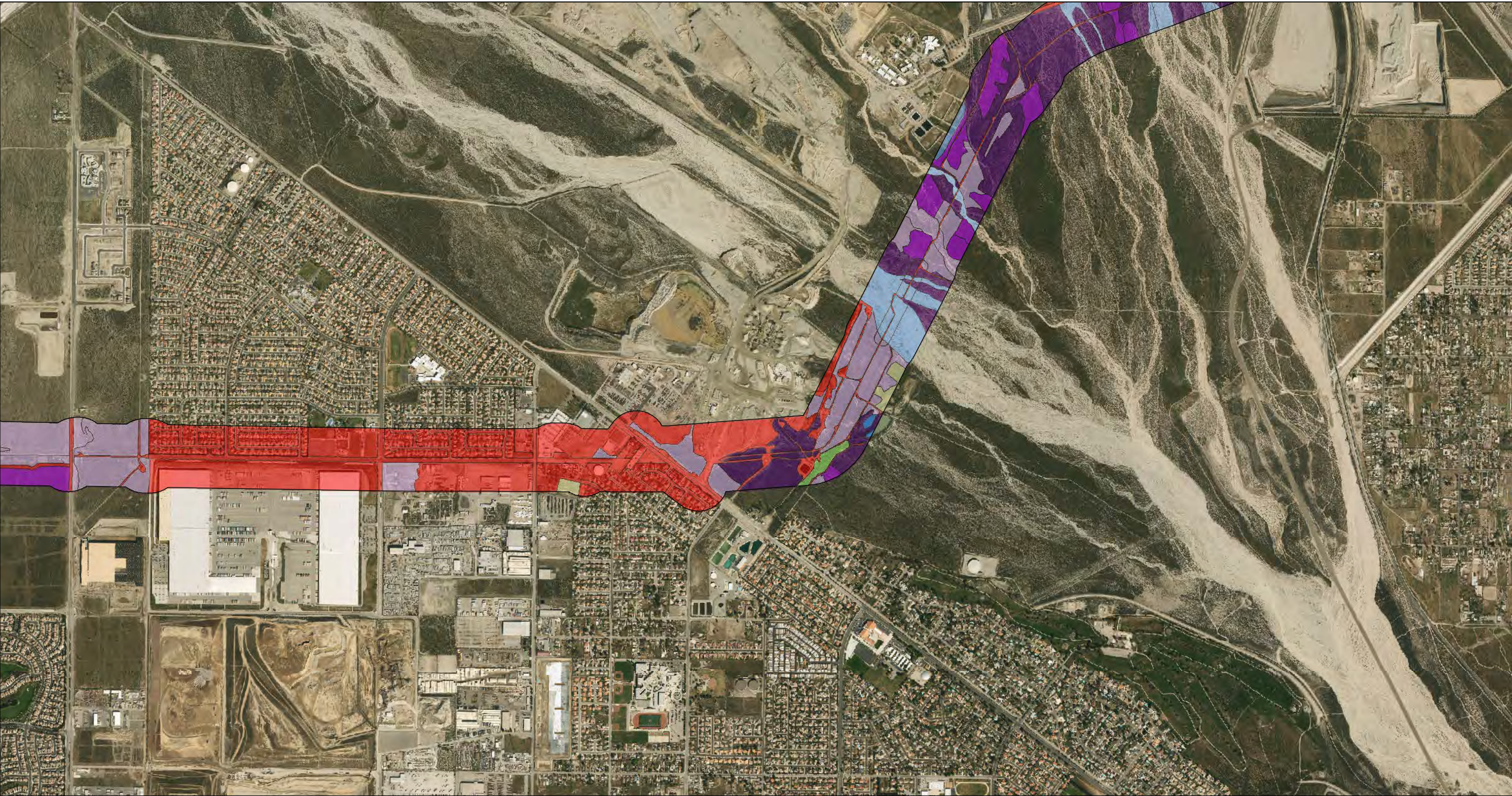
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid D7

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Cool Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Basins and Watercourses

Developed

Water

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

0

750

1,500

Feet

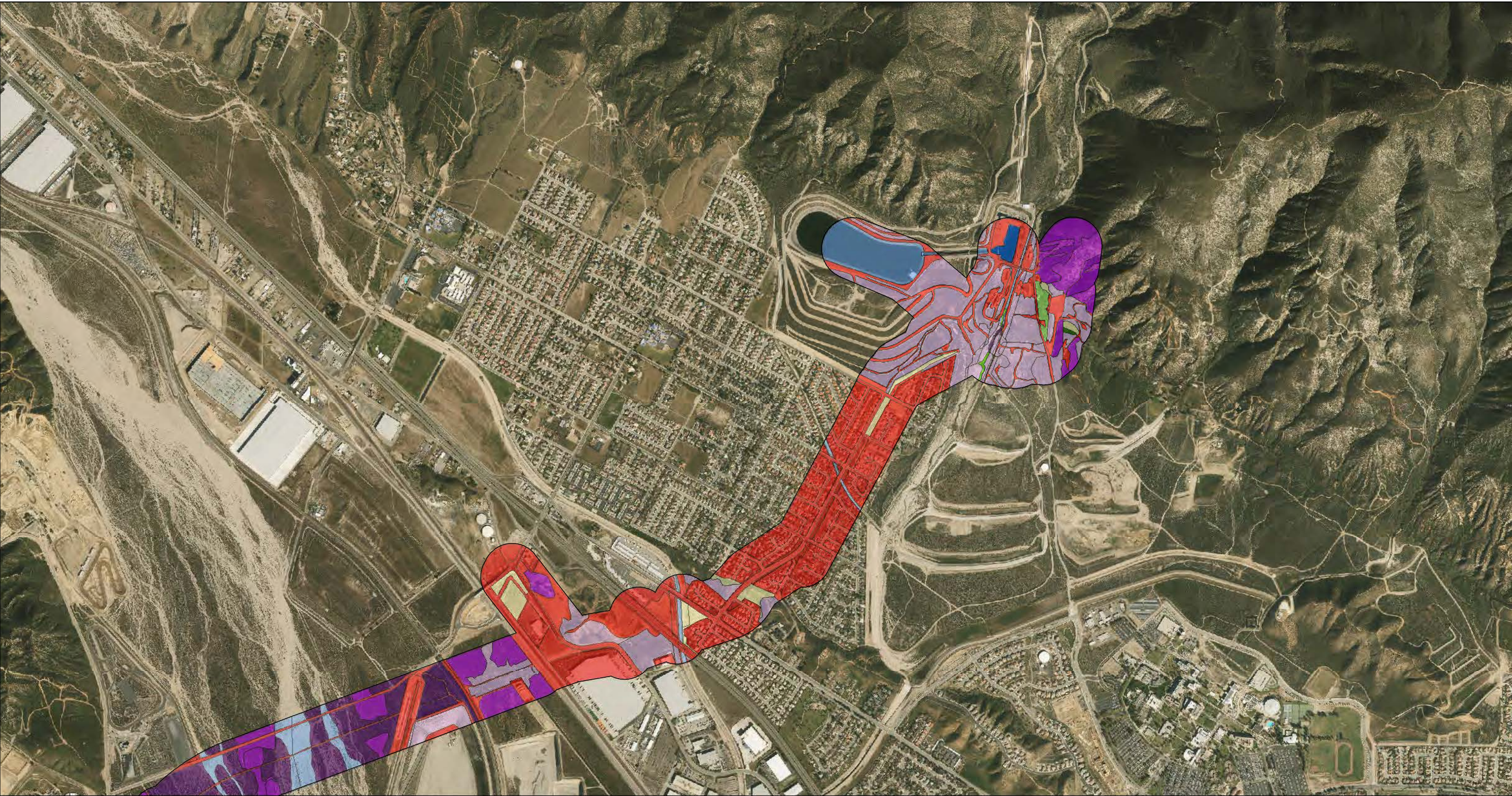
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid E2

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Riparian Forest

Warm Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Basins and Watercourses

Developed

Water

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

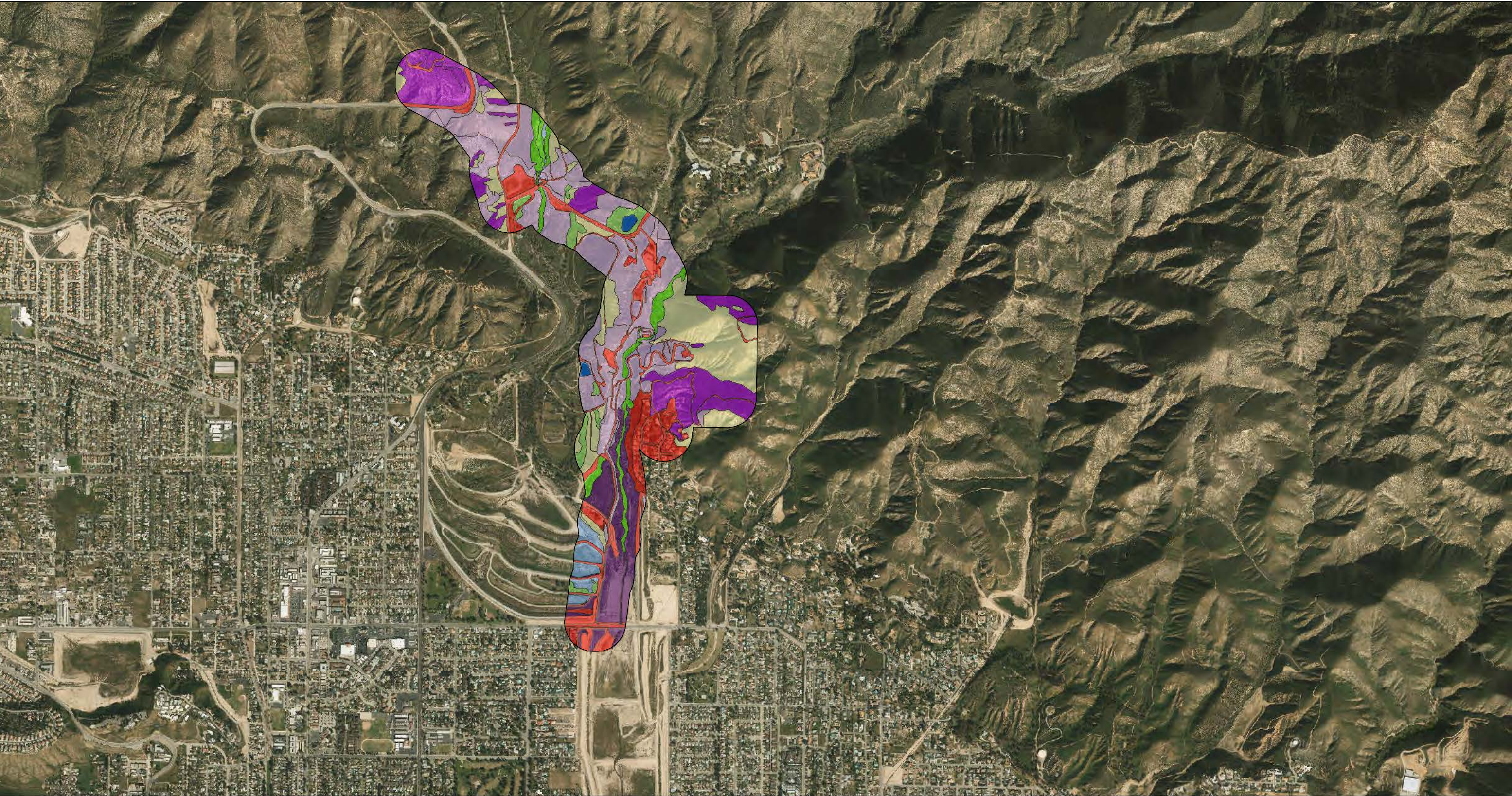
SOURCE: ArcGIS Online Basemap, Eagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid F1

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Cool Temperate Forest

Riparian Forest

Annual Grassland

Basins and Watercourses

Developed

Water

Coastal Scrub

Mixed Chaparral

Riparian Scrub

Forest and Woodlands Alliances and Stands

Herbaceous Alliances and Stands

Non-Natural Land Covers/ Unvegetated Communities

Shrubland Alliances and Stands

0

750

1,500

Feet

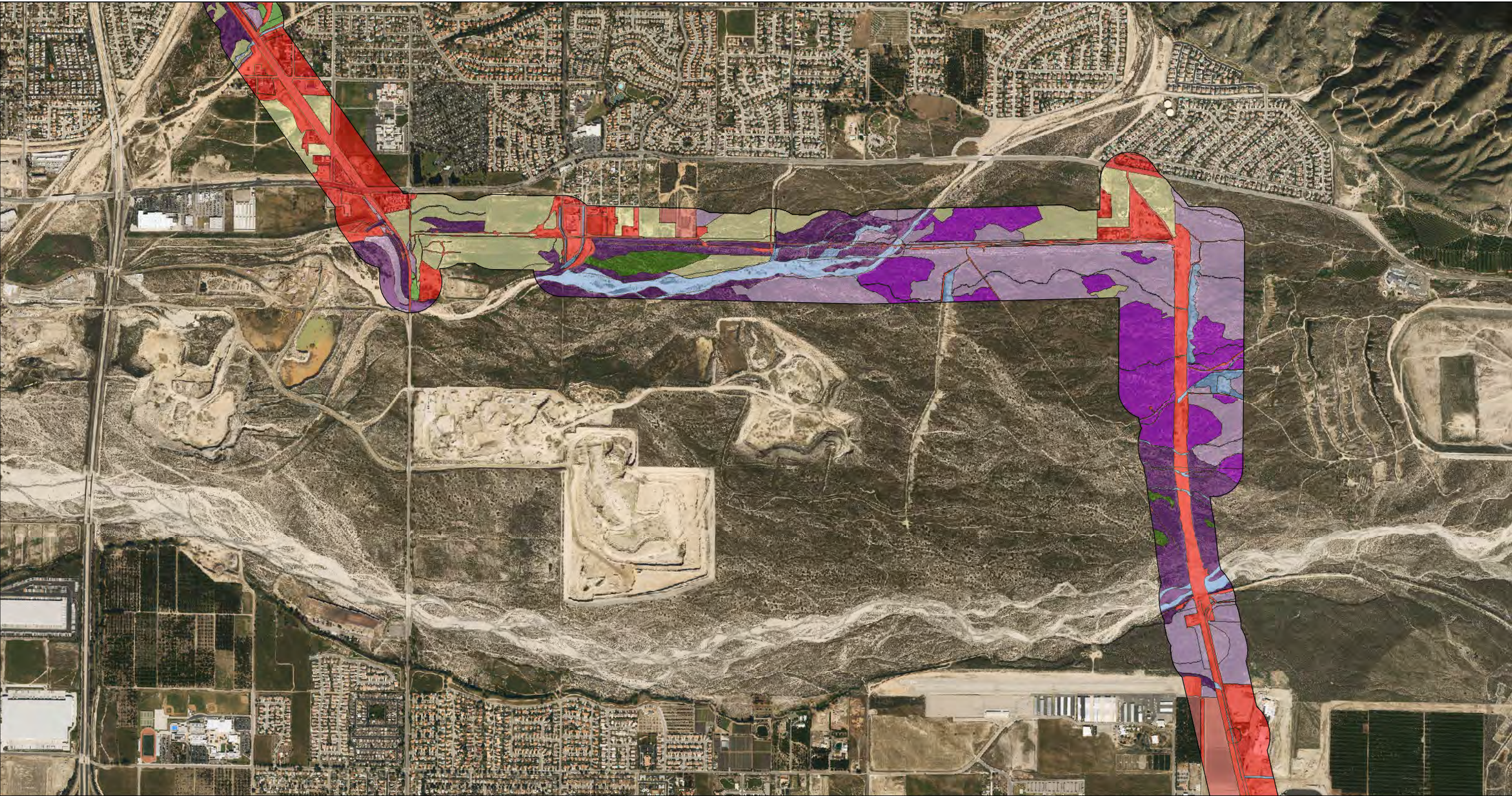
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid G2

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Warm Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-Natural Land Covers/ Unvegetated Communities

Agriculture

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

Riparian Scrub

07501,500

Feet

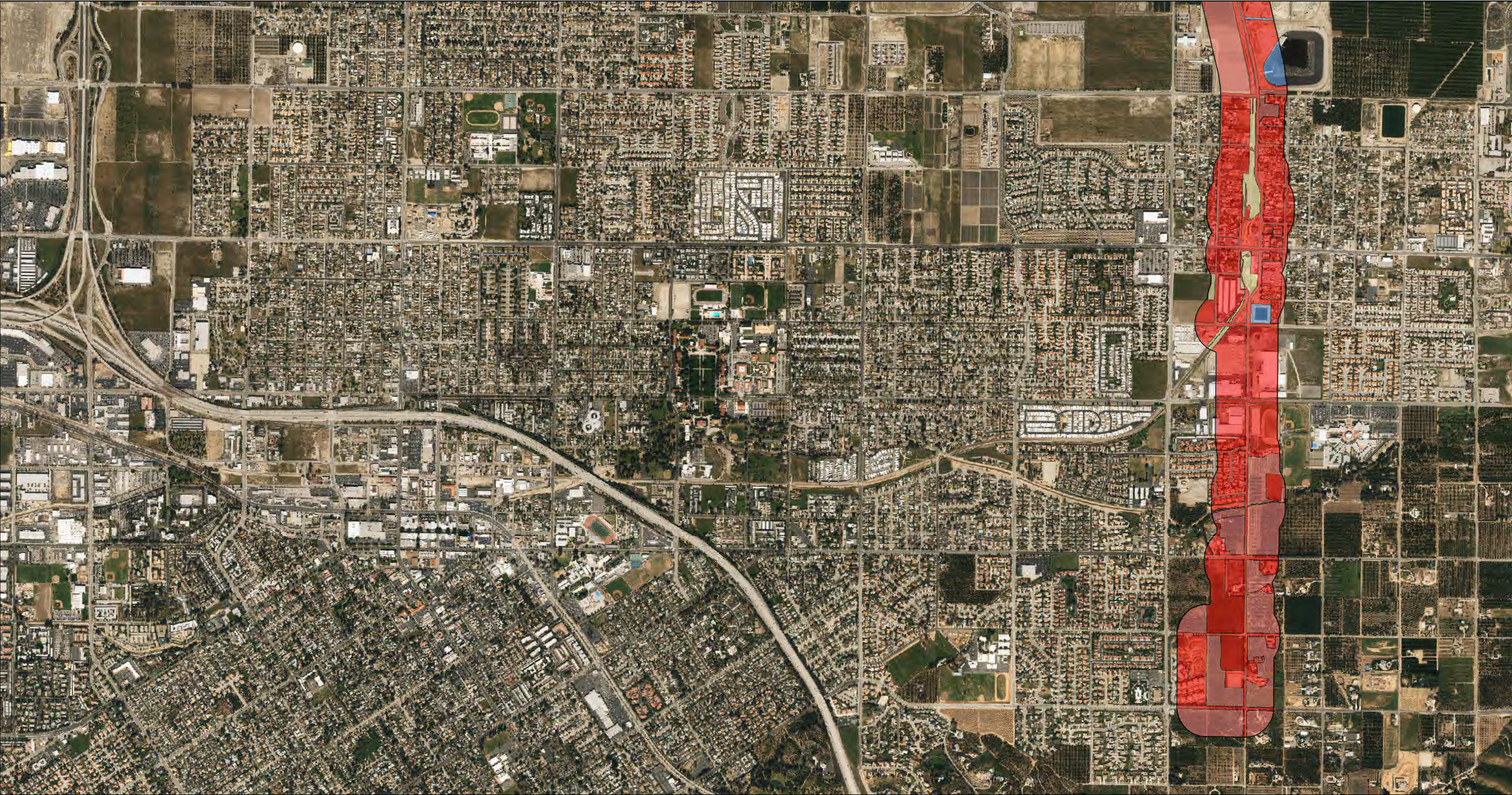
SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid H4

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



A6

A7

B3

B5

C3

C5

D3

D4

D5

D6

D7

E2

F1

G2

H3

H4

H5

Vegetation Mapping Grid

DSIPP 500ft Programmatic Survey Area

Annual Grassland

Herbaceous Alliances and Stands

Non-Natural Land Covers/ Unvegetated Communities

Developed

Agriculture

Basins and Watercourses

0

750

1,500

Feet

SOURCE: ArcGIS Online Basemap, Eaagle Aerial 2015, AECOM 2014, Dudek 2016

APPENDIX A

Grid H5

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program

APPENDIX B

*GIS Data of Vegetation Communities and Land
Covers within the Study Area
(Included on CD)*

Appendix F-2

Botanical Survey Report

October 31, 2017

7576-18

Ms. Jennifer Harriger
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153

Subject: Results of the 2017 Focused Special-Status Plant Surveys for the Metropolitan Water District of Southern California Western San Bernardino Operating Region's Distribution System Infrastructure Protection Program, San Bernardino, California

Dear Ms. Harriger:

This report documents the results of focused special-status plant surveys that were conducted to support The Metropolitan Water District of Southern California (Metropolitan) Western San Bernardino County Operating Region's Distribution System Infrastructure Protection Program (program). The focused plant surveys were conducted at the 12 proposed Capital Investment Plan (CIP) project footprints and single-occurrence operations and maintenance (O&M) activity locations, plus a 500-foot buffer (the study area), which totaled 645 acres.

SITE DESCRIPTION

The Western San Bernardino County Operating Region consists of approximately 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and vacuum valves. The pipelines included in this phase of the proposed program include the Inland Feeder, Upper Feeder, Rialto Pipeline, Etiwanda Pipeline, and Yorba Linda Feeder. Only the portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region, with the exception of a section of the Upper Feeder, from Station 680+00 to Station 728+50. This section of the Upper Feeder is in Riverside County and is included in the Western San Bernardino County Operating Region. Figure 2, Western San Bernardino County Operating Region Pipeline Locations, illustrates the pipeline locations within the Western San Bernardino County Operating Region. The Western San Bernardino County Operating Region totals approximately 9,512 acres, which includes all CIP construction areas, single-occurrence O&M work areas, and other ongoing O&M activity areas, plus a 500-foot buffer.

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The focused survey area for special-status plants consisted of 376.9 acres (the survey area), which were determined using species habitat models across the entire program area. A total of 14 “survey grids” were visited as part of this program (Figure 3).

Ongoing human disturbance at the survey areas appeared to be moderate, and included existing maintenance areas, foot traffic associated with public trails immediately adjacent to the several of the survey areas, and light roadside trash associated with public trails.

Vegetation Communities

Vegetation community mapping was conducted by Dudek in 2015 using the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009) and *List of Vegetation Alliances and Associations*, also referred to as the Natural Communities List (CDFG 2010), to unify the previous mapping classifications and create an updated, comprehensive resource to map the study areas. Vegetation mapping methods are further described in *Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County Operating Region Distribution System Infrastructure Protection Program (DSIPP)* (Dudek 2016).

Twenty-eight vegetation communities or land covers were identified within the focused special-status plant survey area. These vegetation communities include Annual Grassland Mapping Unit (45.62 acres), Basket Bush Alliance (0.96 acre), Black Sage Alliance (3.46 acres), Brittle Bush Alliance (41.97 acres), Brittle Bush Disturbance Mapping Unit (4.51 acres), California Buckwheat – Brittle Bush Association (9.34 acres), California Buckwheat Alliance (36.78 acres), California Buckwheat Disturbance Mapping Unit (4.10 acres), California Juniper Alliance (12.61 acres), California Sagebrush–(California Buckwheat)–Annual Grass-Herb Mapping Unit (4.24 acres), California Sagebrush–California Buckwheat Alliance (3.75 acres), California Sagebrush–California Buckwheat Disturbance Mapping Unit (25.60 acres), California Sagebrush–White Sage Alliance (0.01 acre), California Sagebrush Alliance (43.86 acres), California Sagebrush Disturbance Mapping Unit (0.65 acre), California Sycamore Alliance (9.85 acres), Chamise Alliance (21.43 acres), Deer Weed Alliance (4.59 acres), Fremont Cottonwood Alliance (3.49 acres), Holly Leaf Cherry Chaparral Alliance (0.67 acre), Mulefat Alliance (9.61 acres), Scale Broom Alliance (70.95 acres), Scrub Oak–Chamise Association (2.63 acres), Scrub Oak Alliance (0.48 acre), Sugarbush Alliance (14.54 acres), Tamarisk Thickets Semi-Natural Stands (0.04 acre), Upland Mustards Semi-Natural Stands (0.38 acre), and Willow Riparian Scrub Mapping Unit (0.78 acre).

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Geology and Soils

The study area is located within California's Peninsular Ranges Geomorphic Province, represented by a series of mountain ranges separated by northwest-trending valleys, aligned parallel or nearly parallel to faults branching from the San Andreas Fault (California Geological Survey 2002). Elevation of these sites ranges widely, from approximately 778 feet above mean sea level (AMSL) to 2,652 feet AMSL. The topographic characteristics are similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding older metamorphic rocks. The Peninsular Ranges extend into lower California and are bounded on the east by the Colorado Desert. On the west, the province includes the Los Angeles Basin, its marine shelf, and the Catalina Islands. Major faults in the province are the Cucamonga, San Jacinto, and San Andreas faults. The Metropolitan Water District of Southern California's (Metropolitan) Western San Bernardino County Operating Region is geologically characterized by a large coastal plain underlain by loose deposits of sand, silt, and gravel, and bordered to the north, east, and southwest by the foothills of the San Gabriel Mountains, the foothills of the San Bernardino National Forest, and Chino Hills, respectively. Much of the pipeline system in Metropolitan's Western San Bernardino County Operating Region traverses flatland deposits that are urbanized, with the exception of portions of the Yorba Linda Feeder, Inland Feeder, and Rialto Pipeline.

A total of 17 soils types occur within the focused special-status plant survey area: Chualar clay loam, 9 to 15 % slopes; Cieneba rocky sandy loam, 15 to 50 % slopes, eroded; Cieneba-rock outcrop complex; Delhi fine sand; Fontana clay loam, 30 to 50 % slopes; Greenfield sandy loam, 2 to 9 % slopes; Hanford coarse sandy loam, 2 to 9 % slopes; Hanford coarse sandy loam, 9 to 15 % slopes; Osito-Modesto families association, 30 to 50 % slopes; Psammments and fluvents, frequently flooded; Soboba gravelly loamy sand, 0 to 9 % slopes; Soboba stony loamy sand, 2 to 9 % slopes; Trigo family-Lithic Xerothents, warm complex, 50 to 75 % slopes; Tujunga gravelly loamy sand, 0 to 9 % slopes; Tujunga loamy sand, 0 to 5 % slopes; and Vista coarse sandy loam, 8 to 15 % slopes, eroded.

METHODS

Data regarding botanical resources present within the survey areas were obtained through a review of the pertinent literature and surveys to identify special-status plant species, all of which are described as follows. Survey limitations are also discussed below.

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Literature Review

Prior to field surveys, special-status plant species present or potentially present were identified through a literature search using the following sources: California Natural Diversity Database (CNDDDB) (CDFW 2017), Calflora (2017), California Native Plant Society's Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2017), and U.S. Fish and Wildlife Service's Critical Habitat and Occurrence Data (USFWS 2017).

Special-status species observations and records within the CNDDDB were obtained for the following U.S. Geological Survey 7.5-minute quadrangles in order to evaluate each species potential to occur within the study area: Anaheim, Azusa, Baldwin Park, Beaumont, Big Bear Lake, Black Star Canyon, Butler Peak, Cajon, Corona North, Crystal Lake, Cucamonga Peak, Devore, El Casco, Fontana, Forest Falls, Glendora, Guasti, Harrison Mtn, Keller Peak, La Habra, Lake Arrowhead, Mount San Antonio, Mt. Baldy, Ontario, Orange, Prado Dam, Redlands, Riverside East, Riverside West, San Bernardino North, San Dimas, Silverwood Lake, Sunnymead, Telegraph Peak, Yorba Linda, and Yucaipa.

Reference Population Checks

Plant species bloom at slightly different times each year depending on temperature, rainfall patterns, elevation, and other environmental factors. Reference population checks involve locating known special-status plant species populations during a time frame when they are known to be blooming or exhibit other phenological characteristics that allow for species identification. Observations of reference populations during peak phenology provide assurance that these species would be identifiable if they were present in the study area.

On May 8, 2017, Dudek conducted reference population checks for two federally and state-listed special-status plant species that had a potential to occur within the survey area including slender-horned spineflower (*Dodecahema leptoceras*) and Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*). Data gathered from the reference population checks were used to confirm the appropriate time to begin field surveys. Nevin's barberry (*Berberis nevinii*), a federally and state listed endangered species, was determined to have a potential to occur on site; however, this is a perennial evergreen shrub that would have been identifiable outside of the blooming period; therefore, reference population checks were not conducted for this species. Slender-horned spineflower, CNDDDB occurrence number 39, was observed in bloom along an alluvial bench of Cajon Wash adjacent to Cajon Boulevard. Santa Ana River woollystar, CNDDDB occurrence number 33, was observed within Cajon Wash immediately north

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of Institution Road; however, this perennial herb was not in bloom but was in bud and identifiable in the vegetative form.

Additional reference population checks were conducted for some CRPR 1 and 2 species and were confirmed to be in bloom including intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*) and white-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*). Intermediate mariposa lily was observed in bloom on a confidential project site located in the City of Rancho Cucamonga on May 10, 11, 15, 17, and 18, 2017. White-bracted spineflower was observed in bloom on May 8, 2017, CNDDDB occurrence number 49, within Cajon Wash immediately west of Keenbrook Road. Parry's spineflower was observed in bloom along alluvial terraces adjacent to Oak Glen Creek and Wilson Creek on April 19, 2016 and again on June 12, 2017 in the City of Yucaipa, southwest of the intersection of Oak Glen Road and Bryant Street.

Survey Methods

Focused special-status plant surveys were conducted in May and June 2017 by Dudek biologists Britney Strittmater, Kathleen Dayton, and Erin Bergman (Table 1). Surveys were conducted within the study area, with the primary focus including the survey area consisting of the species modeled habitat. Areas outside of the modeled habitat survey area were also assessed in the field and surveyed if deemed suitable.

Table 1
Survey Conditions

Date	Hours	Personnel	Survey Area	Conditions
5/23/17	0843–1600	BAS, EB	W7, V7	78°F–94°F, 0% cloud cover (cc), 0–3 mph wind
5/24/17	0743–1535	BAS, EB	W7, W8, P2	67°F–82°F, 10%–30% cc, 0–3 mph wind
5/31/17	0752–1500	BAS, KCD	O4, L5	59°F–71°F, 100% cc, 0–3 mph wind
6/01/17	0723–1530	BAS, KCD	W8, U5, G6	60°F–74°F, 0%–100% cc, 0–3 mph wind
6/02/17	0735–1250	BAS, KCD	B15, K9, I12	60°F–83°F, 0%–100% cc, 0–3 mph wind
6/26/17	0750–1155	BAS, KCD	S3, S4, U5	81°F–100°F, 0% cc, 0–3 mph wind

Personnel

BAS: Britney Strittmater

KCD: Katie Dayton

EB: Erin Bergman

Surveys for special-status species were conducted in conformance with the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural*

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Communities (CDFG 2009), *CNPS Botanical Survey Guidelines* (CNPS 2001), and *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 1996). The plant species detected during the field surveys were identified to subspecies or variety, if applicable and feasible, to determine sensitivity status. Latin and common names for plant species with a California Rare Plant Rank (CRPR; formerly CNPS List) follow the *CNPS Online Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2016). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2016), and common names follow the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Plants Database (USDA 2016). All plant species encountered during the field surveys were identified and recorded for inclusion within a plant compendium (Attachment A).

The survey was conducted by walking meandering transects to detect special-status species. Special-status plant observations were mapped in the field using the ESRI Collector application. All plant locations and number of individuals or population estimates were recorded.

Survey Limitations

Surveys for special-status plant species were conducted in May and June of 2017. The timing of the surveys coincided with the blooming period for all target species. Access to modeled habitat within Survey Area S3 and S4 via the Tribal Lands was granted for June 26, 2017; however, surveyors were restricted to remaining within access roads allowing only visual observation via binoculars. Access to modeled habitat within Survey Area O4 was limited due to areas being enclosed by fencing; allowing only visual observation via binoculars. Therefore, there was limited visibility to detect special-status plants within these survey areas. Small, inconspicuous annual or perennial herbs may not have been detectable.

All surveys were conducted during daylight hours under weather conditions that did not preclude observation of special-status plant species (e.g., surveys were not conducted during heavy fog or rain).

RESULTS

Botany – Floral Diversity

A total of 257 species of native or naturalized plants, 175 native (68%) and 82 non-native (32%), were recorded within the survey area (see Attachment A).

Ms. Harriger

Subject: Results of the 2017 Focused Special-Status Plant Surveys for the Metropolitan Water District of Southern California Western San Bernardino County Operating Region's Distribution System Infrastructure Protection Project, San Bernardino County, California

Special-Status Plant Species

Table 2 lists the special-status species that were the focus of special-status plant surveys in 2017 and provides an analysis of their potential to occur on site based on geography, topography, vegetation communities, soils, and survey results.

Table 2
Special-Status Plant Species and their Potential to Occur on Site

Scientific Name	Common Name	Status (Federal/State/C RPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Berberis nevini</i>	Nevin's barberry	FE/CE/1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub; sandy or gravelly/perennial evergreen shrub/Mar–June/230–2707	Low potential to occur. Conspicuous perennial evergreen shrub would have been detected if present. Focused surveys negative.
<i>Brodiaea filifolia</i>	thread-leaved brodiaea	FT/CE/1B.1	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools; often clay/perennial bulbiferous herb/Mar–June/80–3675	Low potential to occur. Focused surveys negative.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	None/None/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland/perennial bulbiferous herb/Mar–June(Nov)/1045–3280	Low potential to occur. Focused surveys negative.
<i>Calochortus plummerae</i>	Plummer's mariposa lily	None/None/4.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland; granitic, rocky/perennial bulbiferous herb/May–July/328–5577	Observed. Four individuals were observed near IF Sta 822+10 and RPL Sta 3571+01.
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily	None/None/1B.2	Chaparral, coastal scrub, valley and foothill grassland; rocky, calcareous/perennial bulbiferous herb/May–July/344–2805	Low potential to occur. Focused surveys negative.
<i>Centromadia pungens</i> ssp. <i>laevis</i>	smooth tarplant	None/None/1B.1	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2100	Low potential to occur. Focused surveys negative.
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	None/None/1B.1	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky, openings/annual herb/Apr–June/902–4003	Observed. Approximately 6,705 individuals were observed near IF Sta 813+00; IF Sta 914+10; IF Sta 940+80; IF Sta 945+10; and RPL Sta 3901+02.

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Table 2
Special-Status Plant Species and their Potential to Occur on Site

Scientific Name	Common Name	Status (Federal/State/C RPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	white-bracted spineflower	None/None/1B.2	Coastal scrub (alluvial fans), Mojavean desert scrub, pinyon and juniper woodland; sandy or gravelly/annual herb/Apr–June/984–3937	Low potential to occur. Focused surveys negative.
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/CE/1B.1	Chaparral, cismontane woodland, coastal scrub (alluvial fan); sandy/annual herb/Apr–June/656–2493	Low potential to occur. Focused surveys negative.
<i>Dudleya multicaulis</i>	many-stemmed dudleya	None/None/1B.2	Chaparral, coastal scrub, valley and foothill grassland; often clay/perennial herb/Apr–July/49–2592	Low potential to occur. Focused surveys negative.
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	FE/CE/1B.1	Chaparral, coastal scrub (alluvial fan); sandy or gravelly/perennial herb/Apr–Sep/299–2001	Observed. Approximately 181 individuals were observed near IF Sta 813+00; IF Sta 822+10; and IF Sta 914+10.
<i>Horkelia cuneata</i> var. <i>puberula</i>	mesa horkelia	None/None/1B.1	Chaparral (maritime), cismontane woodland, coastal scrub; sandy or gravelly/perennial herb/Feb–July (Sep)/230–2657	Low potential to occur. Focused surveys negative.
<i>Imperata brevifolia</i>	California satintail	None/None/2B.1	Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub; mesic/perennial rhizomatous herb/Sep–May/0–3985	Low potential to occur. Focused surveys negative.
<i>Juglans californica</i>	Southern California black walnut	None/None/4.2	Chaparral, cismontane woodland, coastal scrub; alluvial/perennial deciduous tree/Mar–Aug/164–2953	Observed. Eight individuals were observed within the survey area near RPL Sta 3571+01 and YLF Sta 688+15. An additional 38 individuals were mapped outside of the survey area.
<i>Monardella macrantha</i> ssp. <i>hallii</i>	Hall's monardella	None/None/1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland/perennial rhizomatous herb/June–Oct/2395–7200	Low potential to occur. Focused surveys negative.
<i>Phacelia stellaris</i>	Brand's star phacelia	None/None/1B.1	Coastal dunes, Coastal scrub/annual herb/Mar–June/0–1310	Low potential to occur. Focused surveys negative.

Ms. Harriger

Subject: Results of the 2017 Focused Special-Status Plant Surveys for the Metropolitan Water District of Southern California Western San Bernardino County Operating Region's Distribution System Infrastructure Protection Project, San Bernardino County, California

Table 2
Special-Status Plant Species and their Potential to Occur on Site

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Sidalcea neomexicana</i>	salt spring checkerbloom	None/None/2B.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas; alkaline, mesic/perennial herb/Mar–June/49–5020	Low potential to occur. Focused surveys negative.
<i>Viguiera laciniata</i>	San Diego County viguiera	None/None/4.3	Chaparral, coastal scrub/perennial shrub/ Feb–June/197–2461	Observed. One individual was observed near IF Sta 592+31; however, this occurrence appears to be associated with the restoration efforts and is presumed to be introduced.

FT = federally threatened

FE = federally endangered

CE = state endangered

CRPR = California Rare Plant Rank

CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere

CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere

CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

CRPR 3: Plants about which More Information is Needed – A Review List

CRPR 4: Plants of Limited Distribution – A Watch List

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

.2 Moderately threatened in California (20–80% occurrences threatened/moderate degree and immediacy of threat)

.3 Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Five special-status plant species were observed within the survey area: Plummer's mariposa lily (*Calochortus plummerae*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), Santa Ana woollystar (*Eriastrum densifolium* ssp. *sanctorum*), California walnut (*Juglans californica*), and San Diego County viguiera (*Viguiera laciniata*) (Table 3).

Table 3
Summary of Special-Status Plant Populations within the Survey Area

Special-Status Plant Species	Status (Federal/State/CRPR)	Station	Total
Plummer's mariposa lily (<i>Calochortus plummerae</i>)	None/None/4.2	IF Sta 822+10	2
		RPL Sta 3571+01	2
Plummer's mariposa lily Subtotal			4

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Table 3
Summary of Special-Status Plant Populations within the Survey Area

Special-Status Plant Species	Status (Federal/State/CRPR)	Station	Total
Parry's spineflower (<i>Chorizanthe parryi</i> var. <i>parryi</i>)	None/None/1B.1	IF Sta 813+00	70
		IF Sta 914+10	321
		IF Sta 940+80	112
		IF Sta 945+10	5,771
		RPL Sta 3901+02	431
Parry's spineflower Subtotal			6,705
Santa Ana River woollystar (<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>)	FE/CE/1B.1	IF Sta 813+00	170
		IF Sta 822+10	3
		IF Sta 914+10	8
Santa Ana River woollystar Subtotal			181
California walnut (<i>Juglans californica</i>)	None/None/4.2	RPL Sta 3571+01	3
		YLF Sta 688+15	5
California walnut Subtotal			8
San Diego County viguiera (<i>Viguiera laciniata</i>)	None/None/4.3	IF Sta 592+31	1
San Diego County viguiera Subtotal			1
Total			6,899

Plummer's mariposa lily is a CRPR 4.2 species, indicating that it has a limited distribution in California. Plummer's mariposa lily occurs from Ventura County south to Los Angeles and Orange Counties and east to San Bernardino and Riverside Counties (CNPS 2017). This bulbiferous herb blooms from May to July and occurs in granitic, rocky soils in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest and valley and foothill grasslands from 100 to 1,700 meters amsl (328 to 5,577 feet) (CNPS 2017). Four Plummer's mariposa lily occurrences were observed within the survey area. Specifically, two occurrences were mapped near Station IF Sta 822+10 (Figure 4 – Grid W7) and two occurrences were mapped near RPL Sta 3571+01 (Figure 4 – Grid L5).

Parry's spineflower is a CRPR 1B.1 species, indicating that it is rare or endangered in California and elsewhere and seriously endangered in California. Parry's spineflower occurs from Los Angeles County southeast to San Bernardino and Riverside Counties (CNPS 2017). This annual herb blooms from April to June and occurs in rocky or sandy opening within

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chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland from 275 to 1,220 meters amsl (902 to 4,002 feet) (CNPS 2017). It typically blooms from April to June (CNPS 2017). Approximately 6,700 individuals of Parry's spineflower were observed in 2017. Specifically, one population of 70 individuals were mapped near IF Sta 813+00 (Figure 4 – Grid W7); approximately 321 individuals were mapped north of the Santa Ana River near IF Sta 914+10, and 112 individuals were mapped near IF Sta 940+80 and approximately 5,771 individuals were mapped near IF Sta 945+10 south of the Santa Ana River within upper terraces (Figure 4 – Grid W8); and approximately 431 individuals were mapped near RPL Sta 3901+02 along upper terraces of Cajon Wash (Figure 4 – Grid O4).

Santa Ana woollystar is a state- and federally endangered species, as well as a CRPR 1B.1 species, indicating that the species is rare, threatened, or endangered in California and elsewhere with over 80% of California occurrences threatened with a high degree and immediacy of threat. This perennial herb occurs in chaparral, coastal scrub (alluvial fan) habitats with sandy or gravelly soils, from 295 to 2,000 feet amsl (CNPS 2017). It typically blooms from April to September (CNPS 2017). Approximately 181 individuals of Santa Ana woollystar were observed in 2017 within the survey area. Specifically, 170 individuals were mapped within the upper terraces along Plunge Creek near IF Sta 813+00 and three individuals were mapped north of IF Sta 822+00 (Figure 4 – Grid W7); and eight individuals were mapped near IF Sta 914+10 within upper terraces of scale broom scrub north of the Santa Ana River (Figure 4 – Grid W8).

California walnut is a CRPR 4.2 species, indicating that it has a limited distribution in California. California walnut occurs from Santa Barbara County south to San Diego County (CNPS 2017). This perennial deciduous tree blooms from March to August and occurs in alluvial habits in chaparral, cismontane woodland, coastal scrub, and riparian woodlands from 50 to 900 meters amsl (164 to 2,952 feet) (CNPS 2017). Eight California walnuts were observed within the survey area. Specifically, three individuals were mapped near RPL Sta 3571+01 (Figure 4 – Grid L5); and five individuals were mapped near YLF Sta 688+15 along riparian corridor comprised of coast live oak woodlands and southern willow scrub (Figure 4 – Grid B15). An additional 38 California walnuts were observed outside of the survey area near YLF Sta 688+15 (Figure 4 – Grid B15).

San Diego County viguiera is a CRPR 4.3 species, indicating that it has a limited distribution in California. San Diego County viguiera occurs in San Diego County, with occurrences outside of San Diego County being introduced (CNPS 2017). This perennial shrub blooms from February to June and occurs in chaparral and coastal scrub from 60 to 750 meters amsl (197 to 2,461 feet) (CNPS 2017). One individual was identified near IF Sta 592+31 within what appeared to be a

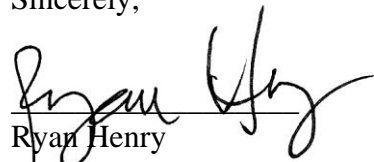
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restoration area associated with the development of the concrete lined v-ditches (Figure 4 – U5). This species is presumed to be introduced as part of the restoration efforts.

We certify that the information in this survey report and attachments fully and accurately represent our work. Please contact Ryan Henry at rhenry@dudek.com or 949.450.7991 with questions or if you require additional information.

Sincerely,



Ryan Henry
Senior Biologist

Att: *Figures 1–4 (Grid B15, Grid L5, Grid O4, Grid U5, Grid W7, and Grid W8)*
Attachment A: Plant Species Observed in Survey Area

cc: *Jennifer Harriger, The Metropolitan Water District of Southern California*
Shelah Riggs, Dudek

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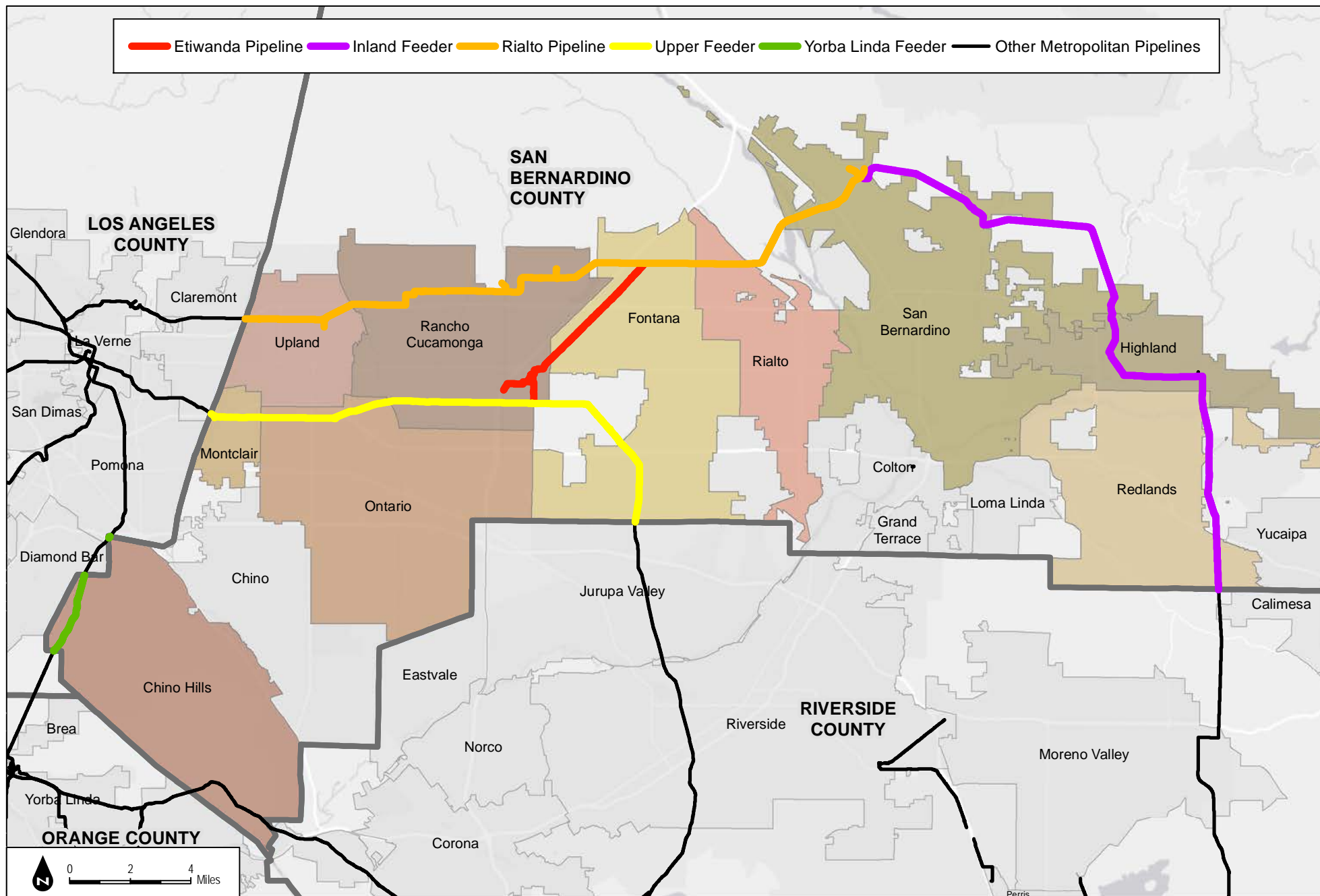
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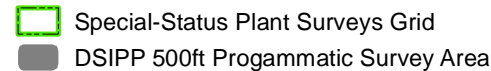
SOURCE: ArcGIS Online Basemap

FIGURE 1
Regional Map



SOURCE: ArcGIS Online Basemap

FIGURE 2
Western San Bernardino County Operating Region Pipeline Locations



The Metropolitan Water District of Southern California

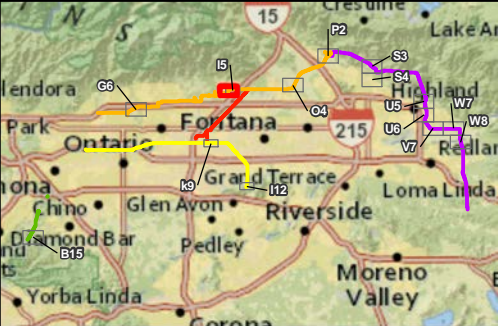
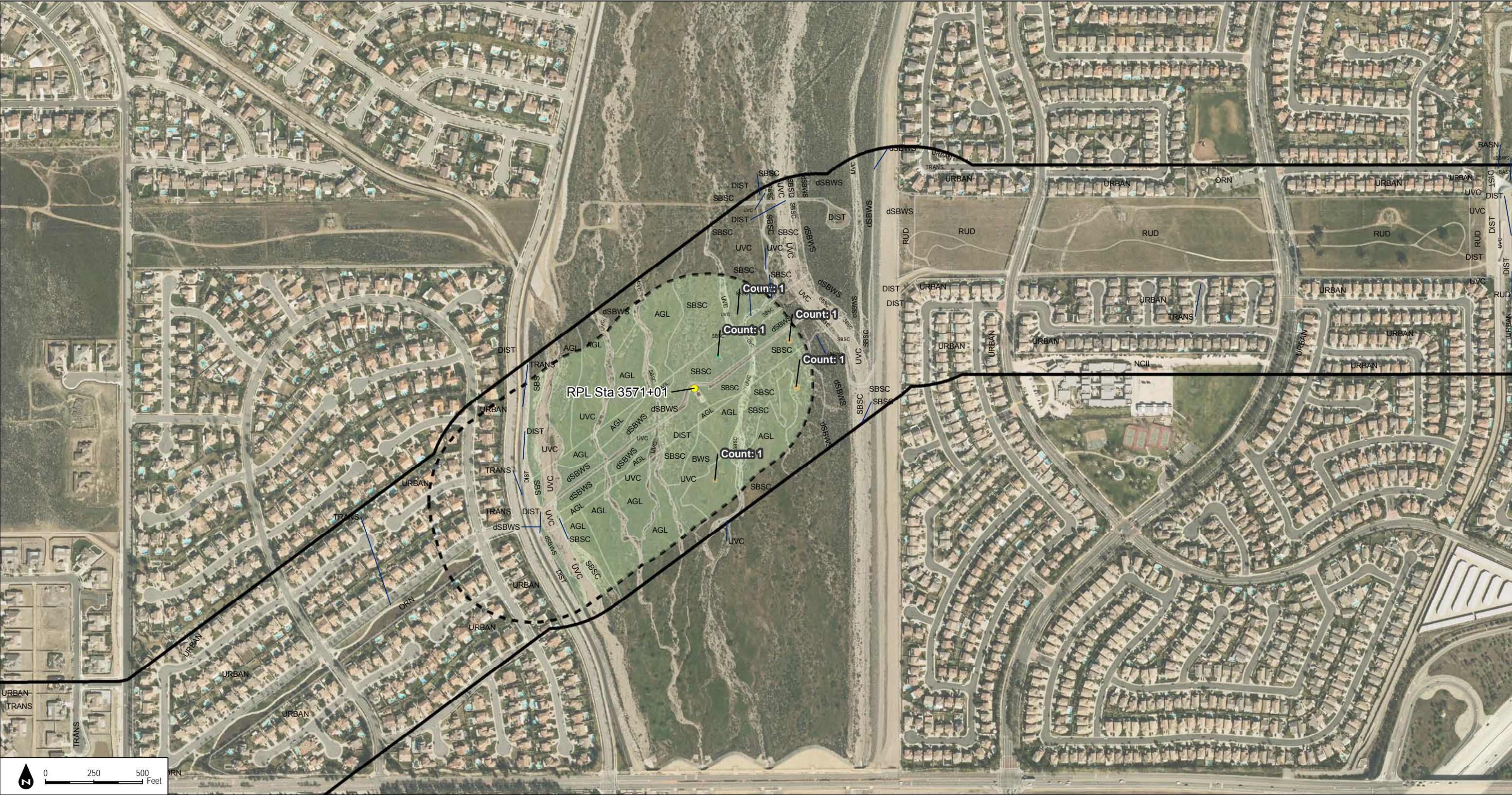
Western San Bernardino County Distribution System Infrastructure Protection Program



- | | | | | | |
|---------------------|----------------------|-------------------------------|-------------------------------|---|---|
| — Etiwanda Pipeline | — Upper Feeder | 500' Study Area | Special-Status Species | Vegetation | CLOW - Coast Live Oak Alliance |
| — Inland Feeder | — Yorba Linda Feeder | Station | California Walnut | AGL - Annual Grassland Mapping Unit | DIST - Disturbed or Barren Mapping Unit |
| — Rialto Pipeline | Project Area | Survey Area - Modeled Habitat | | CBM - California Bulrush Marsh Alliance | SWS - Arroyo Willow / Mulefat Association |

SOURCE: ArcGIS Online Basemap (Nat Geo), Eagle Aerial (2015), MWD Pipelines

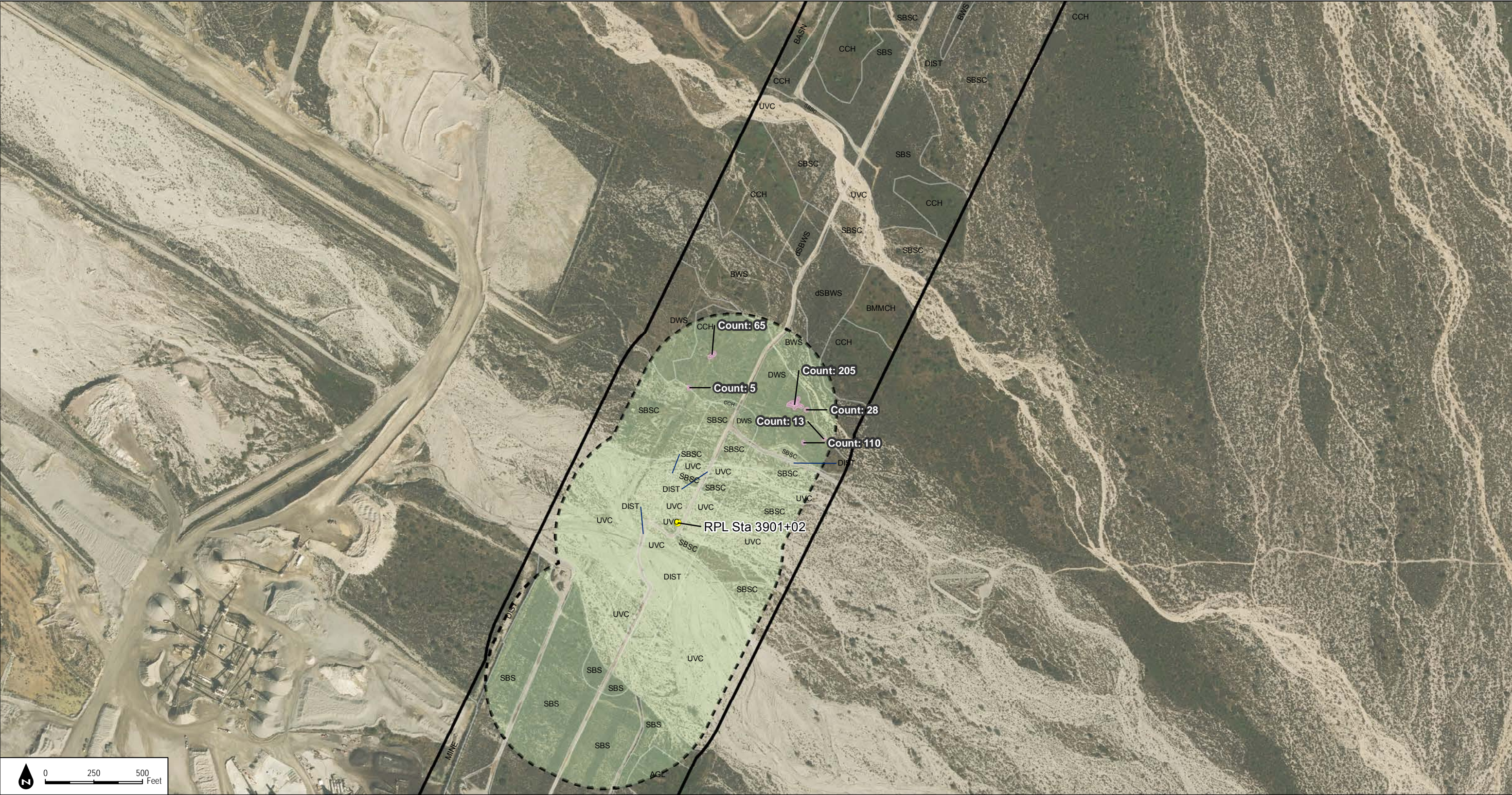
FIGURE 4 - GRID B15
Results - Special-Status Plant Surveys 2017



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|--|---|---|--|---|
| <ul style="list-style-type: none">Etiwanda PipelineInland FeederRialto PipelineUpper FeederYorba Linda FeederProject Area | <ul style="list-style-type: none">500' Study AreaStationSurvey Area - Modeled HabitatSpecial-Status SpeciesPlummer's mariposa lilyCalifornia Walnut | Vegetation <ul style="list-style-type: none">AGL - Annual Grassland Mapping UnitBASN - Basins Mapping UnitBWS - California Buckwheat AllianceDIST - Disturbed or Barren Mapping UnitNCII - Nonurban Commercial/Industrial/Institutional Mapping Unit | <ul style="list-style-type: none">ORN - Ornamental Landscaping Mapping UnitRUD - Ruderal Grassland Mapping UnitSBS - California Sagebrush AllianceSBSC - Scale Broom AllianceTRANS - Transportation Mapping UnitURBAN - Urban and Commercial Mapping Unit | <ul style="list-style-type: none">UVC - Unvegetated Channels Mapping Unit |
|--|---|---|--|---|

SOURCE: ArcGIS Online Basemap (Nat Geo), Eagle Aerial (2015), MWD Pipelines

FIGURE 4 - GRID L5
Results - Special-Status Plant Surveys 2017



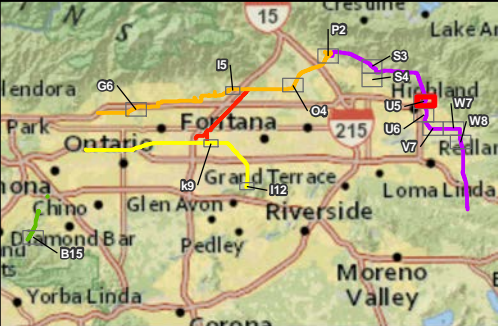
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|---|--|--|---|---|
| <ul style="list-style-type: none">Etiwanda PipelineInland FeederRialto PipelineUpper FeederYorba Linda Feeder | <ul style="list-style-type: none">Project Area500' Study AreaStationSurvey Area - Modeled Habitat | Special-Status Species <ul style="list-style-type: none">Parry's spineflower Vegetation <ul style="list-style-type: none">AGL - Annual Grassland Mapping UnitBASN - Basins Mapping Unit | <ul style="list-style-type: none">BMMCH - Birch Leaf Mountain Mahogany AllianceBWS - California Buckwheat AllianceCCH - Chamise AllianceDIST - Disturbed or Barren Mapping UnitDWS - Deer Weed Alliance | <ul style="list-style-type: none">MINE - Mined Areas Mapping UnitSBS - California Sagebrush AllianceSBSC - Scale Broom AllianceUVC - Unvegetated Channels Mapping Unit |
|---|--|--|---|---|

SOURCE: ArcGIS Online Basemap (Nat Geo), Eagle Aerial (2015), MWD Pipelines

FIGURE 4 - GRID 04
Results - Special-Status Plant Surveys 2017

The Metropolitan Water District of Southern California

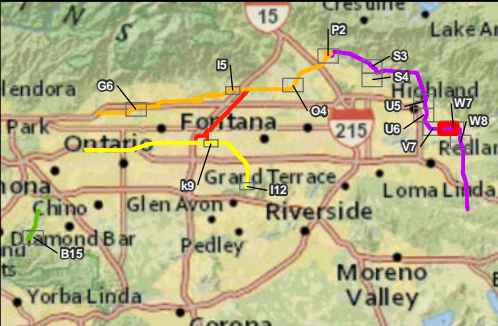
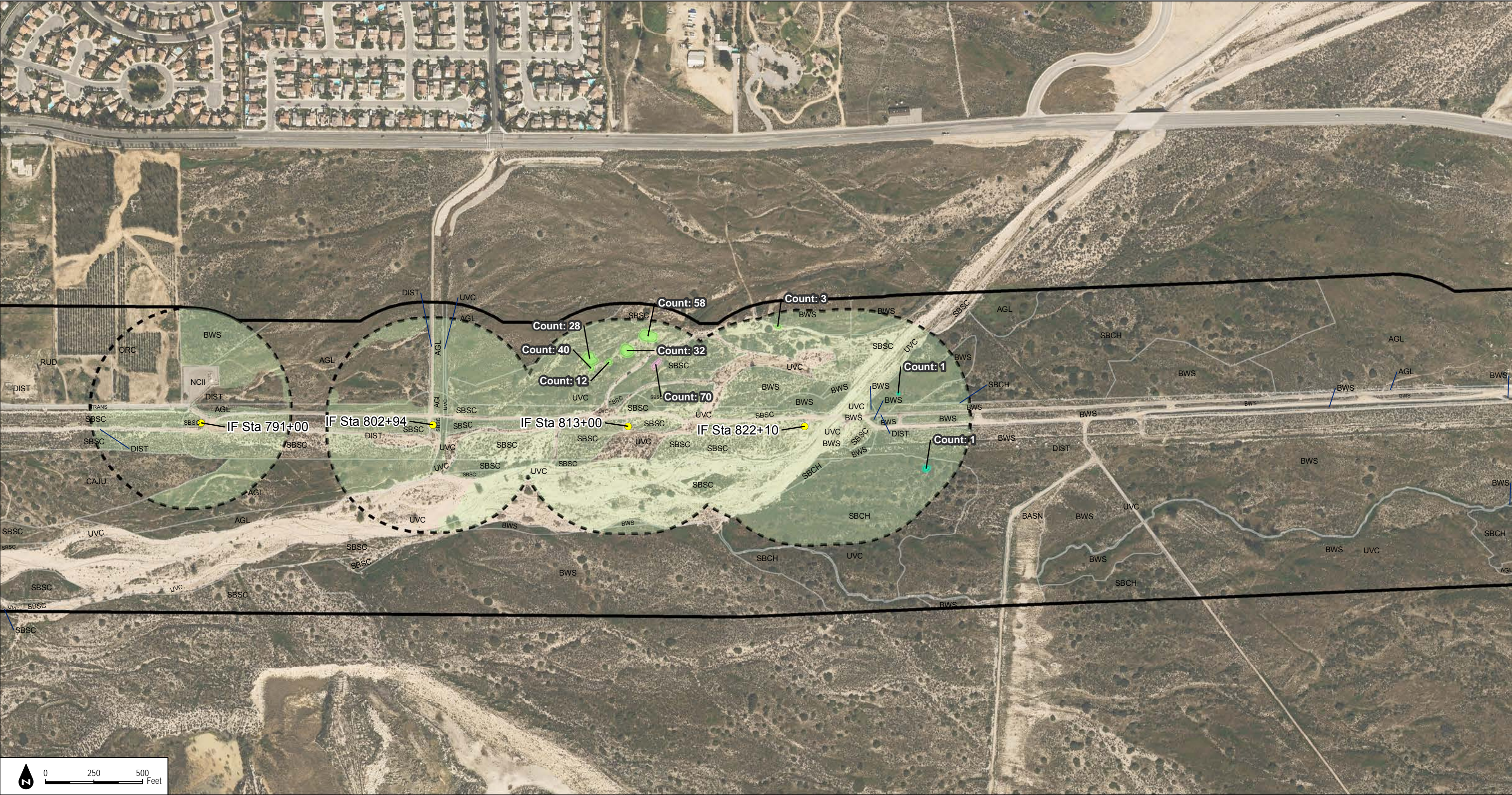
Western San Bernardino County Distribution System Infrastructure Protection Program



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|--|---|---|--|--|--|
| <ul style="list-style-type: none">Etiwanda PipelineInland FeederRialto PipelineUpper FeederYorba Linda FeederProject Area | <ul style="list-style-type: none">500' Study AreaStationSurvey Area - Modeled HabitatSpecial-Status SpeciesSan Diego County viguiera | Vegetation <ul style="list-style-type: none">AGL - Annual Grassland Mapping UnitAWRF - Arroyo Willow AllianceBASN - Basins Mapping UnitBMMCH - Birch Leaf Mountain Mahogany AllianceBS - Brittle Bush Alliance | <ul style="list-style-type: none">BWS - California Buckwheat AllianceCCH - Chamise AllianceDIST - Disturbed or Barren Mapping UnitFCC - Flood Control Channels Mapping UnitMFS - Mulefat AllianceNCII - Nonurban Commercial/Industrial/Institutional Mapping Unit | <ul style="list-style-type: none">ORN - Ornamental Landscaping Mapping UnitSBS - California Sagebrush AllianceSBSC - Scale Broom AllianceSYC - California Sycamore AllianceTRANS - Transportation Mapping UnitTTS - Tamarisk Thickets Semi-natural Stands | <ul style="list-style-type: none">URBAN - Urban and Commercial Mapping UnitWAG - White Alder AlliancedBS - Brittle Bush Disturbance Mapping UnitdBWS - California Buckwheat Disturbance Mapping UnitdSBS - California Sagebrush Disturbance Mapping Unit |
|--|---|---|--|--|--|

SOURCE: ArcGIS Online Basemap (Nat Geo), Eagle Aerial (2015), MWD Pipelines

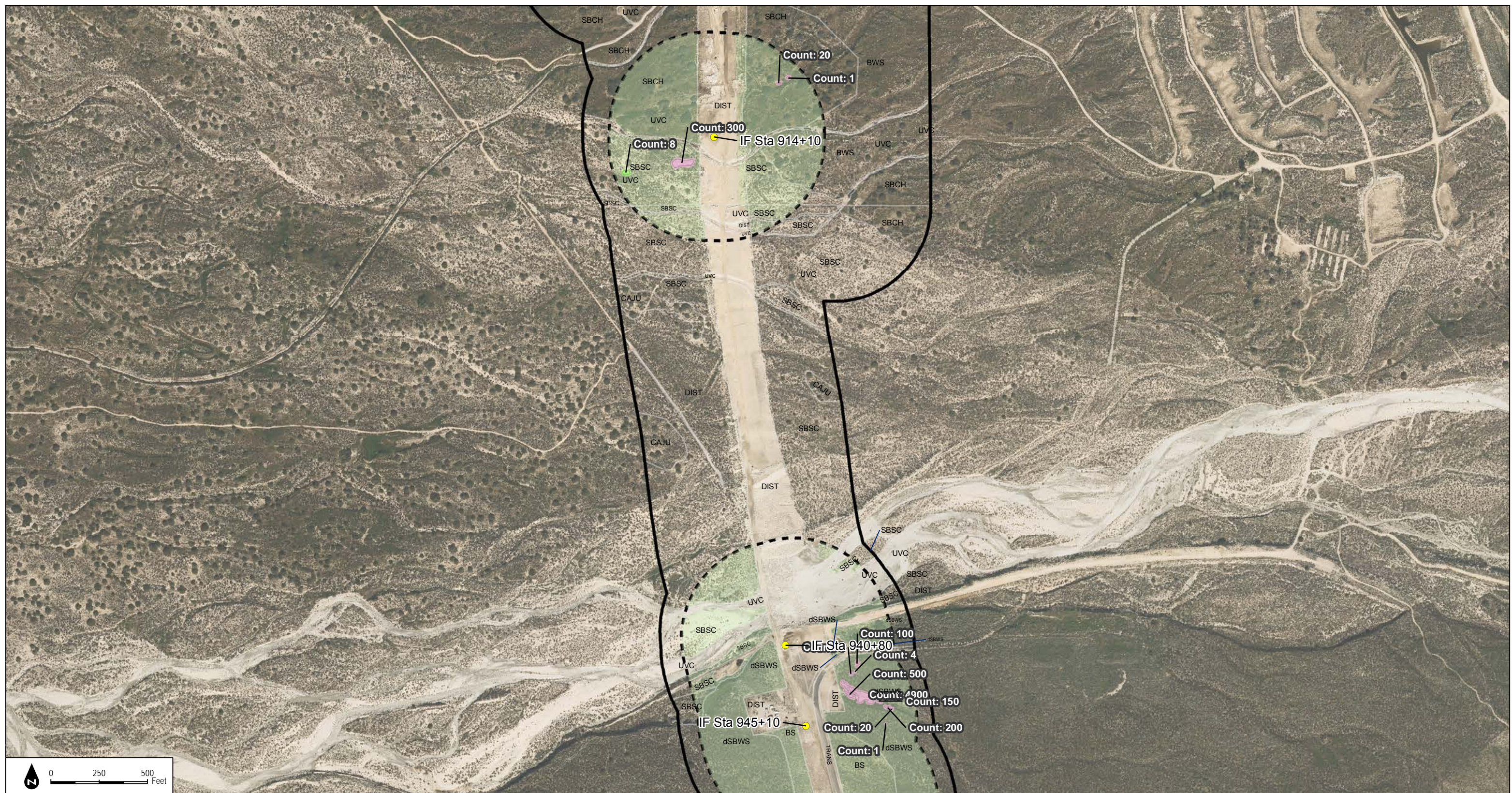
FIGURE 4 - GRID U5
Results - Special-Status Plant Surveys 2017







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|--|---|---|
| <ul style="list-style-type: none">Etiwanda PipelineInland FeederRialto PipelineUpper FeederYorba Linda FeederProject Area | <ul style="list-style-type: none">500' Study AreaStationSurvey Area - Modeled HabitatSpecial-Status SpeciesPlummer's mariposa lilyParry's spineflower | <ul style="list-style-type: none">Santa Ana River woollystarVegetationAGL - Annual Grassland Mapping UnitBASN - Basins Mapping UnitBWS - California Buckwheat AllianceCAJU - California Juniper AllianceDIST - Disturbed or Barren Mapping UnitNCII - Nonurban Commercial/Industrial/Institutional Mapping UnitORC - Orchard and Vineyard Mapping UnitRUD - Ruderal Grassland Mapping UnitSBCH - Sugarbush AllianceSBSC - Scale Broom AllianceTRANS - Transportation Mapping UnitUVC - Unvegetated Channels Mapping Unit |
|--|---|---|

SOURCE: ArcGIS Online Basemap (Nat Geo), Eagle Aerial (2015), MWD Pipelines



FIGURE 4 - GRID W7
Results - Special-Status Plant Surveys 2017



- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder

 Project Area
 500' Study Area
 Station
 Survey Area - Modeled Habitat

Special-Status Species

-  Parry's spineflower
-  Santa Ana River woollystar

Vegetation

-  BS - Brittle Bush Alliance

☐ BWS - California Buckwheat Alliance ☐ TRANS - Transportation Mapping Unit
☐ CAJU - California Juniper Alliance ☐ UVC - Unvegetated Channels Mapping Unit
☐ DIST - Disturbed or Barren Mapping Unit
☐ SBCH - Sugarbush Alliance
☐ SBSC - Scale Broom Alliance

FIGURE 4 - GRID W8
Results - Special-Status Plant Surveys 2017

ATTACHMENT A

Plant Species Observed in Survey Area

ATTACHMENT A

Plant Species Observed in Survey Area

VASCULAR SPECIES

FERNS AND FERN ALLIES

PTERIDACEAE—BRAKE FAMILY

Pellaea andromedifolia—coffee cliffbrake

Pellaea mucronata—birdfoot cliffbrake

SELAGINELLACEAE—SPIKE-MOSS FAMILY

Selaginella bigelovii—bushy spikemoss

GYMNOSPERMS AND GNETOPHYTES

CUPRESSACEAE—CYPRESS FAMILY

Juniperus californica—California juniper

MONOCOTS

AGAVACEAE—AGAVE FAMILY

Hesperoyucca whipplei—chaparral yucca

ARECACEAE—PALM FAMILY

* *Phoenix canariensis*—Canary Island date palm

* *Washingtonia robusta*—Washington fan palm

CYPERACEAE—SEDGE FAMILY

Bolboschoenus maritimus ssp. *paludosus*—cosmopolitan bulrush

Cyperus eragrostis—tall flatsedge

* *Cyperus involucratus*—umbrella plant

JUNCACEAE—RUSH FAMILY

Juncus bufonius—toad rush

Juncus dubius—questionable rush

Juncus mexicanus—Mexican rush

LILIACEAE—LILY FAMILY

Calochortus plummerae—Plummer's mariposa lily

POACEAE—GRASS FAMILY

* *Avena barbata*—slender oat

Leptochloa fusca—Malabar sprangletop

ATTACHMENT A (Continued)

- Stipa coronata*—giant ricegrass
- Stipa speciosa*—desert needlegrass
- * *Bromus diandrus*—ripgut brome
- * *Bromus hordeaceus*—soft brome
- * *Bromus madritensis* ssp. *madritensis*—compact brome
- * *Bromus tectorum*—cheatgrass
- * *Cortaderia selloana*—Uruguayan pampas grass
- * *Cynodon dactylon*—Bermudagrass
- * *Festuca myuros*—rat-tail fescue
- * *Hordeum murinum*—mouse barley
- * *Lamarckia aurea*—goldentop grass
- * *Paspalum dilatatum*—dallisgrass
- * *Poa annua*—annual bluegrass
- * *Polypogon interruptus*—ditch rabbitsfoot grass
- * *Polypogon monspeliensis*—annual rabbitsfoot grass
- * *Schismus barbatus*—common Mediterranean grass
- * *Stipa miliacea*—no common name
- * *Stipa miliacea* var. *miliacea*—smilgrass
- * *Pennisetum setaceum*—fountain grass swards
- * *Festuca perennis*—perennial rye grass
- Stipa pulchra*—purple needle grass
- Distichlis spicata*—salt grass

THEMIDACEAE—BRODIAEA FAMILY

- Bloomeria crocea*—common goldenstar
- Dichelostemma capitatum* ssp. *capitatum*—bluedicks
- Dichelostemma capitatum*—bluedicks

TYPHACEAE—CATTAIL FAMILY

- Typha domingensis*—southern cattail
- Typha latifolia*—broadleaf cattail

EUDICOTS

ADOXACEAE—MUSKROOT FAMILY

- Sambucus nigra* ssp. *caerulea*—blue elderberry

AGAVACEAE—AGAVE FAMILY

- * *Agave americana*—American century plant

ATTACHMENT A (Continued)

AMARANTHACEAE—AMARANTH FAMILY

Amaranthus blitoides—mat amaranth

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

- * *Schinus molle*—Peruvian peppertree
- Rhus aromatica*—basket bush
- Rhus integrifolia*—lemonade berry
- Toxicodendron diversilobum*—poison oak
- Rhus ovata*—sugarbush

APIACEAE—CARROT FAMILY

- Daucus pusillus*—American wild carrot
- * *Apium graveolens*—wild celery

APOCYNACEAE—DOGBANE FAMILY

- Asclepias californica*—California milkweed
- Funastrum cynanchoides* var. *hartwegii*—Hartweg's twinevine
- * *Nerium oleander*—oleander

ASTERACEAE—SUNFLOWER FAMILY

- * *Sonchus oleraceus*—common sowthistle
- Ambrosia acanthicarpa*—flatspine bur ragweed
- Artemisia douglasiana*—Douglas' sagewort
- Brickellia californica*—California brickellbush
- Chaenactis glabriuscula*—yellow pincushion
- Cirsium occidentale*—cobwebby thistle
- Corethrogyne filaginifolia*—common sandaster
- Deinandra fasciculata*—clustered tarweed
- Ericameria linearifolia*—narrowleaf goldenbush
- Ericameria nauseosa*—rubber rabbitbrush
- Ericameria pinifolia*—pinebush
- Erigeron canadensis*—Canadian horseweed
- Erigeron foliosus*—leafy fleabane
- Eriophyllum confertiflorum*—golden-yarrow
- Gnaphalium palustre*—western marsh cudweed
- Helianthus annuus*—common sunflower
- Heterotheca grandiflora*—telegraphweed
- Heterotheca sessiliflora*—sessileflower false goldenaster
- Heterotheca villosa* var. *scabra*—hairy false goldenaster
- Lagophylla ramosissima*—branched lagophylla

ATTACHMENT A (Continued)

- Lessingia glandulifera*—valley lessingia
Logfia filaginoides—California cottonrose
Pseudognaphalium beneolens—Wright’s cudweed
Pseudognaphalium biolettii—two-color rabbit-tobacco
Pseudognaphalium microcephalum—Wright’s cudweed
Senecio flaccidus—threadleaf ragwort
Stephanomeria exigua ssp. *exigua*—small wirelettuce
Stephanomeria exigua—small wirelettuce
Stephanomeria virgata—rod wirelettuce
Stylocline gnaphaloides—mountain neststraw
Tetradymia stenolepis—Mojave cottonthorn
Baccharis salicifolia ssp. *salicifolia*—mulefat
Bahiopsis laciniata—San Diego Viguiera
Bebbia juncea—sweetbush
Pluchea odorata—sweetscent
Viguiera laciniata—San Diego County viguiera
* *Bidens pilosa*—hairy beggarticks
* *Carduus pycnocephalus*—Italian plumeless thistle
* *Carduus pycnocephalus* ssp. *pycnocephalus*—Italian plumeless thistle
* *Centaurea melitensis*—Maltese star-thistle
* *Cirsium vulgare*—bull thistle
* *Cynara cardunculus*—cardoon
* *Dittrichia graveolens*—stinkwort
* *Erigeron bonariensis*—asthmaweed
* *Gazania linearis*—treasureflower
* *Hedypnois rhagadioloides*—crete weed
* *Hypochaeris glabra*—smooth cat’s ear
* *Lactuca serriola*—prickly lettuce
* *Logfia gallica*—narrowleaf cottonrose
* *Oncosiphon piluliferum*—stinknet
* *Pseudognaphalium luteoalbum*—Jersey cudweed
* *Silybum marianum*—blessed milkthistle
* *Sonchus asper*—spiny sowthistle
* *Verbesina encelioides*—golden crownbeard
Pluchea sericea—arrow weed
Encelia farinosa—brittle bush
Gutierrezia californica—California match weed
Artemisia californica—California sagebrush
Xanthium strumarium—cocklebur

ATTACHMENT A (Continued)

Isocoma menziesii—Menzies's golden bush
Baccharis salicifolia—mulefat
Ericameria palmeri—Palmer's goldenbush
Hazardia squarrosa—sawtooth golden bush
Lepidospartum squamatum—scale broom
Ambrosia psilostachya—western ragweed
Artemisia dracunculus—wild tarragon

BETULACEAE—BIRCH FAMILY

Alnus rhombifolia—white alder

BORAGINACEAE—BORAGE FAMILY

Amsinckia intermedia—common fiddleneck
Cryptantha micrantha—redroot cryptantha
Emmenanthe penduliflora var. *penduliflora*—whisperingbells
Emmenanthe penduliflora—whisperingbells
Eriodictyon trichocalyx var. *trichocalyx*—hairy yerba santa
Eucrypta chrysanthemifolia—spotted hideseed
Phacelia cicutaria var. *cicutaria*—caterpillar phacelia
Phacelia cicutaria—caterpillar phacelia
Phacelia ramosissima—branching phacelia
Phacelia tanacetifolia—lacy phacelia

BRASSICACEAE—MUSTARD FAMILY

- * *Sisymbrium irio*—London rocket
- Lepidium nitidum*—shining pepperweed
- Nasturtium officinale*—watercress
- * *Brassica nigra*—black mustard
- * *Hirschfeldia incana*—shortpod mustard
- * *Sinapis arvensis*—charlock mustard
- * *Sisymbrium altissimum*—tall tumbled mustard

CACTACEAE—CACTUS FAMILY

Cylindropuntia californica—California cholla
Opuntia littoralis—coast prickly pear

CARYOPHYLLACEAE—PINK FAMILY

- * *Silene gallica*—common catchfly

ATTACHMENT A (Continued)

CHENOPODIACEAE—GOOSEFOOT FAMILY

- * *Chenopodium album*—lambsquarters
- * *Salsola australis*—Russian thistle
- * *Atriplex prostrata*—fat hen

CONVOLVULACEAE—MORNING-GLORY FAMILY

- Calystegia macrostegia*—island false bindweed
- Cuscuta californica*—chaparral dodder
- * *Convolvulus arvensis*—field bindweed

CRASSULACEAE—STONECROP FAMILY

- Crassula connata*—sand pygmyweed
- Dudleya saxosa*—Panamint liveforever

CUCURBITACEAE—GOURD FAMILY

- Cucurbita foetidissima*—Missouri gourd
- Marah macrocarpa*—Cucamonga manroot

EUPHORBIACEAE—SPURGE FAMILY

- Croton californicus*—California croton
- Stillingia linearifolia*—queen's-root
- Euphorbia albomarginata*—whitemargin sandmat
- Croton setiger*—dove weed
- * *Euphorbia maculata*—spotted sandmat
- * *Ricinus communis*—castorbean

FABACEAE—LEGUME FAMILY

- Acemispson americanus* var. *americanus*—American bird's-foot trefoil
- Acemispson glaber* var. *glaber*—common deerweed
- Lupinus bicolor*—miniature lupine
- Lupinus hirsutissimus*—stinging annual lupine
- Lupinus microcarpus* var. *microcarpus*—valley lupine
- * *Melilotus albus*—yellow sweetclover
- * *Melilotus indicus*—annual yellow sweetclover
- * *Parkinsonia aculeata*—Jerusalem thorn
- * *Spartium junceum*—Spanish broom
- * *Vicia villosa*—winter vetch
- * *Cytisus scoparius*—broom
- Acemispson americanus*—Spanish clover

ATTACHMENT A (Continued)

FAGACEAE—OAK FAMILY

Quercus chrysolepis—Canyon live oak

Quercus kelloggii—California black oak

GERANIACEAE—GERANIUM FAMILY

* *Erodium cicutarium*—redstem stork's bill

* *Erodium botrys*—longbeak stork's bill

JUGLANDACEAE—WALNUT FAMILY

Juglans californica—California walnut

LAMIACEAE—MINT FAMILY

Salvia apiana—white sage

Salvia columbariae—chia

Salvia mellifera—black sage

Stachys albens—whitestem hedgenettle

Trichostema lanceolatum—vinegarweed

* *Marrubium vulgare*—horehound

* *Mentha spicata*—spearmint

LOASACEAE—LOASA FAMILY

Mentzelia involucrata—whitebract blazingstar

MALVACEAE—MALLOW FAMILY

* *Malva parviflora*—cheeseweed mallow

Malacothamnus fasciculatus—bush mallow

MONTIACEAE—MONTIA FAMILY

Calyptidium monandrum—common pussypaws

MORACEAE—MULBERRY FAMILY

* *Ficus carica*—edible fig

MYRTACEAE—MYRTLE FAMILY

* *Eucalyptus globulus*—Tasmanian bluegum

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia*—California four o'clock

ONAGRACEAE—EVENING PRIMROSE FAMILY

Camissoniopsis bistorta—southern suncup

ATTACHMENT A (Continued)

Camissoniopsis hirtella—Santa Cruz Island suncup
Camissoniopsis micrantha—miniature suncup
Clarkia purpurea ssp. *purpurea*—winecup clarkia
Clarkia purpurea—winecup clarkia
Epilobium ciliatum—fringed willowherb
Eulobus californicus—California suncup
Oenothera elata—Hooker’s evening primrose

PAPAVERACEAE—POPPY FAMILY

Ehrendorferia chrysantha—golden eardrops
Eschscholzia californica—California poppy
Dendromecon rigida—bush poppy

PHRYMACEAE—LOPSEED FAMILY

Mimulus cardinalis—scarlet monkeyflower
Mimulus aurantiacus—bush monkeyflower
Mimulus guttatus—common monkey flower

PLANTAGINACEAE—PLANTAIN FAMILY

Penstemon spectabilis—showy penstemon
* *Plantago arenaria*—sand plantain
* *Plantago lanceolata*—narrowleaf plantain
* *Veronica anagallis-aquatica*—water speedwell
Plantago erecta—dwarf plantain

PLATANACEAE—PLANE TREE, SYCAMORE FAMILY

Platanus racemosa—California sycamores

POLEMONIACEAE—PHLOX FAMILY

Eriastrum sapphirinum—sapphire woollystar
Navarretia hamata—hooked pincushionplant
Eriastrum densifolium ssp. *sanctorum*—Santa Ana River woollystar

POLYGONACEAE—BUCKWHEAT FAMILY

Chorizanthe staticoides—turkish rugging
Eriogonum davidsonii—Davidson’s buckwheat
Eriogonum elongatum var. *elongatum*—longstem buckwheat
Eriogonum fasciculatum var. *foliolosum*—Eastern Mojave buckwheat
Eriogonum thurberi—Thurber’s buckwheat
Pterostegia drymarioides—woodland pterostegia

ATTACHMENT A (Continued)

- Eriogonum elongatum*—longstem buckwheat
- * *Polygonum aviculare*—prostrate knotweed
- * *Rumex crispus*—curly dock
- Chorizanthe parryi* var. *parryi*—Parry's spineflower
- Eriogonum fasciculatum*—California buckwheat
- Persicaria lapathifolia*—smartweed

PORTULACACEAE—PURSLANE FAMILY

- * *Portulaca oleracea*—little hogweed

RANUNCULACEAE—BUTTERCUP FAMILY

Delphinium cardinale—scarlet larkspur

RHAMNACEAE—BUCKTHORN FAMILY

Ceanothus crassifolius var. *crassifolius*—no common name

Rhamnus crocea—redberry buckthorn

Ceanothus leucodermis—chaparral white thorn

Ceanothus cuneatus—wedge leaf ceanothus

ROSACEAE—ROSE FAMILY

Adenostoma fasciculatum—chamise

Cercocarpus betuloides var. *betuloides*—birchleaf mountain mahogany

Prunus ilicifolia ssp. *ilicifolia*—hollyleaf cherry

Rubus ursinus—California blackberry

Cercocarpus betuloides—birch leaf mountain mahogany

Prunus ilicifolia—holly leaf cherry

RUBIACEAE—MADDER FAMILY

Galium angustifolium—narrowleaf bedstraw

SALICACEAE—WILLOW FAMILY

Populus fremontii ssp. *fremontii*—Fremont cottonwood

Salix laevigata—red willow

Salix lasiolepis—arroyo willow

Populus fremontii—Fremont cottonwood

Salix gooddingii—black willow

Salix exigua—sandbar willow

SCROPHULARIACEAE—FIGWORT FAMILY

- * *Verbascum thapsus*—common mullein

ATTACHMENT A (Continued)

SIMAROUBACEAE—QUASSIA OR SIMAROUBA FAMILY

- * *Ailanthus altissima*—tree of heaven

SIMMONDSIACEAE—JOJOBA FAMILY

Simmondsia chinensis—jojoba

SOLANACEAE—NIGHTSHADE FAMILY

Datura wrightii—sacred thorn-apple

Nicotiana quadrivalvis—Indian tobacco

Solanum douglasii—greenspot nightshade

- * *Nicotiana glauca*—tree tobacco

TAMARICACEAE—TAMARISK FAMILY

- * *Tamarix chinensis*—five-stamen tamarisk

- * *Tamarix ramosissima*—saltcedar

URTICACEAE—NETTLE FAMILY

Urtica dioica ssp. *holosericea*—stinging nettle

Urtica dioica—stinging nettle

VITACEAE—GRAPE FAMILY

Vitis girdiana—desert wild grape

ZYGOPHYLLACEAE—CALTROP FAMILY

- * *Tribulus terrestris*—puncturevine

- * signifies introduced (non-native) species

Appendix F-3

Coastal California Gnatcatcher Survey Report

**Results of the 2017 Coastal California Gnatcatcher Focused
Surveys for the Metropolitan Water District of Southern
California**

**Western San Bernardino County Operating Region's
Proposed Distribution System Infrastructure
Protection Project
San Bernardino County, CA**

Prepared for:

DUDEK

27372 Calle Arroyo

San Juan Capistrano, CA 92675

Contact: Ryan Henry

Prepared by:



August 15, 2017

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1.0 INTRODUCTION

BioResource Consultants, Inc., was contracted by Dudek to conduct protocol surveys for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica californica*) (CAGN) for The Metropolitan Water District of Southern California's (Metropolitan) proposed Distribution System Infrastructure Protection Program (DSIPP) for the Western San Bernardino County Operating Region. The CAGN was listed as a federal threatened species by the U.S. Fish and Wildlife Service (USFWS) on March 25, 1993 (USFWS 1993). Critical habitat (CH) was designated for the CAGN on December 19, 2007 (USFWS 2007). This report contains the results of the CAGN protocol-level surveys at 12 proposed Capital Investment Plan (CIP) and single-occurrence operation and maintenance (O&M) project locations, plus a 500-foot buffer around each site (the survey area). A total of 13 separate survey sites were initially included in the survey; however, one site was dropped from the survey due to access problems. A list of all other avian species observed during this survey is included.

2.0 PROJECT LOCATION

The Western San Bernardino County Operating Region consists of approximately 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and vacuum valves. The pipelines included in this operating region include the Inland Feeder (IF), Upper Feeder (UF), Rialto Pipeline (RPL), Etiwanda Pipeline (EPL), and Yorba Linda Feeder (YLF). Only the portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region. Appendix A, Figure 1 illustrates the pipeline locations within the Western San Bernardino County Operating Region. The Western San Bernardino County Operating Region includes approximately 9,512 acres, including all CIP construction areas; single-occurrence O&M work areas, and other ongoing O&M activity areas, plus a 500-foot buffer. The focused survey area for CAGN included a total of 174 acres (70.42 hectares), which were determined utilizing species habitat models and field habitat assessments across the entire project area. A total of 13 separate survey sites were initially included in the survey; however, Site 7 (Arrowhead Springs) was dropped from the survey due to access problems. The survey sites were located in Mentone, Highland, Fontana, Rancho Cucamonga, and Upland, San Bernardino County, California (Appendix A, Figure 2).

3.0 SITE DESCRIPTIONS

Topography of the survey area included floodplains, alluvial fans, and hills. Coastal sage scrub and alluvial scrub were the dominant vegetation communities present within the survey area. Dominant vegetation observed within the coastal sage scrub vegetation community included California sagebrush (*Artemisia californica*), California brittlebush (*Encelia californica*), and California buckwheat (*Eriogonum fasciculatum*). Characteristic vegetation observed within the alluvial scrub vegetation community within the survey area included California sagebrush, California

brittlebush, California buckwheat, holly-leaved redberry (*Rhamnus ilicifolia*), skunk brush (*Rhus aromatica*), sugar bush (*Rhus ovata*), holly-leaved cherry (*Prunus ilicifolia*), California mountain-mahogany (*Cercocarpus betuloides*), western poison oak (*Toxicodendron diversilobum*), California juniper (*Juniperus californicus*), scale-broom (*Lepidospartum squamatum*), and blue elderberry (*Sambucus nigra*).

Riparian plant communities were present at some of the sites. Plants associated with the riparian plant community included willow (*Salix* sp.), mulefat (*Baccharis salicifolia*), western sycamore (*Platanus racemosa*), and blue elderberry.

The following summary describes the general location and setting of each survey site.

Site 1 (RPL Station 3094+04) is located along Demens Creek Trail north of Interstate 210 in Rancho Cucamonga. The vegetation community present at Site 1 was alluvial scrub dominated by California buckwheat and scale-broom.

Site 2 (UF Station 728+50) is located along south of Poplar Avenue, south of Interstate 210 in Fontana. The vegetation community present at Site 2 was sage scrub dominated by California buckwheat. Chamise (*Adenostoma fasciculatum*) and blue elderberry were also present.

Site 3 (RPL Station 3571+01) is located in San Sevaine Canyon north of the Interstate 210 in Rancho Cucamonga. The vegetation community present at Site 3 was alluvial scrub dominated by California sagebrush, California buckwheat, scale-broom, and California mountain-mahogany.

Sites 4 and 5 (RPL Station 3901+02) are located within Lytle Creek Wash north of Interstate 210 in Rialto. The vegetation community present at Sites 4 and 5 was alluvial scrub. The dominant plant species at Site 4 were California buckwheat and California sagebrush. The dominant plant species at Site 5 included California buckwheat, California mountain-mahogany, skunk brush, holly-leaved red berry, and blue elderberry.

Site 6 (IF Station 19+55) is located at the Sweetwater Percolation Basin west of Devil's Canyon Road in Highland. The vegetation communities present at the site included riparian woodland habitat dominated by white alder (*Alnus rhombifolia*) and alluvial scrub dominated by California brittlebush, California sagebrush, and California buckwheat.

Site 7 (IF Stations 266+15, 288+90, and 290+15) is located on tribal land near East Twin Creek. The vegetation communities present at the site included chamise and sage scrub habitat dominated by chamise, California buckwheat, California brittlebush, and California sagebrush. This information is from previous biological investigations conducted by Dudek (2016) as access to the site was not available for this survey effort.

Site 8 (IF Stations 573+94 and 592+31) is located along City Creek east of State Route 330 in Highland. The vegetation community present at Site 8 was coastal sage scrub dominated by California buckwheat, California sagebrush, and California brittlebush. A riparian plant community was associated with City Creek at this site and included white alder, California sycamore, willows, and mulefat.

Site 9 (IF Station 660+00) is located along City Creek north of Baseline Road in Highland. The vegetation community at Site 9 was alluvial scrub dominated by California buckwheat, California sagebrush, and California brittlebush. Scale-broom and California sycamores were also present at this site.

Site 10 (IF Stations 733+15, 735+40, 745+00, and 791+00) is located along Oak Creek south of Green Spot Road in Highland. The vegetation community at Site 10 was coastal sage scrub dominated by California buckwheat and exotics such as tobacco tree (*Nicotiana glauca*) and eucalyptus (*Eucalyptus* sp.).

Site 11 (IF Stations 802+94, 813+00, and 822+10) is located along Plunge Creek south of Greenspot Road in Highland. The vegetation community at Site 11 was alluvial scrub dominated by California buckwheat, California sagebrush, chamise, Catalina cherry (*Prunus ilicifolia* ssp. *lyonii*), blue elderberry, scale-broom, California sycamore, and tree tobacco.

Site 12 (IF Station 914+10) is located along Opal Avenue, just south of Cone Camp Road and north of the Santa Ana River Trail in Mentone. The vegetation community at Site 12 was alluvial scrub dominated by California brittlebush, California buckwheat, California sagebrush, and scale-broom.

Site 13 (IF Stations 940+80, 945+10, and 950+10) is located at the intersection of Opal Avenue and the Santa Ana River Trail in Mentone. The vegetation community at Site 13 was alluvial scrub dominated by California brittlebush, California sagebrush, California buckwheat, chamise, and scale-broom.

4.0 METHODS

Mr. Arthur Davenport was the primary investigator for this survey (U.S. Fish and Wildlife permit number TE802450-7). Mr. Davenport was assisted by Mr. Gerald Braden (TE43668A) on three days of the survey. The survey for the CAGN was initiated on 16 May, 2017, and was completed on 24 June, 2017. The survey of each site was repeated six times. Survey passes were conducted weekly unless adverse weather conditions prevented the survey. Surveys were generally initiated around 0600 and completed by 1300 hours. The dates, times, and weather conditions of each survey pass are provided (Table 1). The survey was completed by walking transects located within and along the edges of potential habitat; transects were spaced no more than 50 meters (54.6 yards) apart. During the survey, the call of the CAGN was played, followed by a quiet period to listen for the species, and repeated. Call stations were spaced at approximate 25-meter (27 foot) intervals. The survey methodology followed the survey guidelines provided by the U.S. Fish and Wildlife Service (UFWS 1997). To increase the information regarding spatial use of habitat, multiple observations of each CAGN were recorded and mapped. All bird species observed were identified (Appendix B, Table 1).

Table 1. Dates, sites, times, and weather conditions for each survey.

Survey Date	Sites	Time (24 Hour)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)	Humidity (%)
		Start/Stop	Start/Stop	Start/Stop	Start/Stop	Start/Stop
16 May 2017	10,12,13	0600/1200	50/58	1/5	80/80	76/55
17 May 2017	8,11	0600/1230	52/58	2/5	100/100	82/62
18 May 2017	8,9	0600/1200	49/79	0/5	10/0	75/22
19 May 2017	1,2,3,4,5	0600/1200	65/84	5/8	0/0	28/12
20 May 2017	6,7	0600/1200	62/88	3/2	0/0	38/11
23 May 2017	10,12,13	0600/1200	62/90	0/4	0/10	56/20
24 May 2017	9,11	0600/1200	60/82	0/4	5/15	57/29
25 May 2017	6,8	0600/1200	59/69	4/5	100/10 ML	69/39
26 May 2017	1,2,3,4,5	0600/1330	58/70	8/8	100/50 ML	66/41
27 May 2017	6,7	0600/0900	56/63	2/3	80/70 ML	66/58
30 May 2017	12,13	0600/1200	55/71	1/3	100/20 ML	85/51
31 May 2017	10,11	0600/1200	59/69	1/4	100/80 ML	84/58
1 Jun 2017	8,9	0600/1200	61/74	4/4	100/50 ML	80/48
2 Jun 2017	1,3,4,5	0600/1200	58/81	2/6	0/0	84/41
3 Jun 2017	2,6	0600/1100	61/85	0/4	0/0	65/35
6 Jun 2017	12,13	0600/1200	62/76	1/5	100/10	72/47
7 Jun 2017	10,11	0600/1100	62/70	0/4	100/10	78/65
8 Jun 2017	8,9	0530/1130	62/71	0/5	100/75	74/53
9 Jun 2017	1,3,4,5	0060/1200	58/74	2/5	100/0	80/50
10 Jun 2017	2,6	0600/1200	62/73	0/4	100/50	74/73
13 Jun 2017	12,13	0600/1100	52/74	0/3	0/0	60/27
14 Jun 2017	10,11	0630/1130	55/83	0/4	0/0	58/22
15 Jun 2017	8,9	0550/1100	58/91	0/1	0/0	56/40
16 Jun 2017	1,3,4,5	0550/1130	68/93	1/1	0/0	58/43
17 Jun 2017	2,6	0530/1130	64/93	0/1	0/0	69/43
20 Jun 2017	12/13	0600/1100	68/93	0/5	0/0	50/24
21 Jun 2017	10,11	0600/1100	69/96	0/5	0/0	39/18
22 Jun 2017	8,9	0600/1200	68/92	0/5	0/0	48/26
23 Jun 2017	1,3,4,5	0600/1200	63/83	1/4	5/0	85/44
24 Jun 2017	2,6	0600/1230	67/88	2/1	50/10	73/37

5.0 RESULTS

In total, five CAGN pairs, an adult female and juvenile, and one territorial male CAGN were detected during the 2017 protocol surveys. None of the survey sites overlapped with designated critical habitat for CAGN; however, Site 2 was located adjacent to designated critical habitat. The locations of each CAGN observation are provided Appendix B, Table 2. Representative photographs of the survey sites are also included in Appendix B. Survey results for each site are summarized in the following text.

5.1 Site 1 (RPL Station 3094+04)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 3).

5.2 Site 2 (UF Station 728+50)

Two pairs of CAGN were detected (Appendix A, Figure 4). One pair of CAGN (Territory 1) is located in the coastal sage scrub located east of Poplar Drive. The second pair (Territory 2) was detected in the coastal sage scrub located west of Poplar Road. Birds were observed during five site visits between May 26 and June 24, 2017.

5.3 Site 3 (RPL Station 3571+01)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 5).

5.4 Site 4 (RPL Station 3901+02)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 6)

5.5 Site 5 (RPL Station 3901+02)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 6)

5.6 Site 6 (IF Station 19+55)

One adult female and one fledgling CAGN were detected. The birds were observed during surveys conducted on June 10 and 17, 2017 (Appendix A, Figure 7). Observations were generally located along the edge of the drainage that bisects the survey site. Given the presence of the adult and fledgling, it is assumed at least one pair of CAGN are present within this survey site.

5.7 Site 7 (IF Stations 266+15, 288+90, and 290+15)

This site was not surveyed due to access problems. The proposed survey site is provided in Appendix A, Figure 8.

5.8 Site 8 (IF Stations 573+94 and 592+31)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 9).

5.9 Site 9 (IF Station 660+00)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 10).

5.10 Site 10 (IF Stations 733+15, 735+40, 745+00, and 791+00)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 11).

5.11 Site 11 (IF Stations 802+94, 813+00, and 822+10)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 12).

5.12 Site 12 (IF Station 914+10)

No CAGN were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 13).

5.13 Site 13 (IF Stations 940+80, 945+10, and 950+10)

One territorial male and two pairs of CAGN were detected in the coastal sage scrub. The territorial male was observed within the portion of the survey site (Territory 1). One pair of CAGN was detected in the coastal sage scrub located north of Opal Avenue along the drainage. The second pair (Territory 2) was detected in the coastal sage scrub located north of Opal Avenue (Appendix A, Figure 14). The territorial male was observed during site visits between May 26 and June 24, 2017. The pairs were observed between May 23 and June 20, 2017.

5.14 Incidental Observations

During the CAGN surveys, two additional listed species were also detected (Appendix B, Table 3). The Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*; DSFLF) and least Bell's vireo (*Vireo belli pusillus*; LBVI), both federal endangered species, were incidentally observed during this survey. Regarding the DSFLF, both a female and male were observed at Site 2 (UF Station 728+50) on 24 June, 2017 (Appendix A, Figure 15). Three male LBVI were heard at Site 8 (IF Stations 573+94 and 592+31) (Appendix A, Figure 16). The northernmost LBVI was foraging in the coastal sage scrub.

5.15 Discussion

The habitats present at the survey sites at the time of the surveys were suitable for CAGN nesting and foraging. The absence of CAGN from most sites is likely due to historic events such as wildfire, agricultural, industrial, and urban development that reduced or cut off access to adjacent populations of this threatened species. Additionally, the occupation of habitat shifts through time and not all suitable habitat is likely to be occupied at any one point in time.

Site 1 (RPL Station 3094+04) was highly disturbed due to historic sand-mining activity, industrial, and urban development. Additionally, there was an active development project under construction on the south side of the survey area. Moreover, the remaining alluvial scrub was

being used for shelter by a number of homeless people. Expansive industrial and urban development has reduced access by the CAGN to the remaining fragments of habitat.

The two pairs of CAGN located at Site 2 (UF Station 728+50) both had at least one successful nest this year as both were seen interacting with fledglings. Of concern, the active nests of both pair observed during this survey had been parasitized by the brown-headed cowbird (*Malothrus ater*). The parasitism resulted in failure of both nesting attempts.

Site 3 (RPL Station 3571+01) contains suitable habitat for the CAGN. Unfortunately, much of the natural habitat located in this area has been converted, or is in the process of being converted, to high density urban development. The presence of expansive urban development reduces access by the CAGN to the remaining fragments of habitat such as located at Site 3.

Sites 4 and 5 (RPL Station 3901+02) contained suitable habitat for the CAGN. The reason for the absence of the species from these sites is unknown; however, the expanding industrial and urban development in this general area will reduce access by the CAGN to the remaining fragments of habitat.

Based on the presence of a fledgling and an adult female CAGN, one pair of CAGN were detected at Site 6 (IF Station 19+55). The male CAGN was not detected at this site, but not all habitat could be accessed due to the presence of a secure fenced area. Additionally, the entire territory was not likely contained within the survey area and likely extended off site.

Sites 8 (IF Stations 573+94 and 592+31), 9 (IF Station 660+00), and 10 (IF Stations 733+15, 735+40, 745+00, and 791+00) all contain suitable habitat for the CAGN. The reason for the absence of the species from these sites during this survey is unknown; however, the expanding industrial and urban development in this general area is likely having a detrimental effect on connectivity and will reduce access by the CAGN to the remaining fragments of habitat.

Site 11 (IF Stations 802+94, 813+00, and 822+10) contain suitable habitat for the CAGN. The reason for absence of the species from this site during this survey is unknown. There are no barriers between this site and Site 13, where CAGN are known to occur and are producing fledglings.

Site 12 (IF Station 914+10) contains pockets of suitable nesting habitat for the CAGN. The reason for absence of the species from this site during this survey is unknown. There are no barriers between this site and Site 13 (IF Stations 940+80, 945+10, and 950+10), where CAGN are known to occur and are producing fledglings.

Two pairs of CAGN were observed at Site 13 (IF Stations 940+80, 945+10, and 950+10). Both of these pair had at least one successful nest as they were both interacting with fledglings. The one active nest observed during this survey was not parasitized by brown-headed cowbirds. The habitat adjacent to this site has the potential to harbor many more pair of CAGN.

6.0 CONCLUSIONS

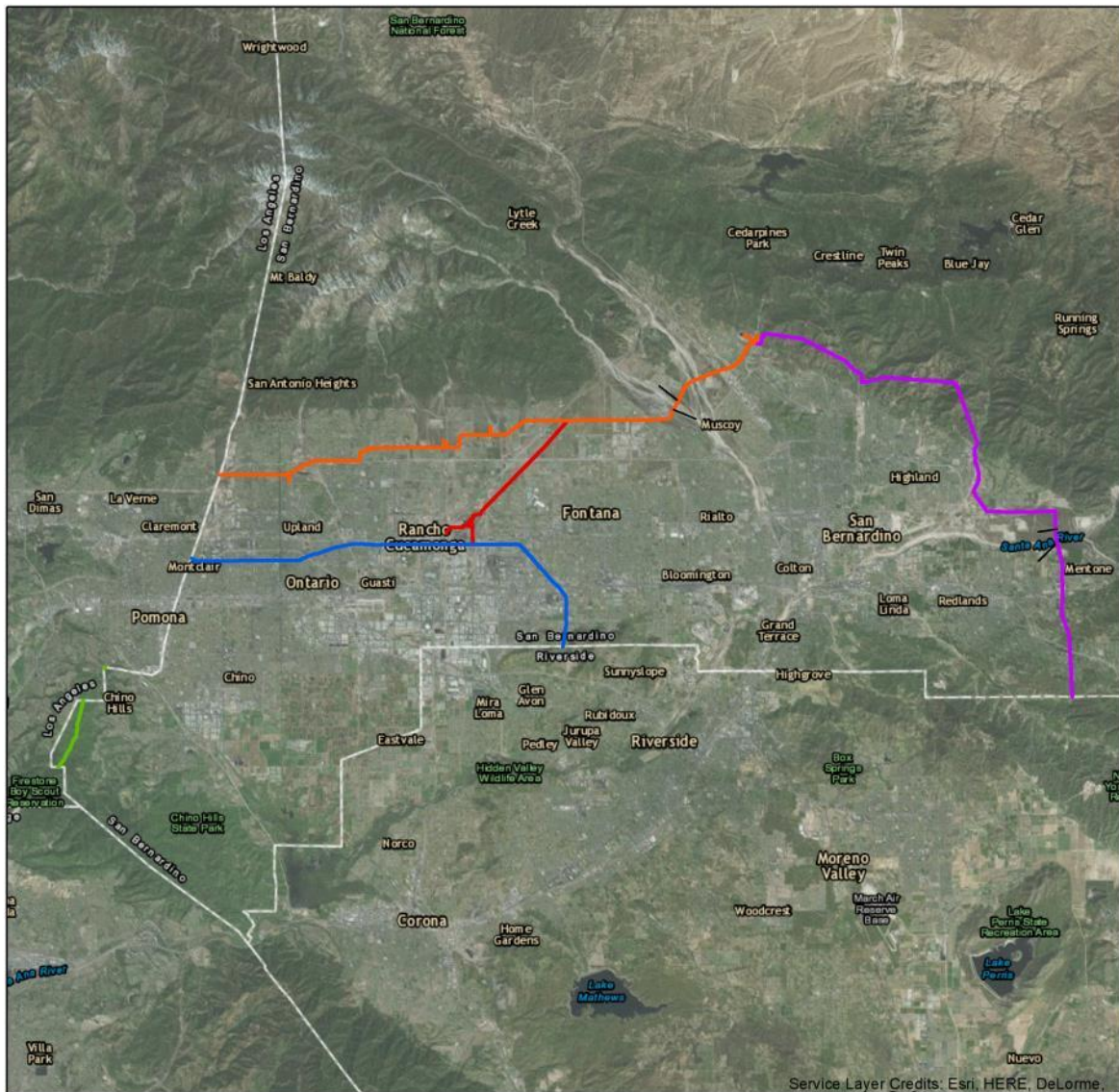
Five pairs of CAGN and one territorial male were observed within the survey area at the time of the 2017 protocol surveys. However, suitable habitat for is present for CAGN is present within all of the areas surveyed.

7.0 REFERENCES

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APPENDIX A:

FIGURES



WSB Pipeline Location

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder



Figure 1. Pipeline locations within the Western San Bernardino County Operating Region



- Work Station Location
- WSB Pipeline Location**
- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder



Figure 2: Focused CAGN Survey Locations



Figure 3. Site 1 (RPL Station 3094+04) survey area.

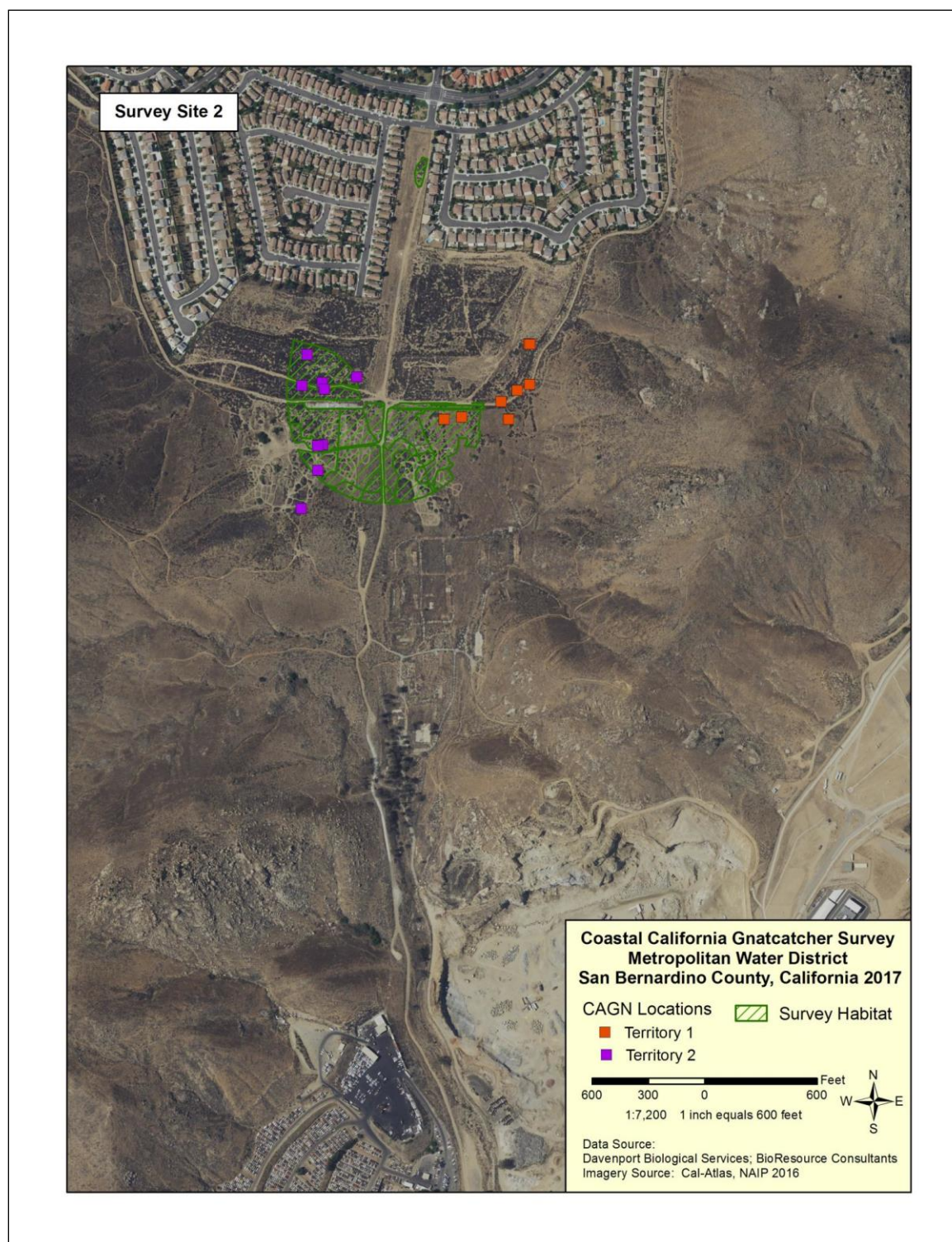


Figure 4. Site 2 (UF Station 728+50) survey area and CAGN observations.



Figure 5. Site 3 (RPL Station 3571+01) survey area.

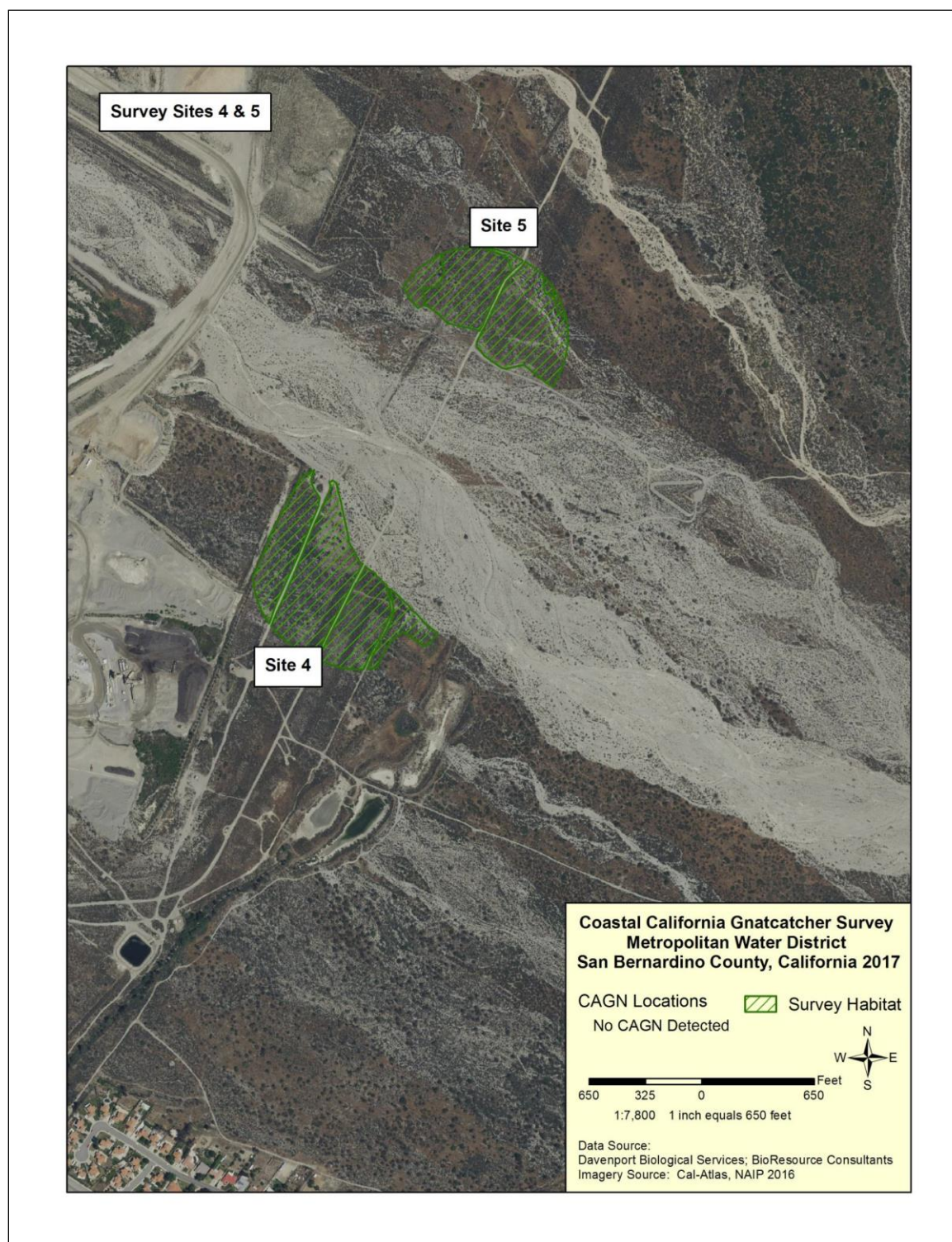


Figure 6. Sites 4 (RPL Station 3901+02) and 5 (RPL Station 3901+02) survey areas.

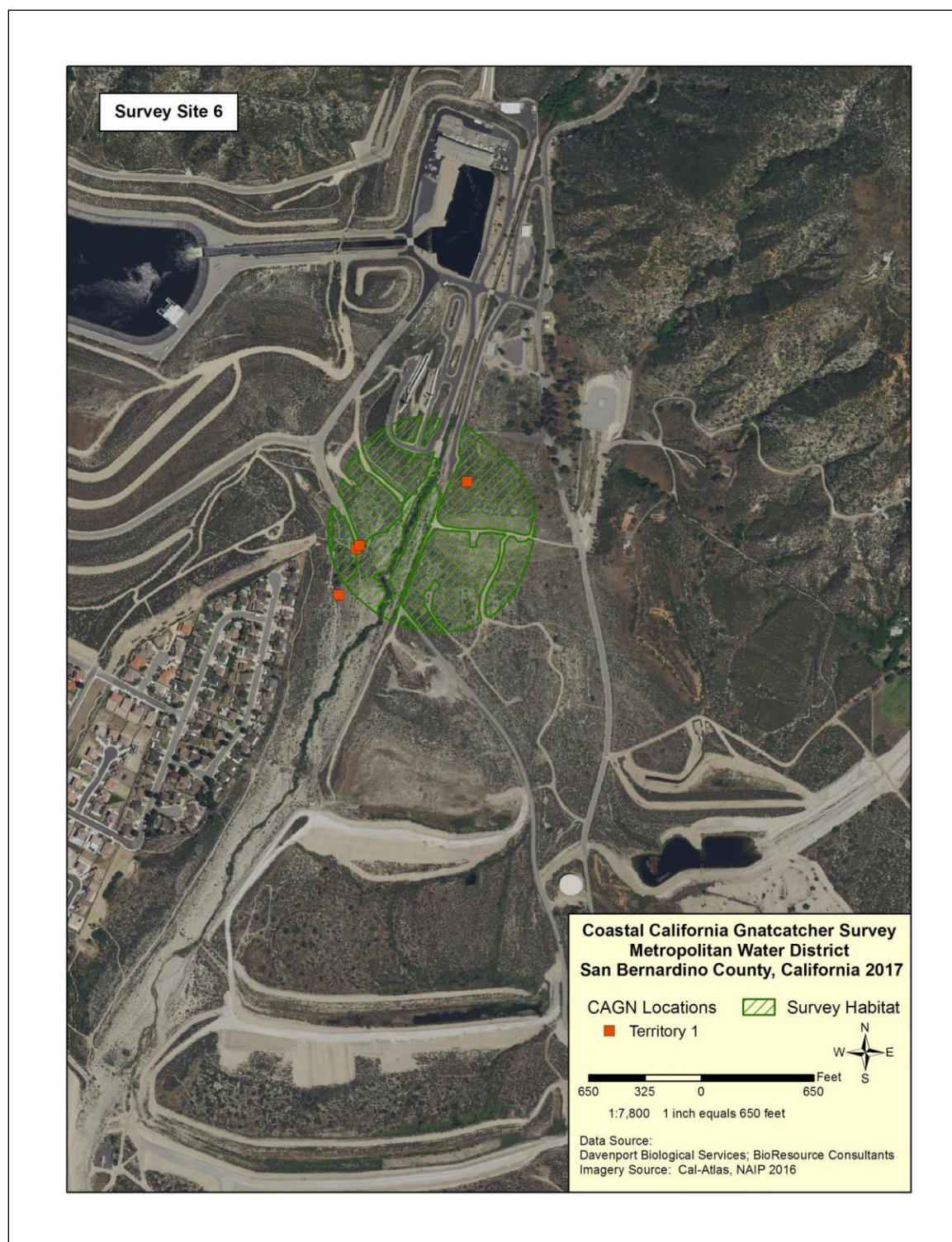


Figure 7. Site 6 (IF Station 19+55) survey area and CAGN observations.



Figure 8. Site 7 (IF Stations 266+15, 288+90, and 290+15) survey area.



Figure 9. Site 8 (IF Stations 573+94 and 592+31) survey area.



Figure 10. Site 9 (IF Station 660+00) survey area.



Figure 11. Site 10 (IF Stations 733+15, 735+40, 745+00, and 791+00) survey area.

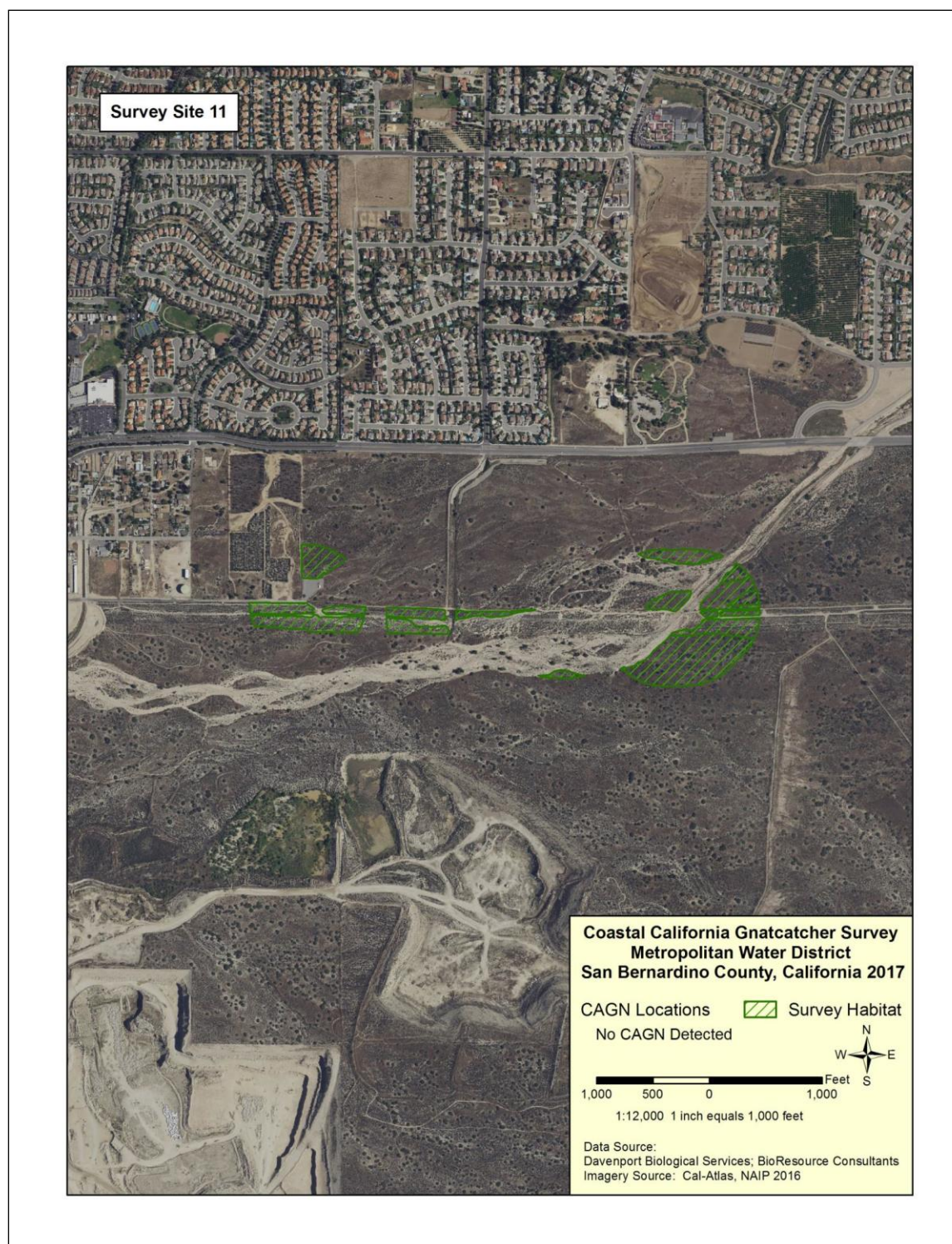


Figure 12. Site 11 (IF Stations 802+94, 813+00, and 822+10) survey area.



Figure 13. Site 12 (IF Station 914+10) survey area.

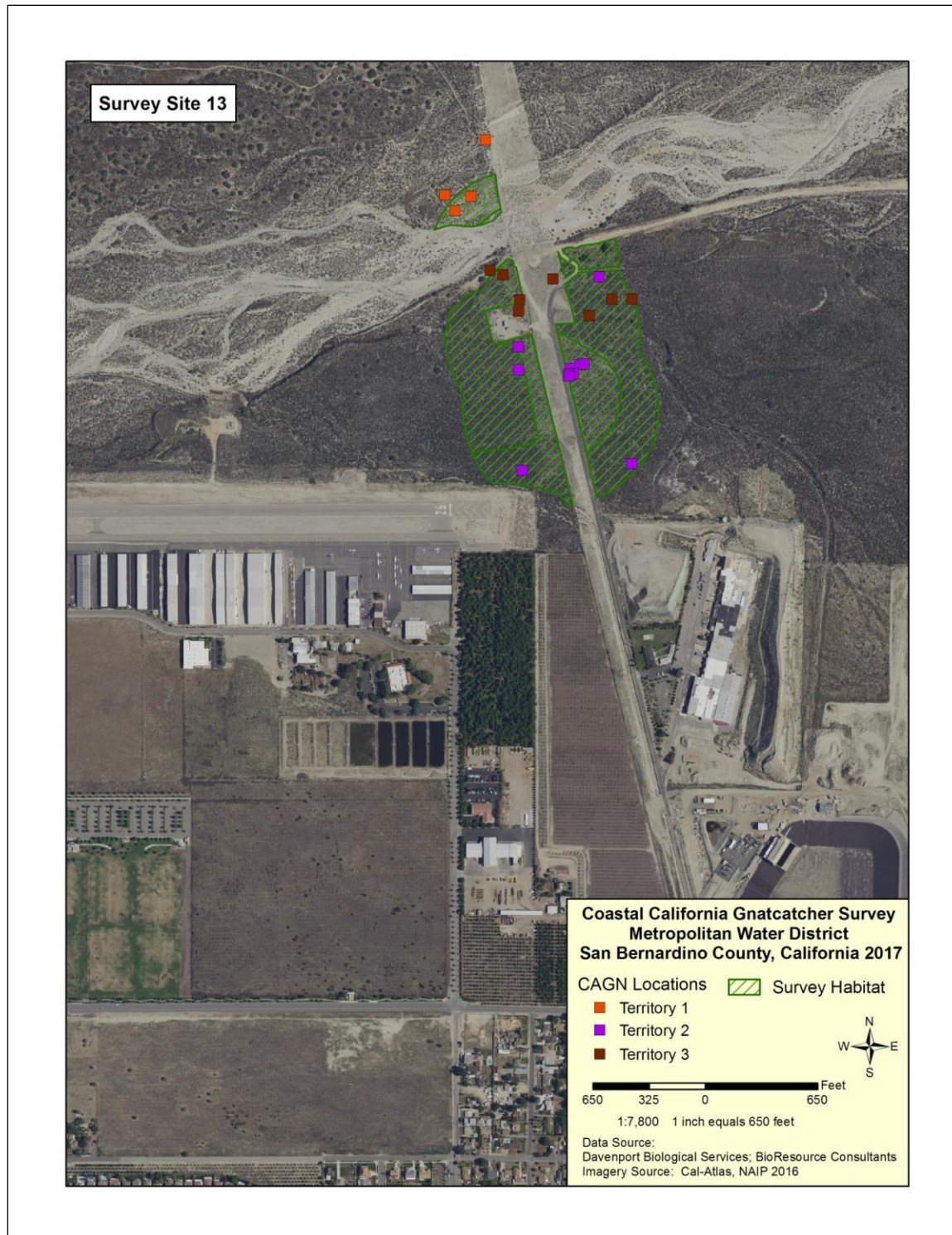


Figure 14. Site 13 (IF Stations 940+80, 945+10, and 950+10) survey area and CAGN observations.



Figure 15. DSFLF observations at Site 2 (UF Station 728+50).



Figure 16. Least Bell's vireo observations at Site 8 (IF Stations 573+94 and 592+31).

APPENDIX B:

TABLES AND PHOTOS

Table 1. List of avian species observed within survey area.

Scientific Name	Common Name
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Aeronautes saxatalis</i>	white-throated swift
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Anas platyrhynchos</i>	mallard
<i>Aphelocoma californica</i>	California scrub-jay
<i>Archilochus alexandri</i>	black-chinned hummingbird
<i>Ardea herodias</i>	great blue heron
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Butorides virescens</i>	green heron
<i>Callipepla californica</i>	California quail
<i>Calypte anna</i>	Anna's hummingbird
<i>Calypte costae</i>	Costa's hummingbird
<i>Campylorhynchus brunneicapillus</i>	cactus wren
<i>Spinus psaltria</i>	lesser goldfinch
<i>Carpodacus mexicanus</i>	house finch
<i>Cathartes aura</i>	turkey vulture
<i>Chamaea fasciata</i>	wrentit
<i>Charadrius vociferus</i>	killdeer
<i>Chondestes grammacus</i>	lark sparrow
<i>Columba livia</i>	rock dove
<i>Columbina passerina</i>	common ground-dove
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
<i>Egretta thula</i>	snowy egret
<i>Falco sparverius</i>	American kestrel
<i>Geococcyx californianus</i>	greater roadrunner
<i>Geothlypis trichas</i>	common yellowthroat
<i>Icterus bullockii</i>	Bullock's oriole
<i>Icterus cucullatus</i>	hooded oriole
<i>Melospiza melodia</i>	song sparrow
<i>Mimus polyglottos</i>	northern mockingbird
<i>Molothrus ater</i>	brown-headed cowbird
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Nycticorax nycticorax</i>	black-crowned night-heron
<i>Oreortyx pictus</i>	mountain quail
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Phainopepla nitens</i>	phainopepla
<i>Pipilo crissalis</i>	California towhee
<i>Pipilo maculatus</i>	spotted towhee

Scientific Name	Common Name
<i>Piranga ludoviciana</i>	western tanager
<i>Polioptila caerulea</i>	blue-gray gnatcatcher
<i>Polioptila californica californica</i>	California gnatcatcher
<i>Psaltiriparus minimus</i>	bushtit
<i>Salpinctes obsoletus</i>	rock wren
<i>Sayornis saya</i>	Say's phoebe
<i>Sayornis nigricans</i>	black phoebe
<i>Setophaga petechia</i>	yellow warbler
<i>Sialia mexicana</i>	western bluebird
<i>Stelgidopteryx serripennis</i>	northern rough-wing swallow
<i>Streptopelia decaocto</i>	Eurasian collared dove
<i>Tachycineta bicolor</i>	tree swallow
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Toxostoma redivivum</i>	California thrasher
<i>Troglodytes aedon</i>	house wren
<i>Turdus migratorius</i>	American robin
<i>Tyrannus verticalis</i>	western kingbird
<i>Tyrannus vociferans</i>	Cassin's kingbird
<i>Zenaida macroura</i>	mourning dove
<i>Zonotrichia leucophrys</i>	white-crowned sparrow

Table 2. Coastal California gnatcatcher observations.

Site Number	Territory	Date	Location		Notes
			Easting	Northing	
2	1	26-May-17	457251	3765964	Pair
2	1	3-Jun-17	457315	3765989	
2	1	3-Jun-17	457222	3765960	
2	1	10-Jun-17	457361	3766017	
2	1	10-Jun-17	457360	3766083	
2	1	10-Jun-17	457341	3766007	
2	1	10-Jun-17	457362	3766082	
2	1	24-Jun-17	457327	3765960	
2	2	26-May-17	457024	3766020	Pair
2	2	26-May-17	456991	3766015	
2	2	26-May-17	457080	3766029	
2	2	3-Jun-17	457000	3766065	
2	2	3-Jun-17	457028	3766009	
2	2	3-Jun-17	457017	3765877	
2	2	3-Jun-17	457017	3765918	
2	2	3-Jun-17	457025	3765919	
2	2	10-Jun-17	457025	3765919	
2	2	17-Jun-17	456990	3765815	
2	2	24-Jun-17	457017	3765917	
6	1	10-Jun-17	468975	3784302	Juvenile
6	1	10-Jun-17	468980	3784308	Territory overlaps with project area.
6	1	10-Jun-17	468944	3784221	
6	1	17-Jun-17	469170	3784420	Adult Female
13	1	16-May-17	487170	3772178	Sing male territory overlaps with project area.
13	1	16-May-17	487216	3772175	
13	1	23-May-17	487242	3772275	
13	1	30-May-17	487300	3771870	
13	1	20-Jun-17	487188	3772150	
13	2	23-May-17	487300	3771910	Pair
13	2	30-May-17	487390	3771859	

Site Number	Territory	Date	Location		Notes
			Easting	Northing	
13	2	30-May-17	487392	3771861	
13	2	30-May-17	487392	3771872	
13	2	30-May-17	487409	3771879	
13	2	30-May-17	487416	3771880	
13	2	30-May-17	487397	3771863	
13	2	6-Jun-17	487442	3772034	
13	2	6-Jun-17	487390	3771859	
13	2	6-Jun-17	487389	3771862	
13	2	13-Jun-17	487390	3771859	
13	2	20-Jun-17	483530	3774393	
13	2	20-Jun-17	487500	3771704	
13	2	20-Jun-17	487307	3771692	
13	3	13-Jun-17	487302	3771993	Pair
13	3	13-Jun-17	487300	3771973	
13	3	13-Jun-17	487273	3772037	
13	3	13-Jun-17	487250	3772045	
13	3	13-Jun-17	487275	377191	
13	3	20-Jun-17	487500	3771994	
13	3	20-Jun-17	487465	3771994	
13	3	20-Jun-17	487425	3771965	
13	3	20-Jun-17	487361	3772030	

Table 3 Incidental observations of listed species

Site Number	Species (Observation #)	Date	Location		Notes
			Easting	Northing	
2	DSFLF	24-Jun-17	547017	3765917	Delhi Sands flower-loving fly; Male and female
8	LBVI #1	17-May-17	482562	3778118	Observed in City Creek; also foraging in scrub
8	LBVI #2	17-May-17	482537	3777618	
8	LBVI #3	17-May-17	482457	3777253	



Photo 1. Site 1 (RPL Station 3094+04), June 23, 2017.



Photo 2. Site 2 (UF Station 728+50), May 30, 2017.



Photo 3. Adult coastal California gnatcatcher at Site 2 (UF Station 728+50).



Photo 4. Coastal California gnatcatcher nest at Site 2 (UF Station 728+50).



Photo 5. Site 3 (RPL Station 3571+01), June 2, 2017.



Photo 6. Site 4 (RPL Station 3901+02), June 23, 2017.



Photo 7. Site 5 (RPL Station 3901+02), June 23, 2017.



Photo 8. Site 6 (IF Station 19+55), June 24, 2017.



Photo 9. Site 8 (IF Stations 573+94 and 592+31), June 22, 2017.



Photo 10. Site 9 (IF Station 660+00), June 22, 2017.



Photo 11. Site 11 (IF Stations 802+94, 813+00, and 822+10), June 21, 2017.



Photo 12. Site 12 (IF Station 914+10), June 06, 2017.



Photo 13. Site 13 (IF Stations 940+80, 945+10, and 950+10), May 26, 2017.

Appendix F-4

Least Bell's Vireo Survey Report

August 25, 2017

7576-29

Jennifer Harriger
The Metropolitan Water District of Southern California
PO Box 54153
Los Angeles, California 90054-0153

Subject: Results of the 2017 Least Bell's Vireo Focused Surveys for The Metropolitan Water District of Southern California Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project, San Bernardino County, California

Dear Ms. Harriger:

This report documents the results of eight protocol-level presence/absence surveys for the state- and federally listed endangered least Bell's vireo (*Vireo bellii pusillus*; vireo). The surveys were conducted in all areas of suitable vireo habitat within The Metropolitan Water District of Southern California's (Metropolitan) proposed Distribution System Infrastructure Protection Program's (DSIPP) Western San Bernardino County Operating Region (Figure 1, Regional Location Map). The survey area focused on approximately 12 proposed Capital Investment Project (CIP) footprints and single-occurrence operation and maintenance (O&M) locations, plus a 500-foot buffer, that will be implemented in 2017.

The least Bell's vireo is closely associated with riparian habitats, especially densely vegetated willow scrub and riparian forest vegetation. This species is threatened primarily by loss, degradation, and fragmentation of riparian habitats. They also are impacted by brown-headed cowbird (*Molothrus ater*) nest parasitism.

LOCATION AND EXISTING CONDITIONS

The Western San Bernardino County Operating Region consists of approximately 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and vacuum valves. The pipelines included in this phase of the proposed program include the Inland Feeder, Upper Feeder, Rialto Pipeline, Etiwanda Pipeline, and Yorba Linda Feeder. Only the portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region, with the exception of a section of the Upper Feeder, from Station 680+00 to Station 728+50. This section of the Upper Feeder is in Riverside County and is included in the Western San Bernardino County Operating

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Region. Figure 2, Western San Bernardino County Operating Region Pipeline Locations, illustrates the pipeline locations within the Western San Bernardino County Operating Region. The Western San Bernardino County Operating Region includes approximately 9,512 acres, including all CIP construction areas, single-occurrence O&M work areas, and other ongoing O&M activity areas, plus a 500-foot buffer. The survey area included a total of 14.16 acres, which was determined utilizing species habitat models and field habitat assessments across the entire project area. Two separate "Survey Areas" were visited as part of this project (Figure 3, LBVI Survey Areas Index Map).

Elevation of these sites ranges widely, from approximately 778 feet above mean sea level (AMSL) to 2,652 feet AMSL (Figure 3). The Survey Areas are located within California's Peninsular Ranges Geomorphic Province, represented by a series of mountain ranges separated by northwest-trending valleys, aligned parallel or nearly parallel to faults branching from the San Andreas Fault (California Geological Society 2002). The topographic characteristics are similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding older metamorphic rocks. The Peninsular Ranges extend into lower California and are bounded on the east by the Colorado Desert. On the west, the province includes the Los Angeles Basin, its marine shelf, and the Catalina Islands. Major faults in the province are the Cucamonga, San Jacinto, and San Andreas faults. The Metropolitan Water District of Southern California's (Metropolitan) Western San Bernardino County Operating Region is geologically characterized by a large coastal plain underlain by loose deposits of sand, silt, and gravel, and bordered to the north, east, and southwest by the foothills of the San Gabriel Mountains, the foothills of the San Bernardino National Forest, and Chino Hills, respectively. Much of the pipeline system in Metropolitan's Western San Bernardino County Operating Region traverses flatland deposits that are urbanized, with the exception of portions of the Yorba Linda Feeder, Inland Feeder, and Rialto Pipeline.

Ongoing human disturbance at the Survey Areas appeared to be moderate, and included existing maintenance areas, foot traffic associated with public trails immediately adjacent to the several of the Survey Areas, and light roadside trash associated with public trails.

A total of 9 soils types occur within the Survey Areas:

- Chualar clay loam, 9 to 15 percent slopes
- Cieneba-rock outcrop complex

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- Garretson very fine sandy loam, 2 to 9 percent slopes
- Greenfield sandy loam, 2 to 9 percent slopes
- Hanford coarse sandy loam, 2 to 9 percent slopes
- Osito-modesto families association, 30 to 50 percent slopes
- Psamments and fluvents, frequently flooded
- Riverwash-soboba families association, 2 to 15 percent slopes
- Soboba stony loamy sand, 2 to 9 percent slopes

VEGETATION COMMUNITIES

Eight vegetation communities or land covers were identified within the Survey Areas. These vegetation communities include Arroyo Willow/Mulefat Association (0.45 acre), Blue Elderberry Alliance (0.02 acre), California Sycamore Alliance (5.14 acres), Coast Live Oak-Arroyo Willow Association (2.72 acres), Fremont Cottonwood Alliance (3.49 acres), Mulefat Alliance (2.00 acres), Tamarisk Thickets Semi-natural Stands (0.04 acre), and Willow Riparian Scrub Mapping Unit (0.78 acre).

Vegetation community mapping was conducted by Dudek in 2015 using the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009) and *List of Vegetation Alliances and Associations*, also referred to as the Natural Communities List (CDFG 2010), to unify the previous mapping classifications and create an updated, comprehensive resource to map the Study Areas. Vegetation mapping methods are further described in *Vegetation Community and Land Cover Mapping Report for the Western San Bernardino County Operating Region Distribution System Infrastructure Protection Program (DSIPP)* (Dudek 2016).

Dudek developed initial habitat models for vireo within the Study Areas using project-specific data within ArcGIS. The desktop assessment was conducted by analyzing environmental factors that may support each species presence, including previous species observations, the location and presence of certain natural vegetation communities, elevations, hydrology, and soil types (Dudek 2016, USFWS 2014, Wachtell 1978). The initial models were created without field verification and as a result reflected conservative estimates. Dudek then conducted a series of field visits to the modeled habitat areas in order to refine the extent of each species' habitat based on existing

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environmental and biological conditions (habitat assessment). Dudek biologists used digital imagery and georeferenced project data on iPads, as well as hard copy aerial photographs at 2,400- to 4,800-scale (1 inch = 200 feet to 1 inch = 400 feet) of the Study Areas to map suitable habitat for each species while walking or driving through the Study Areas. Additional methods and results of a series of habitat assessments, including for vireo, are detailed in the focused habitat assessments (Dudek 2017).

Riparian vegetation communities suitable for vireo occurring within the Study Areas are described below and shown on Figures 3A through 3E (LBVI Survey Route Map - Survey Area - Grid).

Forest and Woodlands Alliances and Stands – Riparian Forests

California Sycamore Alliance

The California sycamore alliance (*Platanus racemosa* woodland alliance) includes California sycamore (*Platanus racemosa*) as the dominant or co-dominant tree in the canopy. This alliance forms an open to intermittent tree canopy less than 115 feet (35 meters) high, with an open to intermittent shrub layer and sparse or grassy ground layer (Sawyer et al. 2009). Species associated with the alliance include white alder (*Alnus rhombifolia*), California walnut (*Juglans californica*), coast live oak, valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), California laurel (*Umbellularia californica*), arroyo willow (*Salix lasiolepis*), Goodding's willow (*S. gooddingii*), and red willow (*S. laevigata*) (Sawyer et al. 2009; NatureServe 2009; Holland 1986).

Coast Live Oak–Arroyo Willow Association

The coast live oak–arroyo willow association (*Quercus agrifolia*–*Salix lasiolepis* association) includes coast live oak as the dominant tree in the overstory. Arroyo willow dominates the open shrub understory with other less common species including coyotebrush (*Baccharis pilularis*), mulefat (*B. salicifolia*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and poison oak (*Toxicodendron diversilobum*). The sparse herbaceous understory is composed of a variety of grasses and forbs including Cuman ragweed (*Ambrosia psilostachya*), black mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), and soft brome (*B. hordeaceus*).

Fremont Cottonwood Alliance

The Fremont cottonwood alliance (*Populus fremontii* forest alliance) includes Fremont cottonwood as a dominant or co-dominant species with box elder (*Acer negundo*), Oregon ash

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(*Fraxinus latifolia*), northern California black walnut (*Juglans hindsii*) and hybrids, California sycamore, coast live oak, and other willow species (*Salix* spp.). The tree layer has a continuous to open canopy less than 80 feet (25 meters), a shrub layer that is intermittent to open, and a variable herbaceous layer (Sawyer et al. 2009).

Shrubland Alliances and Stands – Riparian Scrub

Arroyo Willow/Mulefat Association

The arroyo willow/mulefat association (*Salix lasiolepis*/*Baccharis salicifolia* association) includes arroyo willow as the dominant species in the shrub or tree layer. Mulefat sub-dominates the shrub layer. The alliance has an open to continuous shrub layer that is often in two different strata, with low shrubs less than 7 feet (2 meters) in height and tall shrubs less than 30 feet (10 meters) in height, and an open herbaceous layer (Klein and Evens 2006). Other species associated with the association include blue elderberry and other willows.

Blue Elderberry Stands Alliance

The blue elderberry stands alliance (*Sambucus nigra* stands alliance) includes blue elderberry as the dominant tree in the canopy. The alliance has an open to continuous two-tiered shrub canopy less than 25 feet (8 meters) in height with a variable ground layer (Sawyer et al. 2009). Species associated with the alliance include California sagebrush, coyote brush, mulefat, bigpod ceanothus, toyon, laurel sumac, tree tobacco (*Nicotiana glauca*), fuchsia-flowered gooseberry, lemonade berry, blackberry (*Rubus* spp.), sandbar willow, arroyo willow, and poison oak (Sawyer et al. 2009).

Mulefat Alliance

The mulefat alliance (*Baccharis salicifolia* shrubland alliance) includes mulefat as the dominant or co-dominant shrub. The community has a continuous shrub canopy with two tiers at less than 7 feet (2 meters) and less than 15 feet (5 meters) in height, a tree layer that may be present at low cover, and a sparse herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include arroyo willow, sandbar willow, coastal sagebrush, coyotebrush, tree tobacco (*Nicotiana glauca*), and laurel sumac. Other tree species that may be present include California sycamore, Fremont cottonwood, oaks (*Quercus* spp.), and willows (Sawyer et al. 2009).

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Tamarisk Thickets Semi-Natural Stands

The tamarisk thickets semi-natural stands (*Tamarix* spp. semi-natural shrubland stands) includes one of various *Tamarix* species as the dominant shrub in the canopy. This semi-natural stand has an open to continuous canopy less than 25 feet (8 meters) in height with a sparse ground layer (Sawyer et al. 2009). Species associated with the tamarisk thickets semi-natural stands include Fremont cottonwood or willow species (Sawyer et al. 2009).

Willow Riparian Scrub Mapping Unit

The willow riparian scrub mapping unit (also known as southern willow scrub) is recognized by the List of Terrestrial Natural Communities (CDFG 2003) and Jones & Stokes (1993), but not the Natural Communities List (CDFG 2010). According to Holland (1986), this community (southern willow scrub) has been described as a dense, broad-leafed, winter-deciduous riparian thicket dominated by several species of willow. Most stands are too dense to allow much understory development (Holland 1986). Species associated with the southern willow scrub alliance include scattered emergent Fremont cottonwood and California sycamore (Holland 1986).

METHODS

Suitable vireo habitats within the Study Areas, as described above, were surveyed eight times by Dudek wildlife biologists Anna Cassady, John Spranza, Marshall Paymard, and Ryan Henry. Focused surveys for riparian bird species were initiated on May 8, 2017 and continued through July 29, 2017. Weather conditions, time of day, and season were appropriate for the detection of vireo (Table 1).

Table 1
Survey Conditions

Date	Survey Area	Hours	Biologist ¹	Conditions ²
05/08/17	SA1-P2, -S3, -S4, -U5, -V7	0623–1249	JS	0–10% cc, 0–5 mph wind, 49–67°F
05/09/17	SA-B15	0628–0819	JS	0% cc, 0–5 mph wind, 51–56°F
05/19/17	SA1-P2, -S4, -U5, -V7	0930–1032	MP	0% cc, 5–8 mph wind, 83–88°F
05/20/17	SA-B15	0530–1100	MP	0% cc, 1–3 mph wind, 59–89°F
05/30/17	SA1-P2, -S4, -U5, -V7	0750–1145	MP	100% cc, 0–2 mph wind, 63–73°F
05/31/17	SA-B15	0745–0920	RH	100% cc, 0–2 mph wind, 59–60°F
06/12/17	SA1-P2, -S4, -U5, -V7	0715–1115	MP	10–75% cc, 2–3 mph wind, 58–75°F
06/13/17	SA-B15	0720–0900	RH	0% cc, 0–2 mph wind, 57–66°F
6/23/17	SA1-P2, -S4, -U5, -V7	0710–1010	AC	0% cc, 1–2 mph wind, 64–78°F

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Table 1
Survey Conditions

Date	Survey Area	Hours	Biologist ¹	Conditions ²
6/24/17	SA-B15	0805–0935	RH	66–70% cc, 5–10 mph wind, 66–70°F
7/5/17	SA1-P2, -S4, -U5, -V7	0750–1145	MP	0–100% cc, 0–2 mph wind, 68–78°F
7/6/17	SA-B15	0812–0918	AC	0–5% cc, 1–2 mph wind, 71–76°F
7/17/17	SA1-P2, -S4, -U5, -V7	0745–1140	MP	0% cc, 0–1 mph wind, 75–80°F
7/18/17	SA-B15	0850–0951	AC	0% cc, 1–3 mph wind, 72–80°F
7/28/17	SA1-P2, -S4, -U5, -V7	0745–1025	AC	0% cc, 1–2 mph wind, 62–86°F
7/29/17	SA-B15	0728–0915	RH	0% cc, 0–2 mph wind, 62–72°F

¹ Biologist: AC-Anna Cassidy; JS-John Spranza; MP-Marshall Paymard; and RH-Ryan Henry

² Conditions: % cc-percent cloud cover; mph-miles per hour; °F-degrees Fahrenheit

Surveys consisted of slowly walking a methodical, meandering transect within and adjacent to all riparian habitat. This route was arranged to cover all suitable habitat on site and within 500 feet of the site (depicted on Figures 3A through 3E). An electronically-based vegetation map projected on an iPad or iPhone of the Survey Area was available to record any detected vireo or flycatcher. Binoculars (8×40 through 10×50) were used to aid in detecting and identifying wildlife species. Surveyors did not survey more than 3 linear kilometers of habitat on any given survey day. Surveyors generally surveyed between 1 to 2 kilometers of linear habitat on any given survey day.

A Section 10(a)(1)(A) permit is not required to conduct presence/absence surveys for vireo. The eight surveys for vireo followed the currently accepted *Least Bell's Vireo Survey Guidelines* (USFWS 2001), which states that a minimum of eight survey visits should be made to all riparian areas and any other potential vireo habitats during the period from April 10 to July 31. The site visits are required to be conducted at least 10 days apart to maximize the detection of early and late arrivals, females, non-vocal birds, and nesting pairs. Taped playback of vireo vocalizations were not used during the surveys. Surveys were conducted between dawn and 1115 and were not conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather.

SURVEY LIMITATIONS

Access to modeled habitat within Survey Area SA1-S3 via the Tribal Lands was only allowed for the first pass (May 8, 2017). Therefore, focused surveys were not conducted on Tribal Lands within this area for the remaining 7 surveys.

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Subject: Results of the 2017 Least Bell's Vireo Focused Surveys for Metropolitan's Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project

RESULTS

One male least Bell's vireo was identified in riparian habitat within an unnamed intermittent stream/river in Devil's Canyon (Survey Area SA1-P2) on May 8, 2017 (Figure 3C, LBVI Survey Route Map - Survey Area SA1-P2 - Grid E1 West). This individual was detected in central portion of the Survey Area. The individual perched in vegetation and flew within dense riparian habitat. No nest or female individual observed.

An estimated total of 4 adult least Bell's vireos were acoustically identified in suitable riparian habitat within Survey Area SA1-U5 during 2017 surveys (Figure 3D, LBVI Survey Route Map - Survey Area SA1-U5 - Grid F2). These 4 adult vireos are assumed transients (i.e., detected only twice during the eight surveys). Surveyor is not able to confirm if the detections were duplicate observations from previous survey pass. One vireo observation in the southern portion of the survey area was acoustically detected outside of the survey area boundary. However, since the surveyor was within the survey area boundary when acoustically detected the vireo and the vireo was assumed a transient, the observation was recorded. Table 2 provides a summary of observations for vireos across all 6 Survey Areas.

A pair of State- and Federally-listed endangered species, southwestern willow flycatcher (*Empidonax traillii extimus*), were observed on May 9, 2017 within Survey Area SA2-B15 (Figure 3, LBVI Survey Area Grid F2).

Table 2
Summary of Least Bell's Vireo Observations in the Survey Areas

Survey Area	Grid	Station	Estimated LBVI Adults ¹	Summarized Observations
SA1-P2	E1 - West	IF Sta 19+55	1	Survey Area SA1-P2 is located adjacent to residential housing. One male was detected on May 8, 2017 northeast of North Ventura Avenue within an unnamed intermittent stream/river in Devil's Canyon. This male was first detected in the middle of the Survey Area and then flushed before perching for an estimated 10 seconds. This male was not detected with a female and a nest was not observed.
SA1-S3	E1 - East	IF Sta 288+90, IF Sta 290+15	0	Survey Area SA1-S3 is located in Waterman Canyon east of State Route-18 in San Bernardino National Forest, and within an unnamed intermittent stream/river adjacent to East Twin Creek. No LBVI detections.
SA1-S4	E1 - East	IF Sta 288+90, IF Sta 290+15	0	Survey Area SA1-S4 is south of Survey Area SA1-S3. No LBVI detections.
SA1-U5	F2	IF Sta 573+94, IF Sta 592+31,	4	Survey Area SA1-U5 is located east of State-Road-330 within the bottom slope of San Bernardino Mountains along

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Table 2
Summary of Least Bell's Vireo Observations in the Survey Areas

Survey Area	Grid	Station	Estimated LBVI Adults ¹	Summarized Observations
		IF Sta 592+31		an unnamed intermittent stream/river. A total of four individuals were detected, including two in the southern and two in the northern portions, during two survey visits on June 6, 2017 and August 28, 2017. The southern portion individuals were detected northwest of Cook Canyon and west of City Creek, and just outside of the survey area along the bottom slope of the adjacent hill. The two northern portion individuals were detected within the drainage just upstream of the survey area boundary. All individual detections were acoustic and there was no visual confirmation.
SA1-V7	G3	IF Sta 733+15, IF Sta 735+40, IF Sta 745+00	0	Survey Area SA1-V7 is located south of Greenspot Road and west of Orange Street. No LBVI detections.
SA2-B15	A5	YLF Sta 688+15	0	Survey Area SA2-B15 is located in Chino Hills State Park. No LBVI detections.

¹ Adult is defined as an individual known to have hatched the year prior to 2016. Otherwise, exact age unknown.

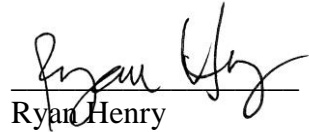
A total of fifty-nine (59) species of wildlife were observed or detected during the surveys which included 1 amphibian, 53 birds, 2 invertebrates, 1 mammal, and 2 reptile species (Appendix A, Wildlife Species Observed within the Study Area). Additional special-status species, including yellow warbler (*Setophaga petechia*; State Species of Special Concern), and song sparrow (*Melospiza melodia*; State Species of Special Concern), were also detected in the Survey Areas; however, locations were not mapped due to the species' low raking and the species' were not prevalent within the project area. Survey Area photographs are included in Appendix B, Survey Area Photographs.

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Subject: Results of the 2017 Least Bell's Vireo Focused Surveys for Metropolitan's Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project

I certify that the information in this survey report and attachments exhibits fully and accurately represent our work. Please feel free to contact me, Ryan Henry, at 949.373.8321 with questions or if you require additional information.

Sincerely,



Ryan Henry
Survey Coordinator

Att: *Figure 1, Regional Location Map*
Figure 2, Western San Bernardino County Operating Region Pipeline Locations
Figure 3, LBVI Survey Areas Index Map
Figure 3A, LBVI Survey Route Map - Survey Area SA2-B12 - Grid A5
Figure 3B, LBVI Survey Route Map - Survey Area SA1-S3 - Grid E1 - East
Figure 3C, LBVI Survey Route Map - Survey Area SA1-P2 - Grid E1 - West
Figure 3D, LBVI Survey Route Map - Survey Area SA1-U5 - Grid F2
Figure 3E, LBVI Survey Route Map - Survey Area SA1-V7 - Grid G3
Appendix A, Wildlife Species Observed within the Study Area
Appendix B, Representative Survey Area Photographs

cc: *Shelah Riggs, Dudek*

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Subject: *Results of the 2017 Least Bell's Vireo Focused Surveys for Metropolitan's Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project*

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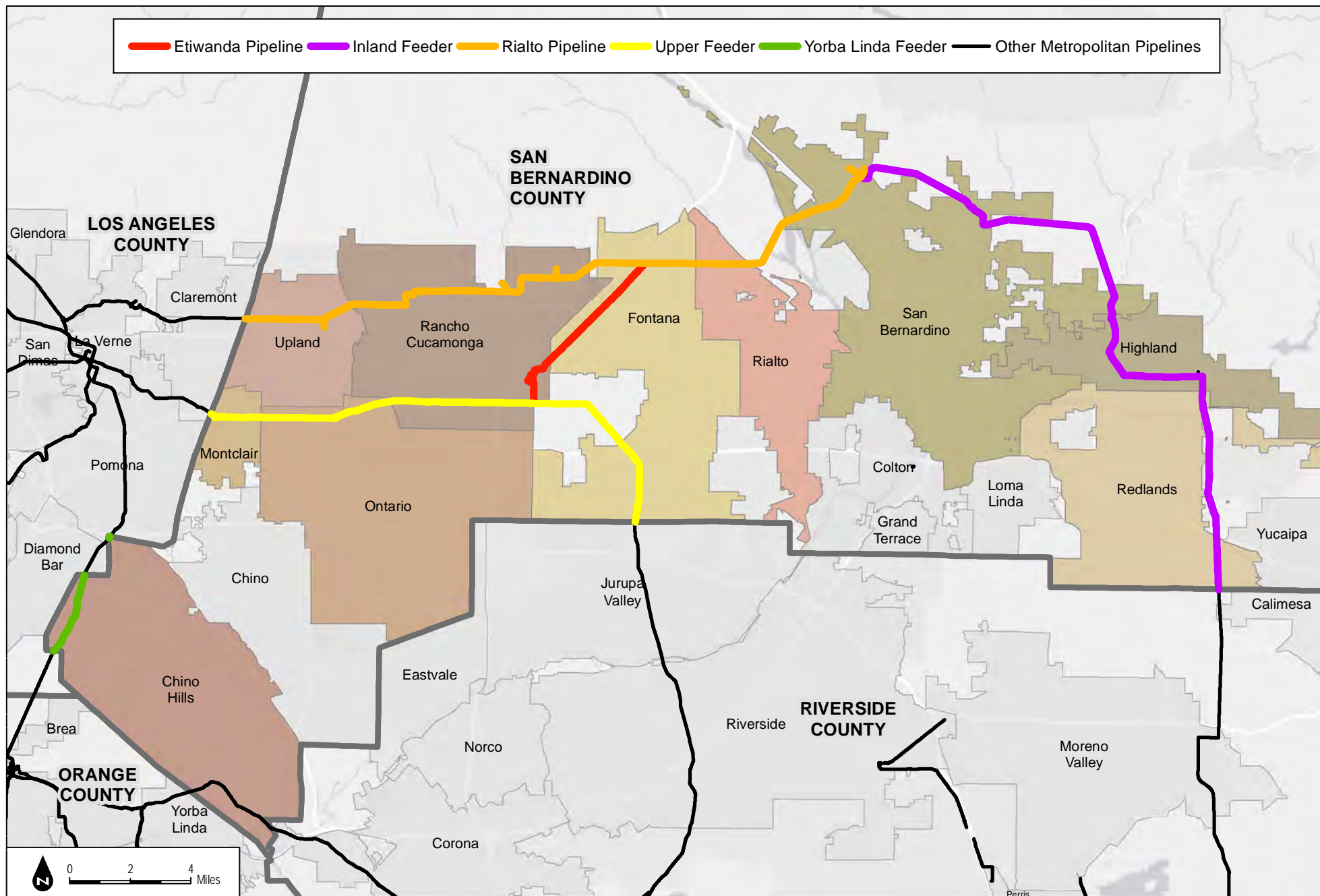
Ms. Jennifer Harriger

Subject: Results of the 2017 Least Bell's Vireo Focused Surveys for Metropolitan's Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project

USFWS (U.S. Fish and Wildlife Service). 2014. Carlsbad Fish and Wildlife Office. Occurrence Information for Multiple Species within Jurisdiction of the Carlsbad Fish and Wildlife Office (CFWO): U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California, USA.

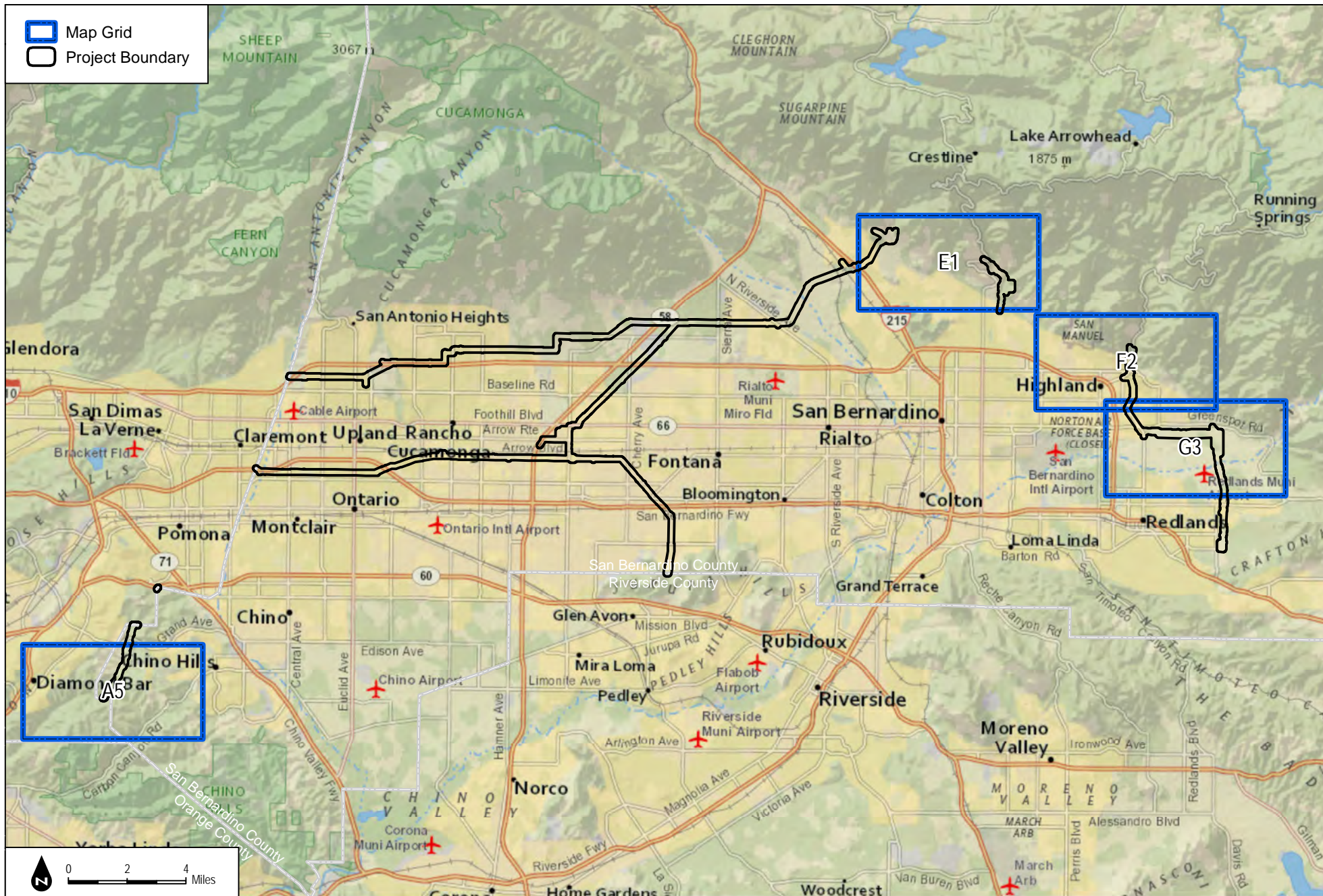
Wachtell, J.K. 1978. *Soil Survey of Orange County and Western Part of Riverside County, California*.

FIGURES



SOURCE: ArcGIS Online Basemap

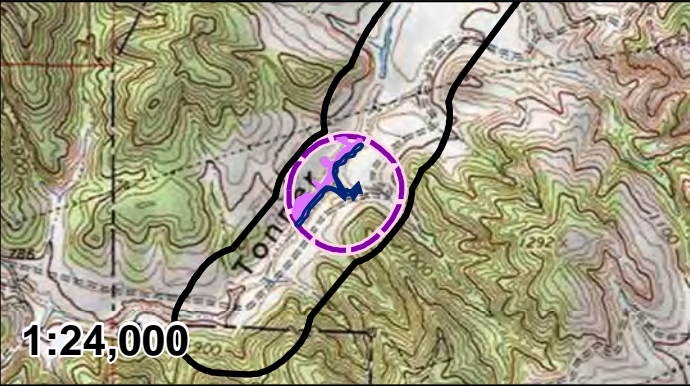
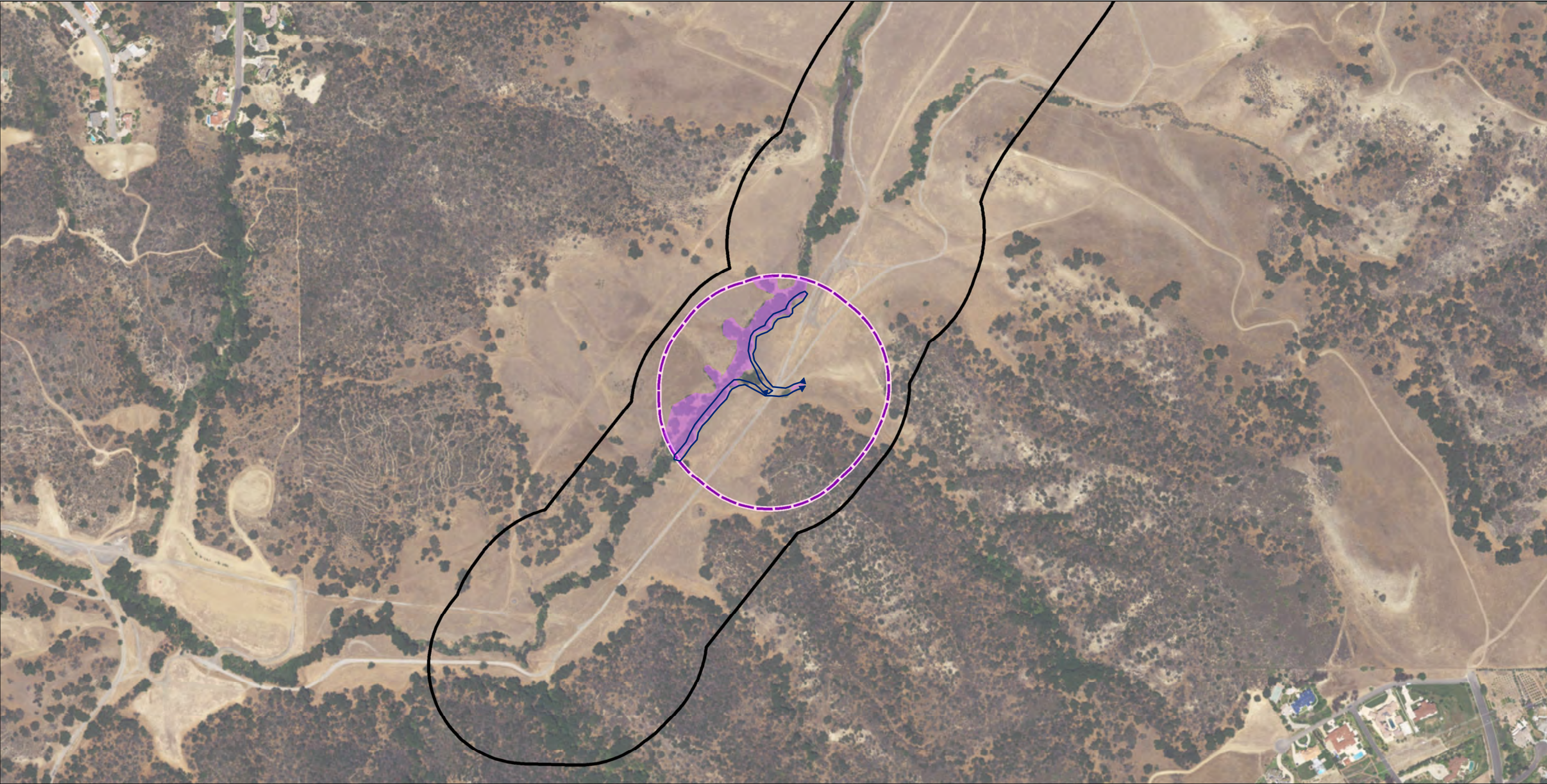
FIGURE 2
Western San Bernardino County Operating Region Pipeline Locations



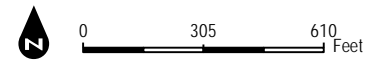
SOURCE: ArcGIS Online Basemap (Nat Geo)

FIGURE 3

LBVI Survey Areas Index Map



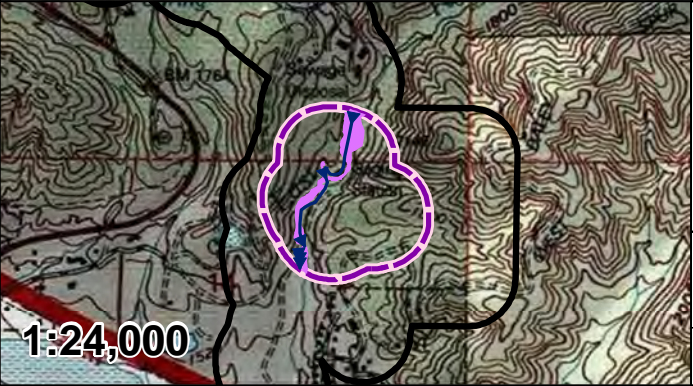
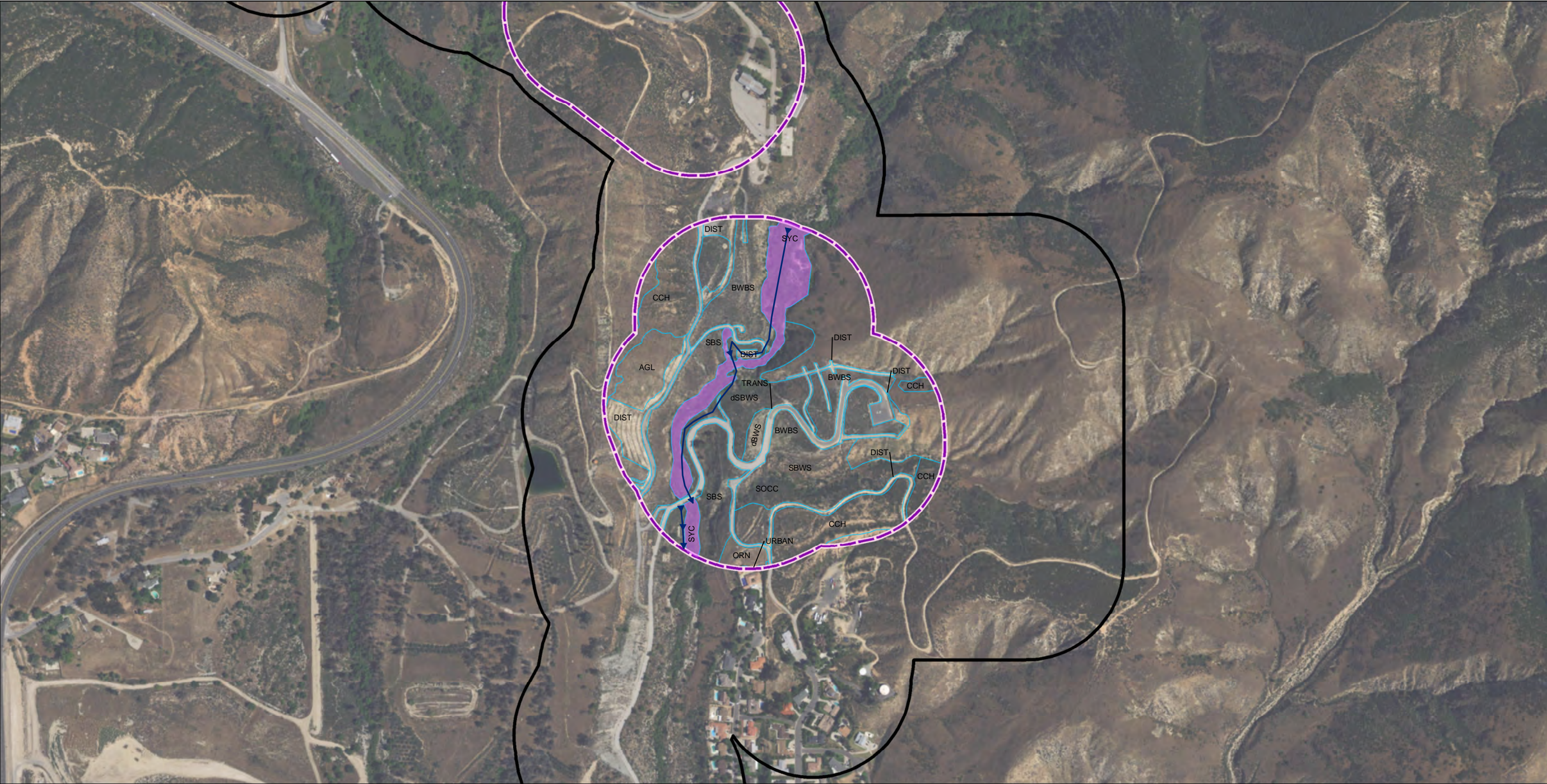
- Project Boundary
- Survey Area
- Survey Routes
- Suitable Habitat**
- least Bell's vireo



SOURCE: ArcGIS Online Basemaps: USA Topo; Bing
Project Components: MWD 2016, Dudek 2017

The Metropolitan Water District of Southern California

FIGURE 3A
LBVI Survey Route Map - Survey Area SA2-B15 - Grid A5
Western San Bernardino County Distribution System Infrastructure Protection Program



- Project Boundary
- Survey Area
- Survey Routes

Suitable Habitat

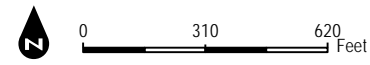
- least Bell's vireo

Vegetation

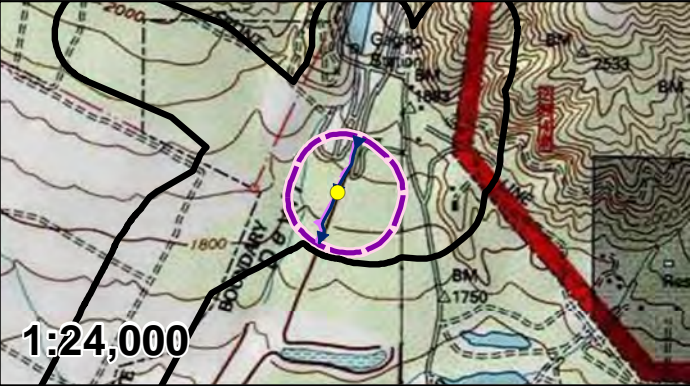
- AGL - Annual Grassland Mapping Unit
- CCH - Chamise Alliance
- DIST - Disturbed or Barren Mapping Unit
- ORN - Ornamental Landscaping Mapping Unit

- SBS - California Sagebrush Alliance
- SYC - California Sycamore Alliance
- TRANS - Transportation Mapping Unit
- URBAN - Urban and Commercial Mapping Unit
- dBS - Brittle Bush Disturbance Mapping Unit

- dBWS - California Buckwheat Disturbance Mapping Unit



SOURCE: ArcGIS Online Basemaps: USA Topo; Bing
Project Components: MWD 2016, Dudek 2017



- Project Boundary
- Survey Area
- Survey Routes

Suitable Habitat
least Bell's vireo

Survey Results

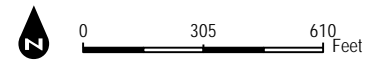
- LBVI - least Bell's vireo

Vegetation

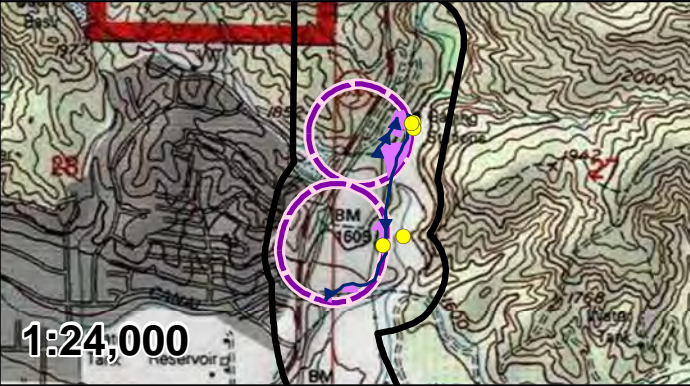
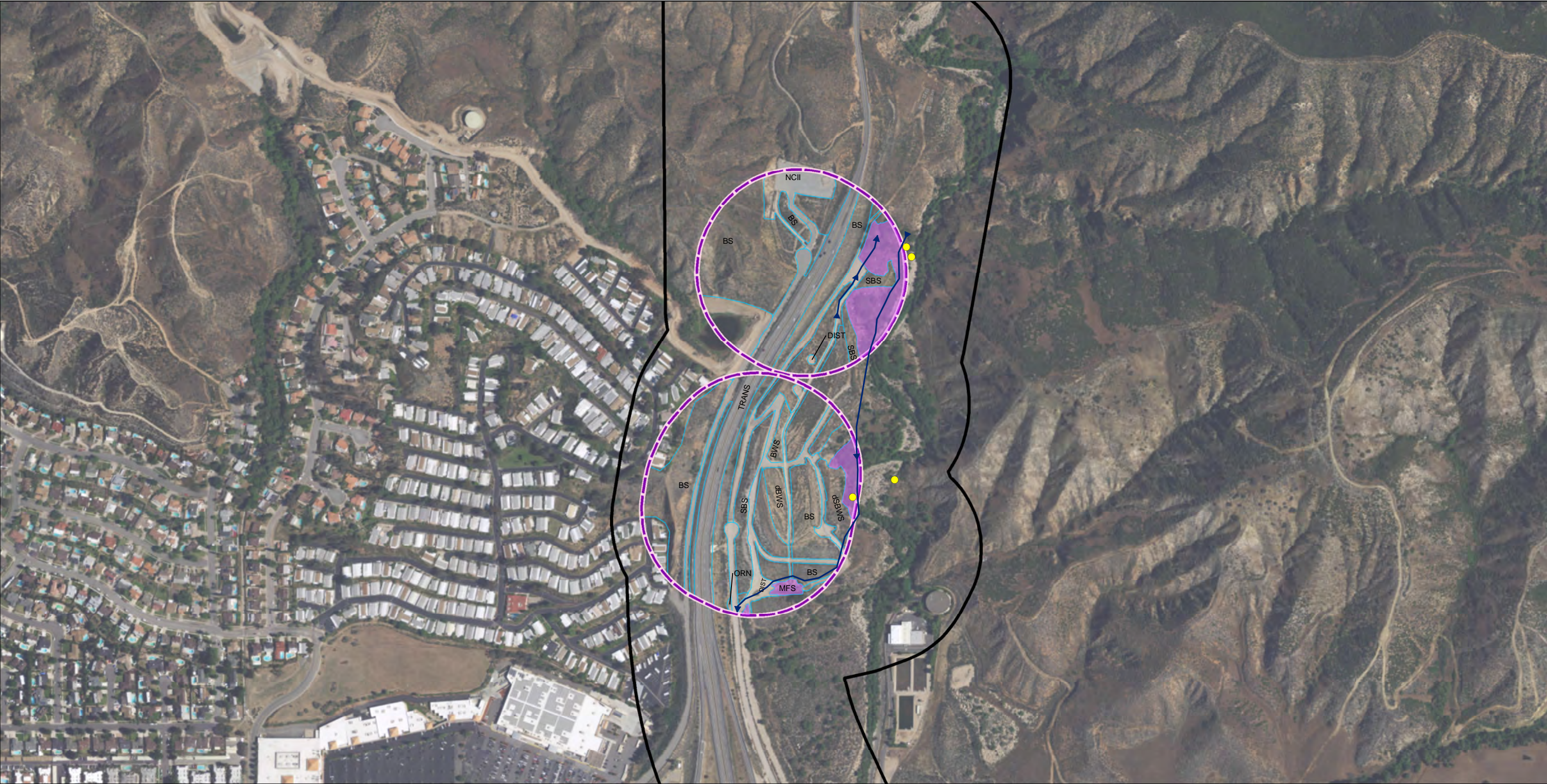
- BS - Brittle Bush Alliance
- BWS - California Buckwheat Alliance

- DIST - Disturbed or Barren Mapping Unit
- NCII - Nonurban Commercial/Industrial/Institutional Mapping Unit
- SBS - California Sagebrush Alliance
- SBSC - Scale Broom Alliance
- SYC - California Sycamore Alliance

- TRANS - Transportation Mapping Unit
- UVC - Unvegetated Channels Mapping Unit
- WRS - Willow Riparian Scrub Mapping Unit
- dBS - Brittle Bush Disturbance Mapping Unit
- dBWS - California Buckwheat Disturbance Mapping Unit



SOURCE: ArcGIS Online Basemaps: USA Topo; Bing
Project Components: MWD 2016, Dudek 2017



Project Boundary Survey Area Survey Routes	Survey Results LBVI - least Bell's vireo	Vegetation AGL - Annual Grassland Mapping Unit BASN - Basins Mapping Unit BS - Brittle Bush Alliance	BWS - California Buckwheat Alliance DIST - Disturbed or Barren Mapping Unit FCC - Flood Control Channels Mapping Unit FCF - Fremont Cottonwood Alliance MFS - Mulefat Alliance NCII - Nonurban Commercial/Industrial/Institutional Mapping Unit	ORN - Ornamental Landscaping Mapping Unit SBS - California Sagebrush Alliance TRANS - Transportation Mapping Unit TTS - Tamarisk Thickets Semi-natural Stands URBAN - Urban and Commercial Mapping Unit dBWS - California Buckwheat Disturbance Mapping Unit
Suitable Habitat least Bell's vireo				

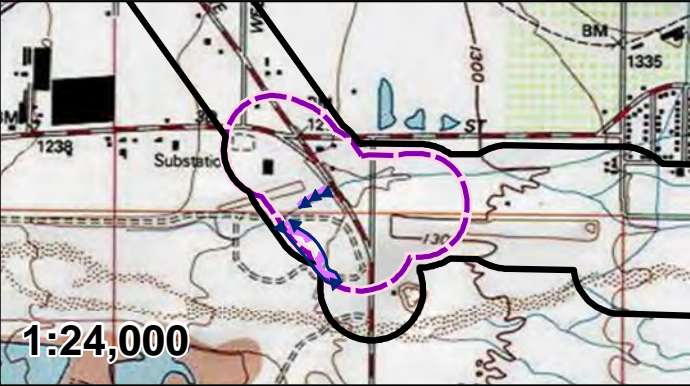
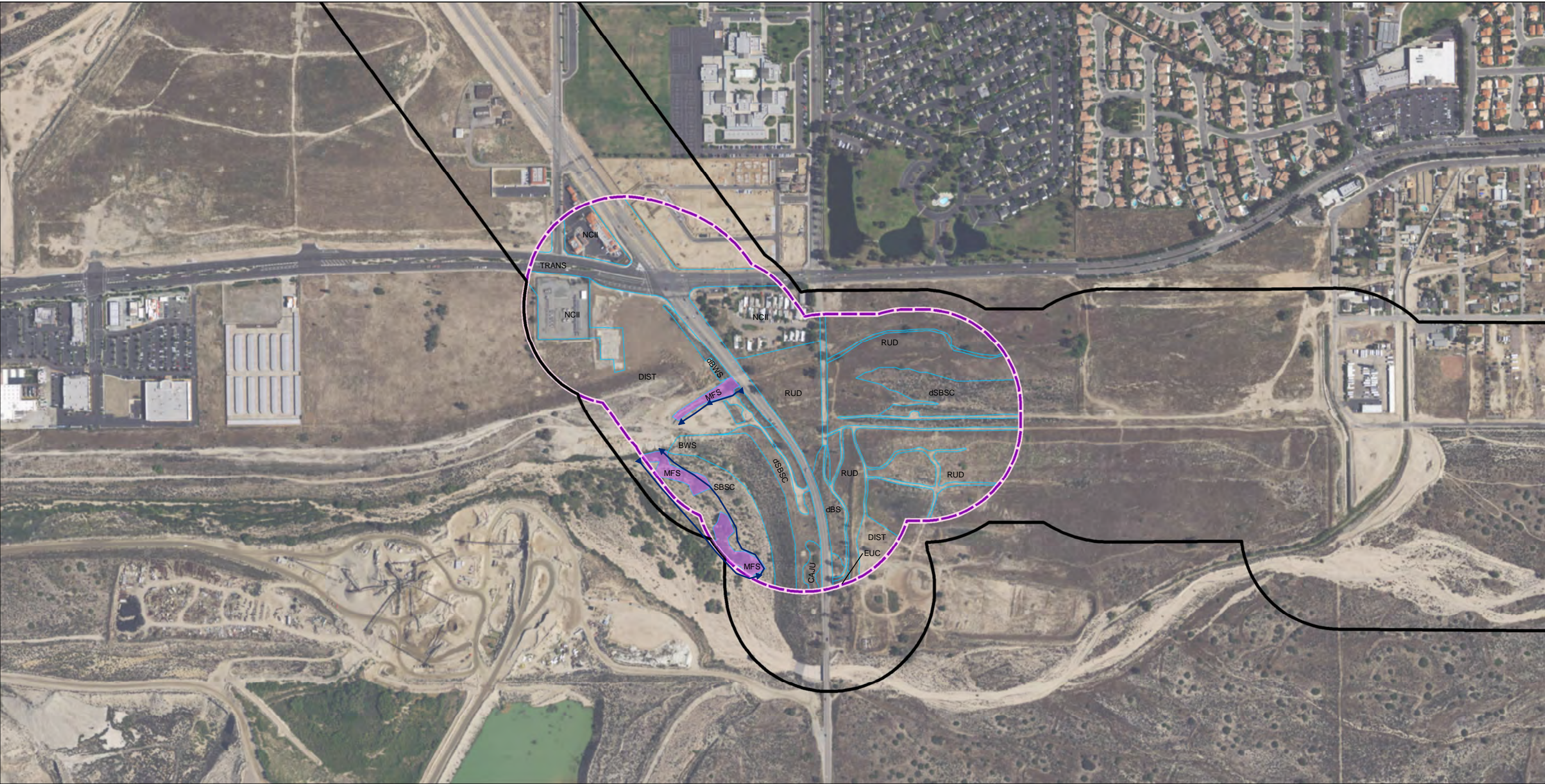
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SOURCE: ArcGIS Online Basemaps: USA Topo; Bing
Project Components: MWD 2016, Dudek 2017

1:24,000

The Metropolitan Water District of Southern California

FIGURE 3D
LBVI Survey Route Map - Survey Area SA1-U5 - Grid F2
Western San Bernardino County Distribution System Infrastructure Protection Program



Project Boundary [Thick black line] Survey Area [Dashed purple line] Survey Routes [Blue arrows]	Suitable Habitat [Purple fill] least Bell's vireo	Vegetation [Light blue fill] BWS - California Buckwheat Alliance CAJU - California Juniper Alliance DIST - Disturbed or Barren Mapping Unit EUC - Eucalyptus Semi-natural Stands MFS - Mulefat Alliance	[Light blue fill] NCII - Nonurban Commercial/Industrial/Institutional Mapping Unit [Light blue fill] RUD - Ruderal Grassland Mapping Unit [Light blue fill] SBSC - Scale Broom Alliance [Light blue fill] TRANS - Transportation Mapping Unit [Light blue fill] URBAN - Urban and Commercial Mapping Unit [Light blue fill] UVC - Unvegetated Channels Mapping Unit	[Light blue fill] dBS - Brittle Bush Disturbance Mapping Unit [Light blue fill] dBWS - California Buckwheat Disturbance Mapping Unit [Light blue fill] dSBSC - Scale Broom Disturbance Mapping Unit
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SOURCE: ArcGIS Online Basemaps: USA Topo; Bing
Project Components: MWD 2016, Dudek 2017

0 310 620 Feet

The Metropolitan Water District of Southern California

FIGURE 3E
LBVI Survey Route Map - Survey Area SA1-V7 - Grid G3
Western San Bernardino County Distribution System Infrastructure Protection Program

APPENDIX A

Wildlife Species Observed in Study Area

APPENDIX A

Wildlife Species Observed in Study Area

AMPHIBIAN

FROGS

RANIDAE—TONGUELESS FROGS

* *Lithobates catesbeianus*—American bullfrog

BIRD

BLACKBIRDS, ORIOLES & ALLIES

ICTERIDAE—BLACKBIRDS

Icterus bullockii—Bullock's oriole

Icterus cucullatus—hooded oriole

Sturnella neglecta—western meadowlark

BUSHTITS

AEGITHALIDAE—LONG-TAILED TITS & BUSHTITS

Psaltiriparus minimus—bushtit

CARDINALS, GROSBEAKS & ALLIES

CARDINALIDAE—CARDINALS & ALLIES

Piranga ludoviciana—western tanager

EMBERIZINES

EMBERIZIDAE—EMBERIZIDS

Chondestes grammacus—lark sparrow

Melospiza melodia—song sparrow

Melospiza crissalis—California towhee

Pipilo maculatus—spotted towhee

Zonotrichia leucophrys—white-crowned sparrow

FALCONS

FALCONIDAE—CARACARAS & FALCONS

Falco sparverius—American kestrel

APPENDIX A (Continued)

FINCHES

FRINGILLIDAE—FRINGILLINE & CARDUELINE FINCHES & ALLIES

Haemorhous mexicanus—house finch

Spinus psaltria—lesser goldfinch

Spinus tristis—American goldfinch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Empidonax traillii extimus—southwestern willow flycatcher

Myiarchus cinerascens—ash-throated flycatcher

Sayornis nigricans—black phoebe

Sayornis saya—Say's phoebe

Tyrannus vociferans—Cassin's kingbird

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, & ALLIES

Buteo jamaicensis—red-tailed hawk

HERONS & BITTERNS

ARDEIDAE—HERONS, BITTERNS, & ALLIES

Ardea herodias—great blue heron

HUMMINGBIRDS

TROCHILIDAE—HUMMINGBIRDS

Archilochus alexandri—black-chinned hummingbird

Calypte anna—Anna's hummingbird

JAYS, MAGPIES & CROWS

CORVIDAE—CROWS & JAYS

Apelocoma californica—California scrub-jay

Corvus brachyrhynchos—American crow

Corvus corax—common raven

APPENDIX A (Continued)

MOCKINGBIRDS & THRASHERS

MIMIDAE—MOCKINGBIRDS & THRASHERS

Mimus polyglottos—northern mockingbird

Toxostoma redivivum—California thrasher

NEW WORLD QUAIL

ODONTOPHORIDAE—NEW WORLD QUAIL

Callipepla californica—California quail

NEW WORLD VULTURES

CATHARTIDAE—CARDINALS & ALLIES

Cathartes aura—turkey vulture

OLD WORLD SPARROWS

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

PIGEONS & DOVES

COLUMBIDAE—PIGEONS & DOVES

* *Streptopelia decaocto*—Eurasian collared-dove

Zenaida macroura—mourning dove

ROADRUNNERS & CUCKOOS

CUCULIDAE—CUCKOOS, ROADRUNNERS, & ANIS

Geococcyx californianus—greater roadrunner

SHOREBIRDS

CHARADRIIDAE—LAPWINGS & PLOVERS

Charadrius vociferus—killdeer

SILKY FLYCATCHERS

APPENDIX A (Continued)

PTILOGONATIDAE—SILKY-FLYCATCHERS

Phainopepla nitens—phainopepla

STARLINGS & ALLIES

STURNIDAE—STARLINGS

* *Sturnus vulgaris*—European starling

SWALLOWS

HIRUNDINIDAE—SWALLOWS

Stelgidopteryx serripennis—northern rough-winged swallow

SWIFTS

APODIDAE—SWIFTS

Aeronautes saxatalis—white-throated swift

VIREOS

VIREONIDAE—VIREOS

Vireo bellii pusillus—least Bell's vireo

Vireo gilvus—warbling vireo

Vireo huttoni—Hutton's vireo

WOOD WARBLERS & ALLIES

PARULIDAE—WOOD-WARBLERS

Cardellina pusilla—Wilson's warbler

Geothlypis trichas—common yellowthroat

Oreothlypis celata—orange-crowned warbler

Setophaga petechia—yellow warbler

Setophaga coronata auduboni—Audubon's warbler

WOODPECKERS

PICIDAE—WOODPECKERS & ALLIES

Colaptes auratus—northern flicker

APPENDIX A (Continued)

Melanerpes formicivorus—acorn woodpecker

Picoides nuttallii—Nuttall's woodpecker

WRENS

TROGLODYTIDAE—WRENS

Thryomanes bewickii—Bewick's wren

Troglodytes aedon—house wren

WRENTITS

TIMALIIDAE—BABBLERS

Chamaea fasciata—wren tit

INVERTEBRATE

BUTTERFLIES

NYMPHALIDAE—BRUSH-FOOTED BUTTERFLIES

Nymphalis antiopa—mourning cloak

PIERIDAE—WHITES & SULFURS

Pieris rapae—cabbage white

MAMMAL

SQUIRRELS

SCIURIDAE—SQUIRRELS

Spermophilus (Otospermophilus) beecheyi—California ground squirrel

REPTILE

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

Uta stansburiana—common side-blotched lizard

APPENDIX A (Continued)

* signifies introduced (non-native) species

APPENDIX B

Representative Survey Area Photographs

Appendix B

Representative Survey Area Photographs



Survey Area SA1-P2



Survey Area SA1-P2



Survey Area SA1-P2



Survey Area SA1-S3/-S4

Appendix B

Representative Survey Area Photographs (cont.)



Survey Area SA1-U5



Survey Area SA1-U5



Survey Area SA1-U5



Survey Area SA1-V7

Appendix B

Representative Survey Area Photographs (cont.)



Survey Area SA1-V7



Survey Area SA1-V7



Survey Area SA2-B15



Survey Area SA2-B15

Appendix F-5

San Bernardino Kangaroo Rat Survey Report

February 21, 2018

7576-29

Jennifer Harriger
The Metropolitan Water District of Southern California
PO Box 54153
Los Angeles, California 90054-0153

Subject: Results of the 2017 San Bernardino Kangaroo Rat Focused Surveys for The Metropolitan Water District of Southern California Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project, San Bernardino County, California

Dear Ms. Harriger:

BioResource Consultants, Inc. (BRC) was contracted by Dudek to conduct protocol surveys for the federally-listed endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus*; SBKR) for the Metropolitan Water District of Southern California's (Metropolitan) proposed Distribution System Infrastructure Protection Program (DSIPP) for the Western San Bernardino County Operating Region. The SBKR was listed as a federal endangered species by the U.S. Fish and Wildlife Service (USFWS) on September 24, 1998 (USFWS 1998). Final Critical Habitat (CH) was designated for the SBKR on October 17, 2008 (USFWS 2008). The results of the previous habitat assessments determined that potentially suitable habitat for SBKR was present at select locations within the alignment, which required trapping. This report contains the results of the SBKR protocol-level surveys at proposed Capital Investment Plan (CIP) and single-occurrence operation and maintenance (O&M) project locations.

PROJECT LOCATION

The Western San Bernardino County Operating Region consists of approximately 74 miles of pipelines and 392 aboveground appurtenant pipeline structures, including manholes, blow-offs, pump wells, and air release and vacuum valves. The pipelines included in this operating region include the Inland Feeder (IF), Upper Feeder (UF), Rialto Pipeline (RPL), Etiwanda Pipeline (EPL), and Yorba Linda Feeder (YLF). Only the portions of these pipelines within San Bernardino County are included in the Western San Bernardino County Operating Region. Appendix A: Figure 1 illustrates the pipeline locations within the Western San Bernardino County Operating Region. The Western San Bernardino County Operating Region includes approximately 9,512 acres, including all CIP construction areas; single-occurrence O&M work areas, and other ongoing O&M activity areas, plus a 500-foot buffer area. The focused survey area for SBKR included a

Ms. Jennifer Harriger

Subject: Results of the 2017 San Bernardino Kangaroo Rat Focused Surveys for Metropolitan's Western San Bernardino County Operating Region's Proposed Distribution System Infrastructure Protection Project

total of 11.25 acres (4.55 hectares), which were determined utilizing species habitat models and field habitat assessments across the entire project area.

PROJECT SITE DESCRIPTIONS

A total of eight separate survey sites (Sites 3, 4, 5, and 9-13) were included in the survey. These locations occur within several drainages that are designated critical habitat for SBKR, including the Santa Ana River, Plunge Creek, City Creek, Lytle Creek, Morse Canyon, and San Sevaine Canyon (Appendix A: Figure 2).

Topography of the survey area included floodplains, alluvial fans, and hills. Coastal sage scrub and alluvial scrub were the dominant vegetation communities present within the survey area. Dominant vegetation observed within the coastal sage scrub vegetation community included California sagebrush (*Artemisia californica*), California brittlebush (*Encelia californica*), and California buckwheat (*Eriogonum fasciculatum*). Characteristic vegetation observed within the alluvial scrub vegetation community within the survey area included California sagebrush, California brittlebush, California buckwheat, holly-leaved redberry (*Rhamnus ilicifolia*), skunk brush (*Rhus aromatica*), sugar bush (*Rhus ovata*), holly-leaved cherry (*Prunus ilicifolia*), California mountain-mahogany (*Cercocarpus betuloides*), western poison oak (*Toxicodendron diversilobum*), California juniper (*Juniperus californicus*), scale-broom (*Lepidospartum squamatum*), and blue elderberry (*Sambucus nigra*). Riparian plant communities were present at some of the sites. Plants associated with the riparian plant community included willow (*Salix* sp.), mulefat (*Baccharis salicifolia*), western sycamore (*Platanus racemosa*), and blue elderberry.

The following summary describes the general location, corresponding Metropolitan work areas, and setting of each survey site.

Site 3 (RPL Station 3571+01) is located in San Sevaine Canyon north of Interstate 210 in Rancho Cucamonga (Appendix A: Figure 3). The vegetation community present at Site 3 was alluvial scrub dominated by California sagebrush, California buckwheat, scale-broom, and California mountain-mahogany.

Sites 4 and 5 (RPL Station 3901+02) are located within Lytle Creek Wash north of Interstate 210 in Rialto (Appendix A: Figure 4). The vegetation community present at Sites 4 and 5 was alluvial scrub. The dominant plant species at Site 4 were California buckwheat and California sagebrush. The dominant plant species at Site 5 included California buckwheat, California mountain-mahogany, skunk brush, holly-leaved red berry, and blue elderberry.

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Site 9 (IF Station 660+00) is located along City Creek north of Baseline Road in Highland (Appendix A: Figure 5). The vegetation community at Site 9 was alluvial scrub dominated by California buckwheat, California sagebrush, and California brittlebush. Scale-broom and California sycamores were also present at this site.

Site 10 (IF Stations 733+15, 735+40, 745+00, and 791+00) is located along Oak Creek south of Green Spot Road in Highland (Appendix A: Figures 6-8). The vegetation community at Site 10 was coastal sage scrub dominated by California buckwheat and exotics such as tobacco tree (*Nicotiana glauca*) and eucalyptus (*Eucalyptus* sp.).

Site 11 (IF Stations 802+94, 813+00, and 822+10) is located along Plunge Creek south of Greenspot Road in Highland (Appendix A: Figures 9 and 10). The vegetation community at Site 11 was alluvial scrub dominated by California buckwheat, California sagebrush, chamise (*Adenostoma fasciculatum*), Catalina cherry (*Prunus ilicifolia* ssp. *lyonii*), blue elderberry, scale-broom, California sycamore, and tree tobacco.

Site 12 (IF Station 914+10) is located along Opal Avenue, just south of Cone Camp Road and north of the Santa Ana River Trail in Mentone (Appendix A: Figure 11). The vegetation community at Site 12 was alluvial scrub dominated by California brittlebush, California buckwheat, California sagebrush, and scale-broom.

Site 13 (IF Stations 940+80, 945+10, and 950+10) is located at the intersection of Opal Avenue and the Santa Ana River Trail in Mentone (Appendix A: Figures 12 and 13). The vegetation community at Site 13 was alluvial scrub dominated by California brittlebush, California sagebrush, California buckwheat, chamise, and scale-broom.

METHODS

To determine the presence/absence of SBKR, BRC conducted focused trapping for up to five (5) consecutive nights within the selected locations/work areas. The trapping effort was initiated on November 13, 2017 and was completed on December 16, 2017. BRC's biologist (permitted SBKR biologist Mikael Romich; USFWS 10(A)1(a) permit #TE-068799-5) placed traps within each work area in locations judged by Mr. Romich to have the most potential for SBKR (relatively open habitat, sandy substrates, potential kangaroo rat burrows, and native plants). Portions of the work areas with dense vegetation were not tapped because they were determined unsuitable for SBKR. Mixed birdseed was used as bait. Mr. Romich set and baited the traps during the early evening and then systematically checked them before midnight and again at dawn. Overnight temperatures did not drop below 50° Fahrenheit for the duration of the survey and weather conditions were good.

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Due to the configurations of the suitable habitat, trapping lines were used with variable trap spacing (approximately 2 to 10 meters). Where SBKR were captured within small work areas, traps were collected in the morning as soon as they were confirmed to be occupied in order to minimize trap injuries to SBKR.

The work areas that BRC trapped for this effort were (from east to west, north to south): Site 3 (RPL Sta 3571+01, 138 traps, Appendix A: Figure 3), Sites 4 and 5 (RPL Sta 3901+02, 108 traps, Appendix A: Figure 4), Site 9 (IF Sta 660+00, 25 traps, Appendix A: Figure 5), Site 10 (IF Sta 745+00, 13 traps, Appendix A: Figure 6; IF Sta 791+00, 7 traps, Appendix A: Figure 7; IF Sta 733+15, 28 traps, Appendix A: Figure 8), Site 10 (IF Sta 735+40, 20 traps, Appendix A: Figure 8), Site 11 (IF Sta 802+94, 29 traps, Appendix A: Figure 9; IF Sta 813+00, 12 traps, Appendix A: Figure 10; IF Sta 822+10, 76 traps, Appendix A: Figure 10), Site 12 (IF Sta 914+10, 12 traps, Appendix A: Figure 11), and Site 13 (IF Sta 940+80, 11 traps, Appendix A: Figure 12; IF Sta 945+10, 10 traps, Appendix A: Figure 13; IF Sta 950+10, 15 traps, Appendix A: Figure 13).

Mr. Romich identified each captured animal to the species level before releasing it. Each captured kangaroo rat was removed from the trap and Mr. Romich inspected both hind legs for the presence of a fifth toe; the presence of a fifth toe unequivocally identifies Dulzura kangaroo rat (*Dipodomys simulans*; DISI) from San Bernardino kangaroo rat. Table 1 summarizes the dates and weather conditions during the survey.

TABLE 1:
Dates, sites, times, and weather conditions during each survey.

Dates	Biologist	Recorded Weather Conditions
11/13/17-11/18/17	Mikael Romich	Nightly lows 50-60° F, Overcast to clear skies, wind 0-10 mph, no precipitation
11/27/17-12/02/17	Mikael Romich	Nightly lows 50-54° F, Overcast to clear skies, wind 0-10 mph, no precipitation
12/11/17-12/16/17	Mikael Romich	Nightly lows 50-62° F, Overcast to clear skies, wind 0-15 mph, no precipitation

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RESULTS

In total, BRC trapped 25 SBKR during the 2017 protocol surveys. The greatest numbers of SBKR were trapped at Sites 4 and 5 (RPL Sta 3901+02), Site 10 (IF Sta 735+40, IF Sta 745+00), and Site 11 (IF Sta 822+10). All of the survey sites overlapped with designated critical habitat for SBKR. The locations of each SBKR observation are provided in Table 2. Survey results for each site are summarized below. Total minimum counts of each species trapped are provided in Table 3.

Site 3 (UF Station 728+50)

A total 138 of traps were set for a total of five nights. No SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 3). Small mammals trapped at the site include 22 San Diego pocket mice (*Chaetodipus fallax*; CHFA), four desert woodrats (*Neotoma lepida*; NELE), 25 northern Baja deer mice (*Peromyscus fraterculus*; PEFR), 19 deer mice (*Peromyscus maniculatus*; PEMA), and 1 western harvest mouse (*Reithrodontomys megalotis*; REME).

Sites 4 & 5 (RPL Station 3901+02)

A total 108 of traps were set for a total of five nights. Six SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 4). Small mammals trapped at the site include 16 San Diego pocket mice, 7 desert woodrats, 14 northern Baja deer mice, 10 deer mice, and 4 western harvest mice.

Site 9 (IF Station 660+00)

A total 25 of traps were set for a total of one night. One SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 5). Additional small mammals trapped at the site include three northern Baja deer mice and three deer mice.

Site 10 (IF Station 733+15)

A total 28 of traps were set for a total of one night. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 8). Small mammals trapped at the site include three San Diego pocket mice, two desert woodrats, one northern Baja deer mouse, and five deer mice.

Site 10 (IF Station 735+40)

A total 20 of traps were set for a total of one night. Four SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 8). Additional small mammals trapped at the site include two deer mice.

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Site 10 (IF Station 745+00)

A total 13 of traps were set for a total of one night. Four SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 6). Additional small mammals trapped at the site include one deer mouse.

Site 10 (IF Station 791+00)

A total of seven traps were set for a total of two nights. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 7). Additional small mammals trapped at the site include two San Diego pocket mice.

Site 11 (IF Station 802+94)

A total of 29 traps were set for a total of four nights. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 9). Additional small mammals trapped at the site include three San Diego pocket mice, five Dulzura kangaroo rats, three deer mice, and three northern Baja deer mice.

Site 11 (IF Station 813+00)

A total of 12 traps were set for a total of two nights. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 10). Additional small mammals trapped at the site include three deer mice.

Site 11 (IF Station 822+10)

A total of 76 traps were set for a total of four nights. Four SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 10). Additional small mammals trapped at the site include 9 San Diego pocket mice, 1 Dulzura kangaroo rat, 72 desert woodrats, 7 deer mice, 1 western harvest mouse (*Reithrodontomys megalotis*), and 18 northern Baja deer mice.

Site 12 (IF Station 914+10)

A total of 12 traps were set for a total of five nights. No SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 11). Small mammals trapped at the site include eight northern Baja deer mice, three deer mice.

Site 13 (IF Station 940+80)

A total of 11 traps were set for a total of five nights. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 12). Small mammals trapped at the site include three San Diego pocket mice, two northern Baja deer mice, and three deer mice.

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Site 13 (IF Station 945+10)

A total of 10 traps were set for a total of two nights. One SBKR was detected within this survey site during 2017 protocol surveys (Appendix A, Figure 13). Small mammals trapped at the site include two San Diego pocket mice, three northern Baja deer mice, and two deer mice.

Site 13 (IF Station 950+10)

A total of 15 traps were set for a total of five nights. No SBKR were detected within this survey site during 2017 protocol surveys (Appendix A, Figure 13). Small mammals trapped at the site include 1 San Diego pocket mouse, 1 desert woodrat, 10 northern Baja deer mice, and 2 deer mice.

TABLE 2:
Summary of Captures

Area	Dates	No. of Traps/nights	SBKR Occupied	Species Trapped-minimum number**
Site 3, RPL Sta 3571+01	11/27/2017- 12/2/2017	138/5	No	CHFA-22 NELE-4 PEFR-25 PEMA-19 REME-1
Site 4 & 5, RPL Sta 3901+02	12/11/2017- 12/16/2017	108/5	Yes	CHFA-16 DISI-19 NELE-7 PEFR-14 PEMA-10 REME-4 SBKR-6
Site 9, IF Sta 660+00	12/11/2017- 12/12/2017	25/1	Yes	PEFR-3 PEMA-3 SBKR-1
Site 10, IF Sta 733+15	11/2017/2017- 11/18/2017	28/1	Yes	CHFA-3 NELE-2 PEFR-1

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Area	Dates	No. of Traps/nights	SBKR Occupied	Species Trapped-minimum number**
				PEMA-5 SBKR-1
Site 10, IF Sta 735+40	11/16/27- 11/17/2017	20/1	Yes	CHFA-1 PEMA-2 SBKR-4
Site 10, IF Sta 745+00	11/15/2017- 11/16/2017	13/1	Yes	CHFA-1 PEMA-1 SBKR-4
Site 10, IF Sta 791+00	12/11/2017- 12/13/2017	7/2	Yes	CHFA-2 SBKR-1
Site 11, IF Sta 802+94	12/11/2017- 12/15/2017	29/4	Yes	CHFA-3 DISI-5 PEFR-3 PEMA-3 SBKR-1
Site 11, IF Sta 813+00	11/13/2017- 11/15/2017	12/2	Yes	PEMA-3 SBKR-1
Site 11, IF Sta 822+10	11/13/2017- 11/17/2017	76/4	Yes	CHFA-9 DISI-1 NELE-72 PEFR-18 PEMA-7 REME-1 SBKR-4
Site 12, IF Sta 914+10	11/13/2017- 11/18/2017	10/5	No	PEFR-8 PEMA-3
Site 13, IF Sta 940+80	11/13/2017- 11/18/2017	11/5	Yes	CHFA-3 PEFR-2 PEMA-3

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Area	Dates	No. of Traps/nights	SBKR Occupied	Species Trapped-minimum number**
				SBKR-1
Site 13, IF Sta 945+10	11/13/2017- 11/15/2017	2/10	Yes	CHFA-2 PEFR-3 PEMA-2 SBKR-1
Site 13, IF Sta 950+10	11/13/2017- 11/18/2017	15/5	No	CHFA-1 NELE-1 PEFR-10 PEMA-2

* NELE=desert woodrat, CHFA=San Diego pocket mouse, DISI=Dulzura kangaroo rat, PEMA=deer mouse, PEFR= northern Baja deer mouse, SBKR=San Bernardino kangaroo rat, REME = western harvest mouse

**This represents the minimum number known to be alive, which is equivalent to the maximum of captures during any trap check.

TABLE 3:
Species trapped during 2017 SBKR surveys.

Species		Minimum Total Number Trapped
Common Name	Scientific Name	
<i>Chaetodipus fallax</i>	San Diego pocket mouse	63
<i>Dipodomys merriami parvus</i>	San Bernardino kangaroo rat	25
<i>Dipodomys simulans</i>	Dulzura kangaroo rat	25
<i>Neotoma lepida</i>	desert woodrat	86
<i>Peromyscus fraterculus</i>	northern Baja deer mouse	87
<i>Peromyscus maniculatus</i>	deer mouse	63
<i>Reithrodontomys megalotis</i>	western harvest mouse	6

DISCUSSION

Suitable habitat for SBKR was present at all of the survey sites at the time of the trapping. The absence of SBKR from sites 3 and 12 is likely due to historic events such as wildfire or agricultural,

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industrial, and/or urban development that reduced or eliminated access to adjacent populations of the species. Additionally, the occupation of habitat shifts through time and not all suitable habitat is likely to be occupied at any one point in time.

BRC captured SBKR in most of the work areas associated with this trapping effort, as summarized in Table 2 and Figures 14 through 21. No SBKR were trapped in three of the work areas: IF Sta 950+10, IF Sta 914+10, and RPL Sta 3571+01.

Two work areas where SBKR were not trapped (IF Sta 914+10 and IF Sta 950+10; Figures 11 and 13) overlap a previously-disturbed area from previous pipeline installations across the Santa Ana River. In these locations, the ground appears compact and is not expected to support burrowing opportunities for SBKR; however, two other work areas (IF Sta 940+80 and IF Sta 945+10; Appendix A: Figures 12 and 13) where SBKR were trapped had similarly largely-unsuitable conditions for burrowing. For these areas, it is suspected that the SBKR captured had burrows outside the footprint (based on observations of movement after their release), but were foraging or moving through the footprint. For work area RPL Sta 3571+01, SBKR were not captured likely due to the poor suitability of the habitat due to high vegetation cover (including non-native grasses) and limited sands suitable for burrowing (Appendix A: Figure 3). In addition, RPL Sta 3571+01 is in the floodplains of San Seva Canyon and Morse Canyon, which are on the fringe of the current known SBKR range.

Due to the large size of the RPL Sta 3901+02 work area, which crosses Lytle Creek, traps were distributed to sample the distinct types of habitat that were present (Figures 4 and 14). These trap locations included upper bench areas on the west side of the footprint where a fire had removed much of the vegetative cover where SBKR were captured. Lower sandy benches located on the west and central portions of the RPL Sta 3901+02 work area were also confirmed as occupied. The far eastern portion of the RPL Sta 3901+02 work area is the only area where SBKR were not captured despite what appeared to be suitable habitat; this area was confirmed to support many *Dulzura kangaroo rats* (Table 2).

Although one SBKR was captured during trapping at work area IF Sta 791+00 (gate improvement area; Appendix A: Figure 18), the trapped SBKR was found adjacent to the actual footprint. Due to gravel that has been deposited near the existing gate, no suitable habitat occurs in this footprint. However, the results confirmed that SBKR occur in the immediate area.

Several of the work areas have regularly used access roads that are not expected to support burrowing or foraging for SBKR, although they very likely support movement. The immediate

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edges of the sandy access roads or less well-used access roads can support SBKR. Roads that appear to be regularly used, such that they would not support SBKR foraging or burrowing, are associated with occupied work areas RPL Sta 3901+02, IF Sta 735+40, IF Sta 745+00, IF Sta 791+00, IF Sta 802+94, IF Sta 813+00, IF Sta 822+10, IF Sta 940+80, and IF Sta 945+10.

BRC did not set traps on a large portion of work area IF Sta 733+15 because this area did not support SBKR habitat at the time of survey (Appendix A: Figure 8). The northern portion of the work area is a regularly and finely disked such that there is no vegetation and little soil structure. This disked area is not considered occupied, although areas around the manhole were found to be occupied by SBKR (Appendix A: Figure 16).

California species of special concern San Diego pocket mouse and desert woodrat were captured in many of the work areas (Table 2). Common species captured include Dulzura kangaroo rat, deer mouse, and northern Baja deer mouse (Table 2 and Table 3).

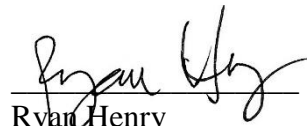
CONCLUSION

BRC observed 25 SBKR during the 2017 protocol surveys (Table 2 and Table 3). The habitats present at the survey sites at the time of the trapping were suitable for SBKR. Two sites, 3 and 12, did not produce any SBKR at the time of the 2017 protocol surveys.

SIGNATURE

I certify that the information in this survey report and attachments exhibits fully and accurately represent our work. Please feel free to contact me, Ryan Henry, at 949.373.8321 with questions or if you require additional information.

Sincerely,



Ryan Henry
Survey Coordinator

Att:

Appendix A, Figures

cc: *Shelah Riggs, Dudek*

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USFWS. 2008. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*). Federal Register 73: 61936 62002.

APPENDIX A

Figures

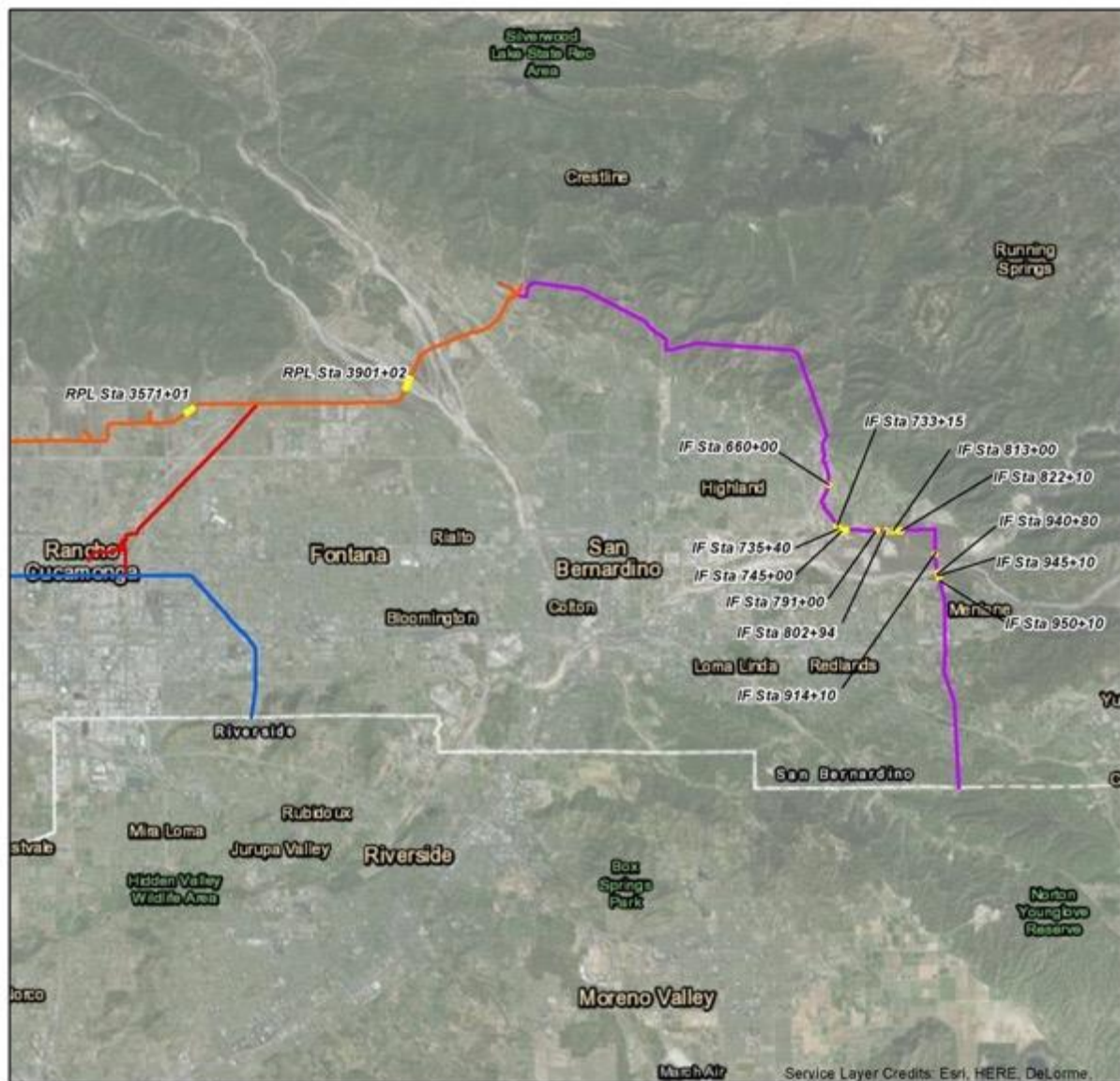


WSB Pipeline Location

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder



Figure 1. Pipeline locations within the Western San Bernardino County Operating Region.



- SBKR Trapping Location
- WSB Pipeline Location**
- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder



Figure 2. SBKR Trapping Locations.

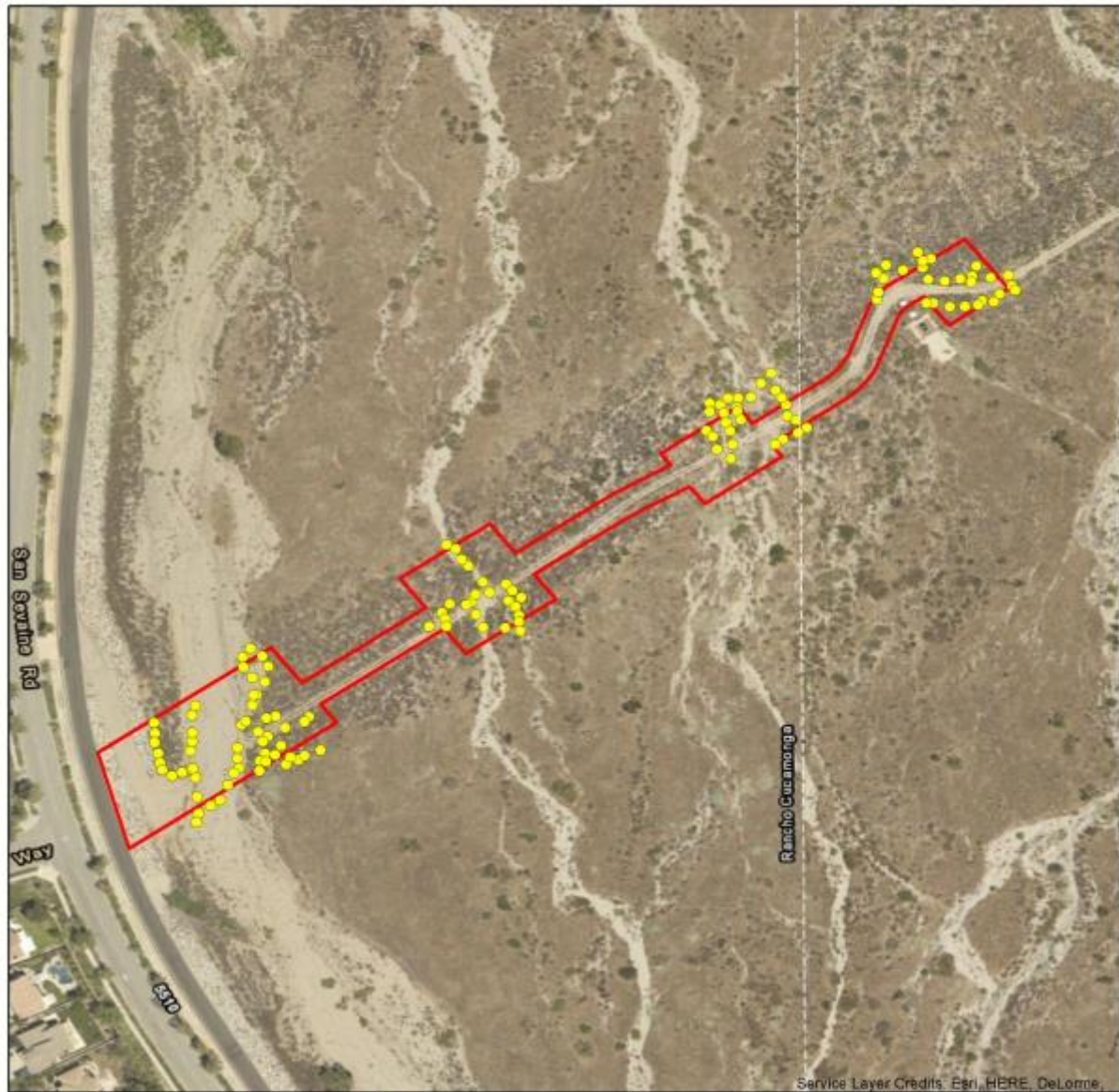


Figure 3. Site 3 (RPL Station 3571+01) survey area.



Figure 4. Sites 4 (RPL Station 3901+02; northern half of polygon) and 5 (RPL Station 3901+02; southern half of polygon) survey areas.

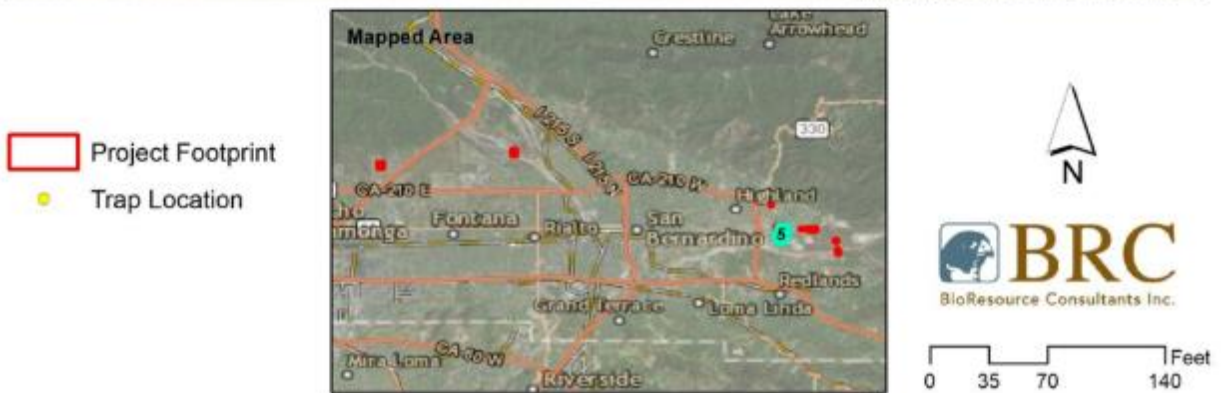
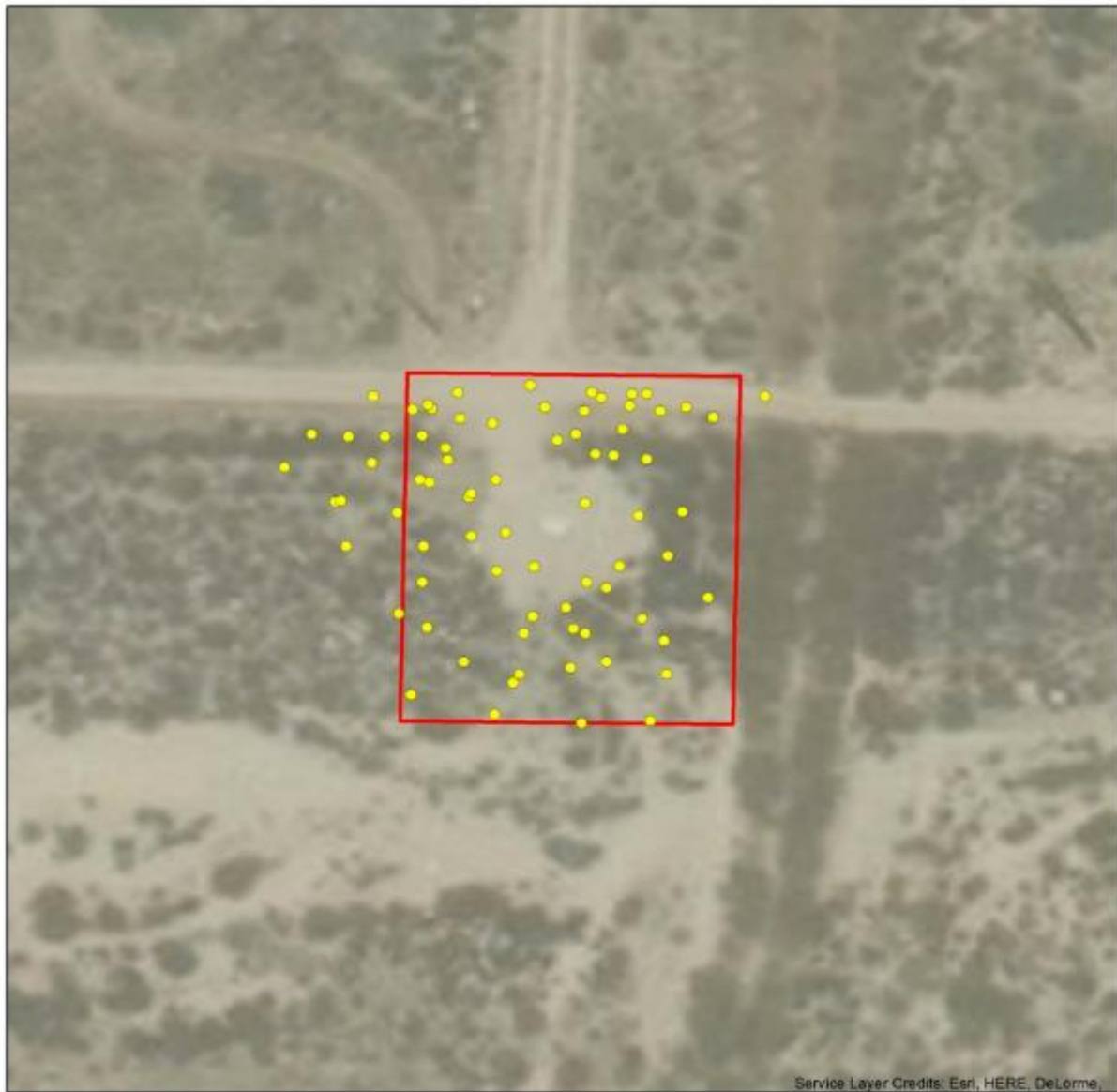


Figure 6. Site 10 (IF Station 745+00) survey area.



Figure 8. Site 10 (IF Stations 733+15 and 735+40) survey area.



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Figure 9. Site 11 (IF Station 802+94) survey area.

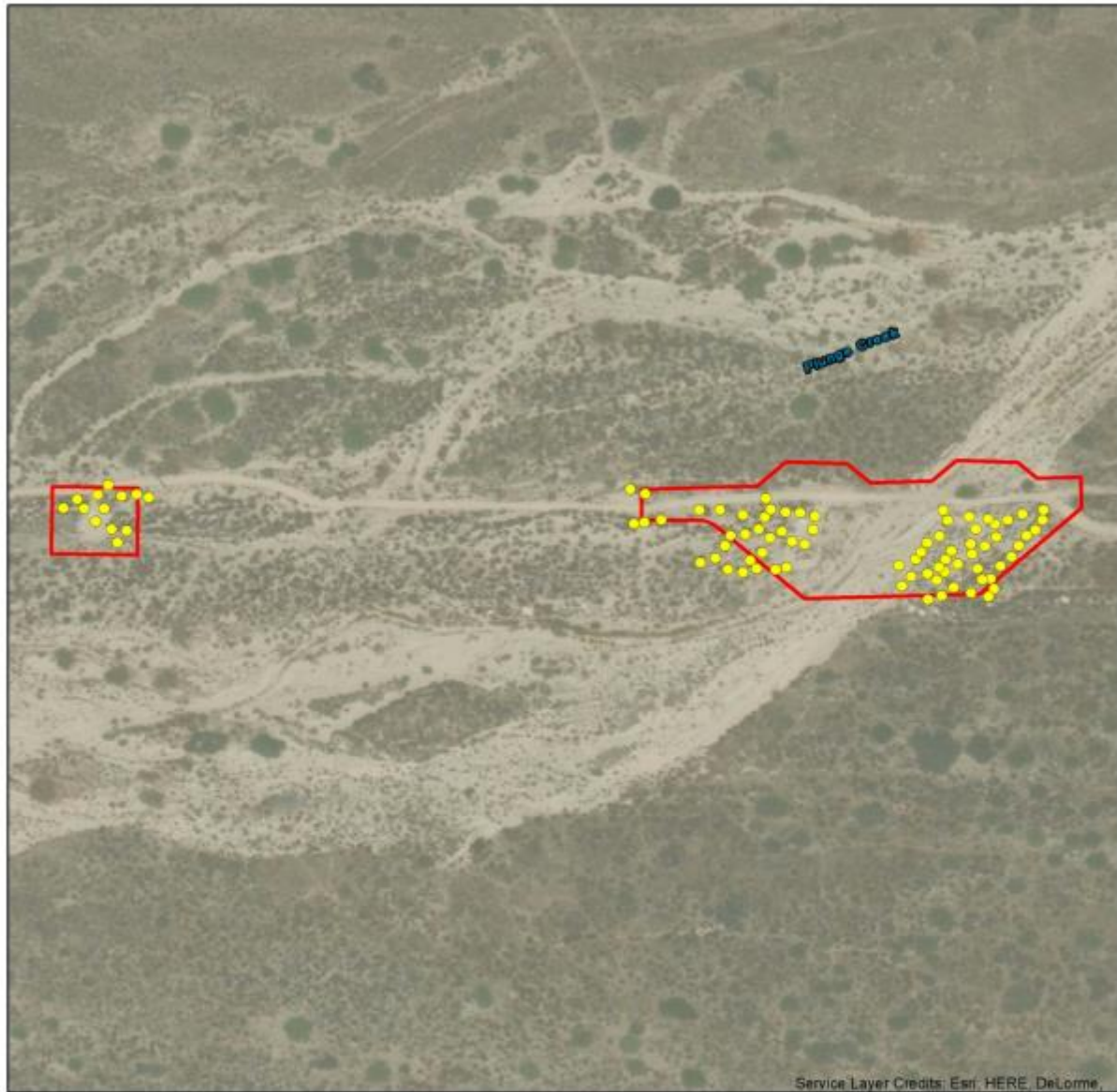


Figure 10. Site 11 (IF Stations 813+00 and 822+10) survey area.

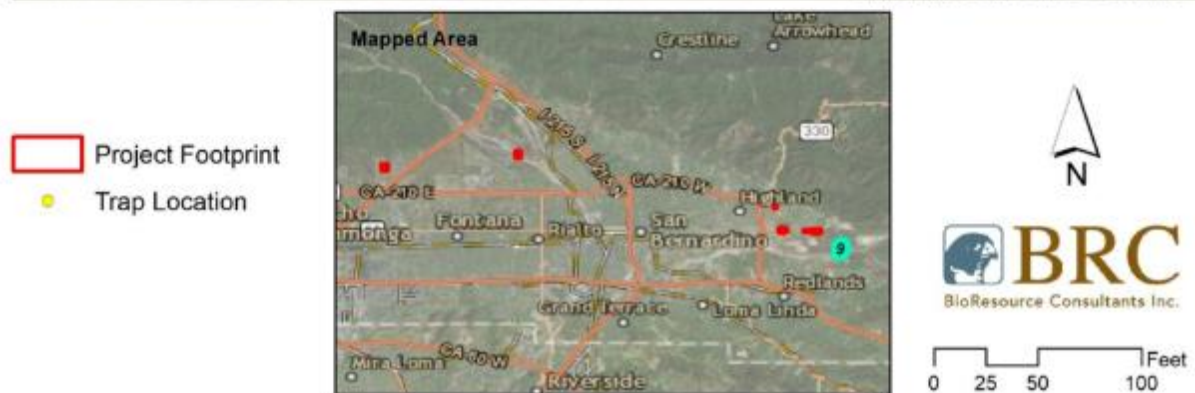


Figure 11. Site 12 (IF Station 914+10) survey area.

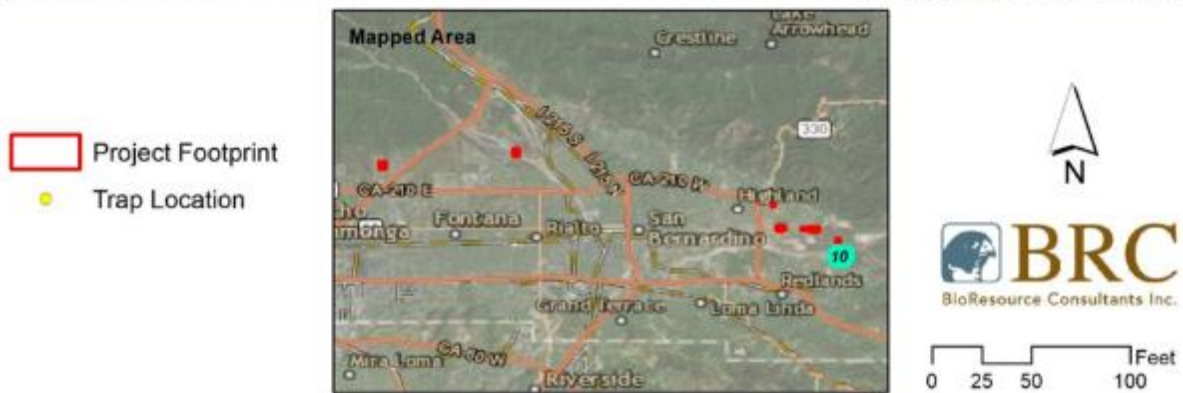


Figure 12. Site 13 (IF Station 940+80) survey area.



Figure 13. Site 13 (IF Stations 945+10, and 950+10) survey area.



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Figure 14. San Bernardino Kangaroo Rat Occurrence at Sites 4 and 5 (RPL Station 3901+02).



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Figure 15. San Bernardino Kangaroo Rat Occurrence at Site 9 (IF Station 660+00).



Figure 16. San Bernardino Kangaroo Rat Occurrence at Site 10 (IF Stations 733+15 and 735+40).



Figure 17. San Bernardino Kangaroo Rat Occurrence at Site 10 (IF Station 745+00).



Figure 18. San Bernardino Kangaroo Rat Occurrence at Site 10 (IF Station 791+00).



Figure 19. San Bernardino Kangaroo Rat Occurrence at Site 11 (IF Station 802+94).



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Figure 20. San Bernardino Kangaroo Rat Occurrence at Site 11 (IF Stations 813+00 and 822+10).



Figure 21. San Bernardino Kangaroo Rat Occurrence at Site 12 (IF Station 914+10) and Site 13 (IF Station 940+80).

Appendix F-6

Additional Protocol Survey Reports



The Metropolitan Water District of Southern California

Rialto Feeder Access Road Maintenance and Improvements Project

Coastal California Gnatcatcher Focused Survey Report

prepared for
The Metropolitan Water District of Southern California
700 North Alameda
Los Angeles, CA 90012

prepared by
Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

July 2019



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Appendices

Appendix A	USFWS 10(a)(1)(A) permit, Kelly Rios
Appendix B	Avian Species Observed/Detected in the Survey Area

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1 Introduction

Rincon Consultants, Inc. (Rincon) herein presents the results of focused surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN). The surveys were conducted on behalf of The Metropolitan Water District of Southern California (Metropolitan) for the Rialto Feeder Access Road Maintenance and Improvements Project, to support compliance with the federal Endangered Species Act (FESA). The surveys were conducted under the authority of a FESA Section 10(a)(1)(A) Recovery Permit, and were performed in accordance with all terms and conditions of that permit.

The project site is located in the City of Rancho Cucamonga, San Bernardino County, California (Figures 1 and 2). The purpose of the proposed project is to address maintenance issues and includes grading an access road within San Sevaine Creek, which may include moving existing rocks and dirt to smooth out ruts as well as trimming vegetation within the access road.

The survey area includes the dirt access road and a 300-foot buffer that surrounds the access road (Figure 3). All surveys for the CAGN were conducted by Rincon biologist Kelly Rios under USFWS Recovery Permit number TE-018909-5 (USFWS 2017; Appendix A).

2 Methodology

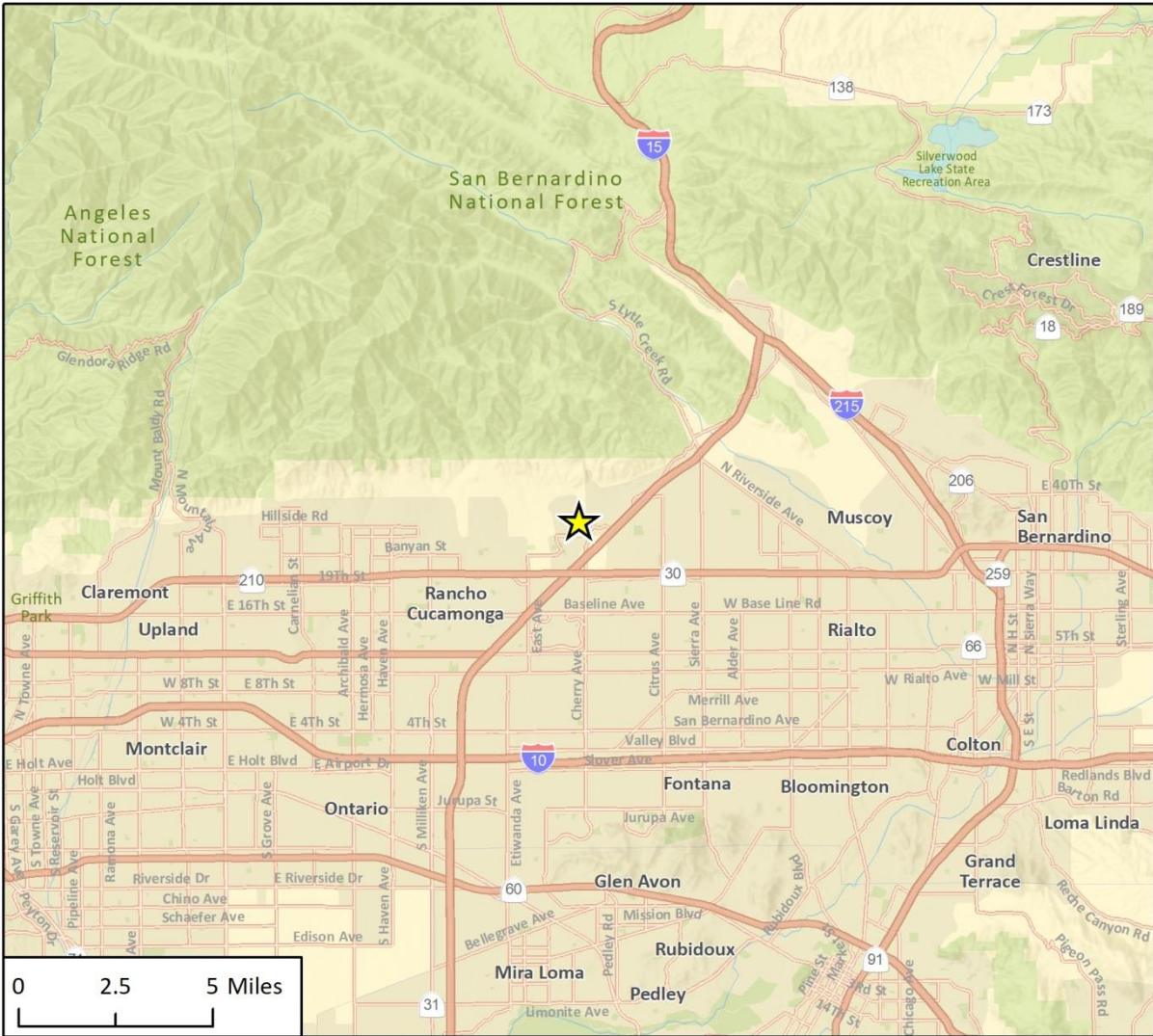
Notification to commence protocol surveys for CAGN was submitted to the USFWS Carlsbad Field Office via email on May 13, 2019 by Kelly Rios. Surveys were conducted pursuant to Section IV of the USFWS *Coastal California CAGN (Polioptila californica californica) Presence/Absence Survey Protocol*, issued February 28, 1997, and revised July 28, 1997.

The survey window was within the CAGN breeding season (March 15 to June 30), and six surveys were completed at least one week apart during this time. The surveys occurred between 0700 and 1200 hours, in all portions of the project site and buffer containing suitable coastal sage scrub habitat, hereafter referred to as the survey area. Surveys were not conducted during inclement weather conditions (e.g., excessive or abnormal heat, wind, rain, fog).

The biologist entered the survey area from the gated entrance located off of San Sevaine Road. Ms. Rios slowly walked a linear transect along the access road and adjacent habitat, stopping at approximate 50-foot intervals to play an audio recording of CAGN vocalizations. Binoculars were used to aid in surveying for adults and CAGN fledglings. The recording was played for several seconds at each interval, followed by a brief pause to listen for a response. If any CAGNs were observed, the age, sex, breeding status, and behavioral characteristics were documented, when possible.

The Metropolitan Water District of Southern California
Rialto Feeder Access Road Maintenance and Improvements Project

Figure 1 Regional Location of Project Site



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★ Project Location

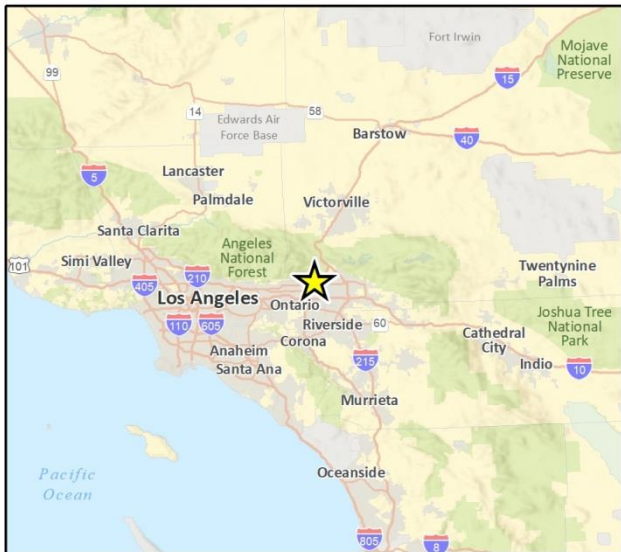
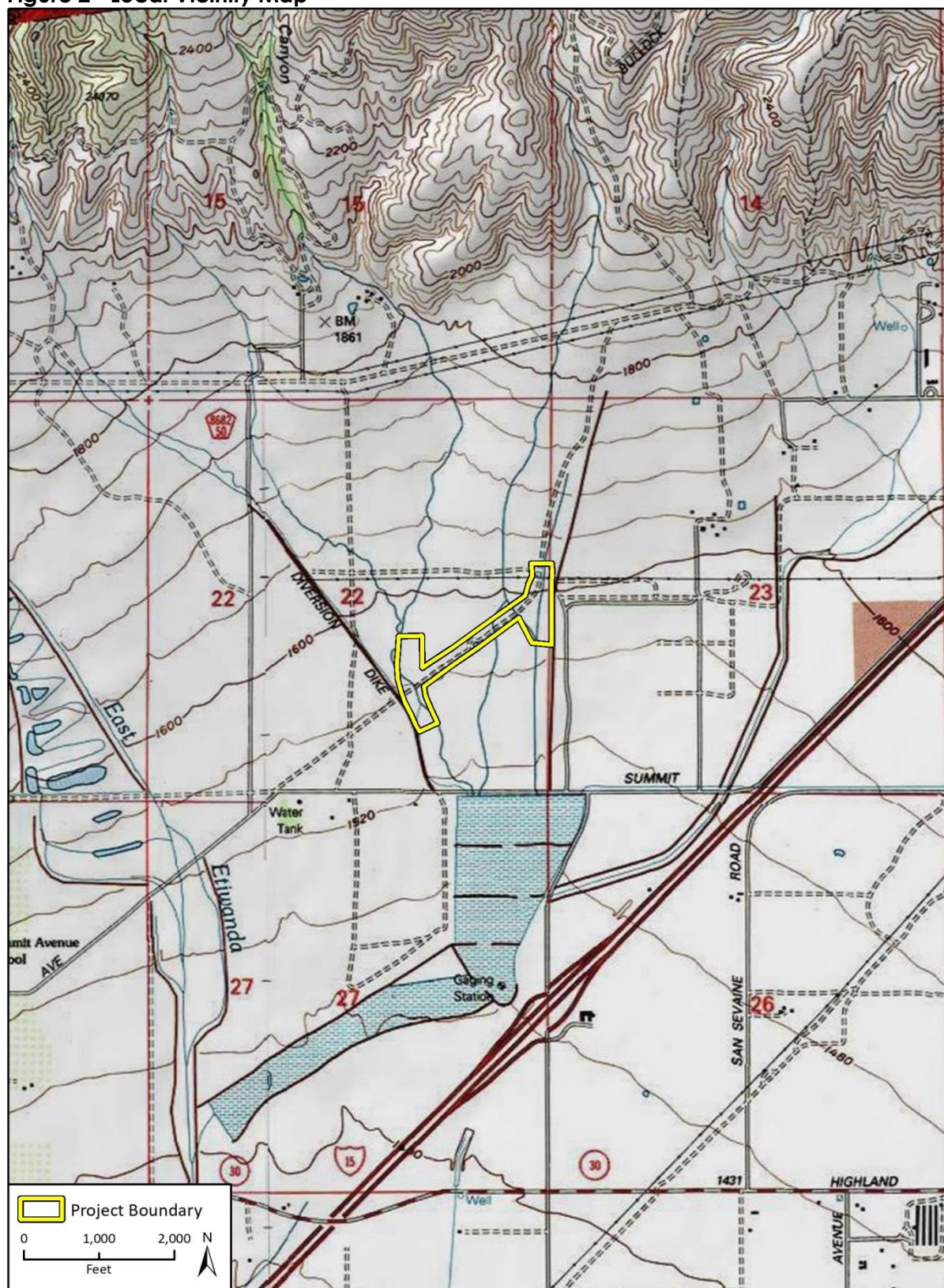


Fig 1 Regional Location

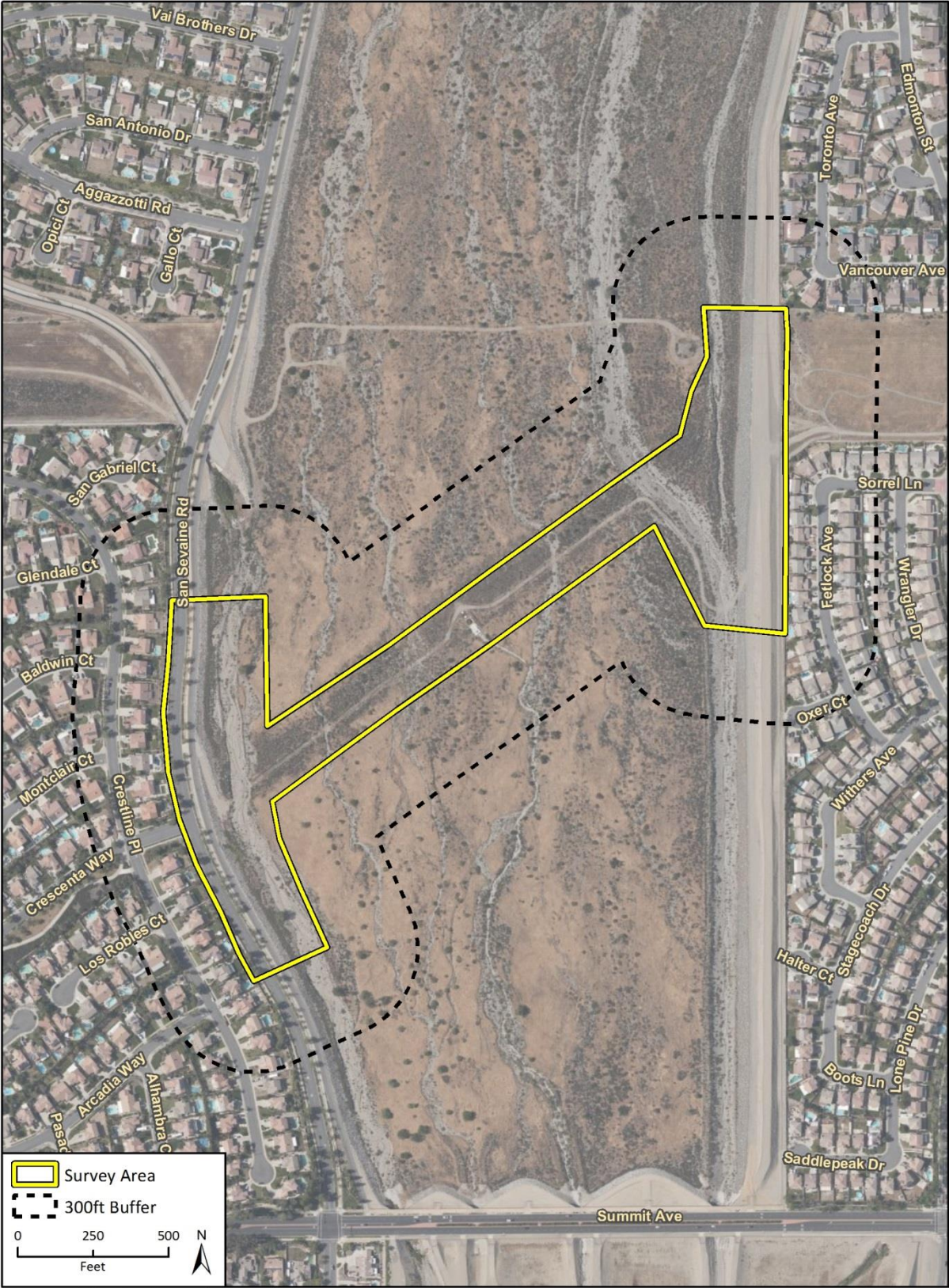
Figure 2 Local Vicinity Map



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Fig 2 Local Vicinity Map

Figure 3 Survey Area Map



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Fig 3 Survey Area_CAGN

3 Project Location and Environmental Setting

The approximate 25-acre project site is generally located north of Wilson Avenue, south of Lytle Creek, east of Interstate 15, and west of San Sevaine Road, in the City of Rancho Cucamonga. The survey area is within the Devore U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 2). The project site is not located within federally designated Critical Habitat for the CAGN.

The survey area is located within an alluvial fan extending from San Sevaine Canyon to the north with East Etiwanda Creek located to the west of the site. The topography of the survey area is moderately sloping from the north to the south and the area comprised of a native vegetation community, Riversidean alluvial fan sage scrub (RAFSS). Intermittent areas of bare ground, including an access road, are also located within the survey area.

Riversidean alluvial fan sage scrub is present along the north and south sides of the access road. Vegetation in this community consists of a relatively dense shrub layer characterized by the dominant presence of a few species, including California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber*), California sagebrush, (*Artemisia californica*), and scalebroom (*Lepidospartum squamatum*). Other shrub species observed in this community include white sage (*Salvia apiana*), black sage (*S. mellifera*), chamise (*Adenostoma fasciculatum*), and blue elderberry (*Sambucus nigra*). This community supports a relatively dense herbaceous understory dominated by native species such as common sandaster (*Corethrogyne filaginifolia*), California croton (*Croton californicus*), golden yarrow (*Eriophyllum confertiflorum*), popcorn flower (*Cryptantha* sp.), and phacelia (*Phacelia* sp.). This community is designated as a sensitive community by the California Department of Fish and Wildlife (CDFW).

Adjacent land use consists of open space within the alluvial fan to the north and south, San Sevaine Road to the west of the survey area followed by a residential development, and a residential development to the east of the survey area.

4 Species Background

The CAGN belongs to the old-world warbler and CAGN family, Sylviidae. It is a small blue-gray songbird that measures 4.5 inches and weighs 0.2 ounces. It has dark blue-gray feathers on its back and grayish-white feathers on its underside. The wings have a brownish wash to them. Its long tail is mostly black with white outer tail feathers, and the species has a thin, small bill. The males have a black cap during the spring and summer that is absent in the winter. Both males and females have white rings around their eyes.

The CAGN is non-migratory, and is found on the coastal slopes of southern California. It ranges from Ventura County south to northwest Baja California, Mexico (Atwood et al. 1999; Jones and Ramirez 1995). It is strongly associated with coastal sage scrub habitats below 820 feet elevation in coastal areas, and between 820 and 1,640 feet in inland areas (Atwood and Bolsinger 1992); however, not all types of coastal sage scrub communities are used or preferred. This species appears to be most abundant in areas dominated by California sagebrush and California buckwheat. CAGN numbers are

generally low in coastal habitats dominated by black sage (*Salvia mellifera*), white sage, or lemonade berry (*Rhus integrifolia*). In inland areas, habitats dominated by black sage may be used more regularly (Atwood and Bontrager 2001).

The breeding season of the CAGN extends from late February through August with peak nesting occurring from mid-March through mid-May. The breeding territory size of the CAGN ranges from 2 to 22 acres, with home ranges expanding up to 39 acres, during the non-breeding season (Bontrager 1991; USFWS 1993). Nest parasitism by brown-headed cowbirds (*Molothrus ater*) has been documented (Unitt 2004). Typically, there is a high rate of nest failure each breeding season. This is offset by rapid and persistent re-nesting efforts; a breeding pair may attempt to nest as many as 10 times in a year, producing up to three successful broods in a season (Atwood and Bontrager 2001). There is evidence that this species is also susceptible to nest predation by various animals such as snakes, coyote (*Canis latrans*), foxes, rodents, and other birds, such as California scrub-jay (*Aphelocoma californica*) (Atwood et al. 1999).

Population estimates for the CAGN vary. In the 1980s and 1990s, qualitative estimates of the population size were made but were not based on rigorous sampling (USFWS 2010). At the time of listing in 1993, an estimated 2,562 CAGN pairs remained in the U.S., while about 2,800 pairs were reported in Baja California (USFWS 1993). In 1999, the USFWS estimated U.S. populations to be 2,735: San Diego County at 1,917 pairs, Orange County at 643 pairs, Los Angeles County at 144 pairs, San Bernardino County at 27 pairs, and Ventura County at 4 pairs (Atwood and Bontrager 2001). In a recent 2008 study (using methods supported by probability theory), an estimated 1,324 CAGN pairs were documented over a 111,006-acre area on public and quasi-public lands of Orange and San Diego counties (Winchel and Doherty 2008). The recent sampling timeframe covered only a portion of the U.S. range, focusing on the coast, and was limited to one year. It is not valid to extrapolate beyond the sampling frame, but it is likely there are more CAGNs in the U.S. portion of the range than previously estimated (USFWS 2010). CAGN population sizes are known to fluctuate from year to year (Atwood and Bontrager 2001), further complicating any trend assessment.

The CAGN is federally listed as threatened and is a California Department of Fish and Wildlife Species of Special Concern. The USFWS listed the CAGN as threatened pursuant to the FESA on March 30, 1993 (USFWS 1993). Critical habitat for the CAGN was designated on October 24, 2000 and revised on December 12, 2007 (USFWS 2007).

The CAGN's range and distribution is closely aligned with coastal sage scrub vegetation. The cumulative loss of coastal sage scrub vegetation to urban and agricultural development is the primary cause of this species' decline. Much of the species' current range in the U.S. is now or is anticipated to be covered by large, regional Habitat Conservation Plans permitted under section 10(a)(1)(B) of FESA and under the state of California's Natural Community Conservation Planning Act. Regional HCPs have greatly reduced the magnitude of threats to this species by directing development toward certain areas, while preserving core and linkage habitat areas (USFWS 2010).

5 Survey Results and Discussion

Survey dates, times, and weather conditions are listed in Table 1 below.

Table 1 Coastal California Gnatcatcher Survey Conditions and Results

Date	Biologist	Beginning Conditions	Ending Conditions	CAGN Observed
5/24/19	Kelly Rios	0945; 62°F, winds 2-3 mph, 10% cloud cover	1100; 65°F, winds 2-3 mph, 5% clouds	No
5/31/19	Kelly Rios	1045; 68°F, winds 2-3 mph, 10% cloud cover	1200; 70°F, winds 2-3 mph, clear	No
6/7/19	Kelly Rios	1100; 74°F, winds 3-5 mph, clear	1200; 76°F, winds 3-5 mph, clear	No
6/14/19	Kelly Rios	0900; 61°F, winds 2-3 mph, 50% cloud cover	1010; 63°F, winds 2-3 mph, 40% clouds	No
6/21/19	Kelly Rios	0800; 63°F, winds 2-3 mph, 90% cloud cover	0915; 64°F, winds 2-3 mph, 80% clouds	No
6/28/19	Kelly Rios	1100; 79°F, winds 1-2 mph, clear	1200; 81°F, winds 2-3 mph, clear	No

No CAGN were observed or otherwise detected during the six breeding season protocol surveys.

Overall avian activity and diversity was generally moderate to high during the surveys and common avian species expected to occur in alluvial scrub and coastal sage scrub were observed on a regular basis. Brown-headed cowbirds (*Molothrus ater*), considered to be a nest parasite to CAGNs and other avian species, were not observed in or near the survey area over the course of the surveys. Appendix B provides a complete list of avian species detected or observed in the survey area during the surveys.

Wildlife activity was low to moderate, with most of the wildlife represented by bird species. Table 2 below includes wildlife species that were observed during the CAGN surveys.

Table 2 Incidental Observations of Wildlife Species

Scientific Name	Common Name
<i>Odocoileus hemionus</i>	mule deer
<i>Sylvilagus audubonii</i>	desert cottontail
<i>Otospermophilus beecheyi</i>	California ground squirrel
<i>Thomomys bottae</i>	Botta's pocket gopher
<i>Lichanura trivirgata</i>	rosy boa
<i>Aspidoscelis tigris</i>	western whiptail
<i>Euphilotes bernardino</i>	Bernardino blue butterfly
<i>Pieris rapae</i>	cabbage white
<i>Leptotes marina</i>	marine blue
<i>Vanessa cardui</i>	painted lady

6 Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



Signed: _____

Date: July 29, 2019

Kelly Rios
Senior Biologist
TE-018909-5

7 References

- Atwood, J. L., C. A. Reynolds, and S. L. Grove. 1999. Distribution of California Gnatcatchers on Camp Pendleton Marine Corps Base. Prepared for U.S. Marine Corps, Oceanside, California (Contract No. M00681-97-C-0035). Unpublished technical report, February 14, Manomet Center for Conservation Sciences, MA.
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- U.S. Fish and Wildlife Service. 2007. Federal Register, Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*); Final Rule. December 19.
- U.S. Fish and Wildlife Service. 2010. Federal Register, Coastal California Gnatcatcher 5-year Review. September 29.
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Appendix A

USFWS 10(a)(1)(A) permit, Kelly Rios



Permit Number: TE018909-5
Effective: 02/02/2017 Expires: 02/01/2022

Issuing Office:

Department of the Interior
U.S. FISH & WILDLIFE SERVICE
Endangered Species Permit Office
2800 Cottage Way, Suite W-2606
Sacramento, CA 95825-1846
permitsR8ES@fws.gov

Permittee:

KELLY M. RIOS
500 EAST FIR STREET
BREA, CA 92821
U.S.A.

**ANGELA
PICCO**

Digitally signed by
ANGELA PICCO
Date: 2017.02.23 09:38:57
-08'00'

ACTING ENDANGERED SPECIES DIVISION CHIEF

Authority: Statutes and Regulations: 16 USC 1539(a), 16 USC 1533(d), 16 USC 703-712; 50 CFR 17.22, 50 CFR 17.32, 50 CFR 21.23 & 21.27, 50 CFR 13.

Location where authorized activity may be conducted:

ON LANDS SPECIFIED WITHIN THE ATTACHED SPECIAL TERMS AND CONDITIONS

Reporting requirements:

ANNUAL REPORT DUE: 1/31
See permit conditions for further reporting requirements.

Conditions and Authorizations:

- A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.
- B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.
- C. Valid for use by permittee named above.

SPECIAL TERMS AND CONDITIONS

Kelly M. Rios

1. This permit was previously issued on December 9, 2011. The terms and conditions set forth in that permit are hereby superseded by this amendment.
2. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the "General Permit Procedures and Permit Regulations for Native Endangered and Threatened Wildlife Species Permits," 50 CFR Part 13, 50 CFR 17.21 and 17.22 (endangered wildlife) and/or 50 CFR 17.31 and 17.32 (threatened wildlife), as applicable found at: <http://www.fws.gov/carlsbad/r8permits/permitprocedures-regulations.htm>
3. The permittee must have all other applicable State and Federal permits prior to the commencement of activities authorized by this permit. In addition, this permit does not authorize access to Federal, Tribal, State, local government, or private lands as it is the responsibility of the permittee to obtain land owner permission prior to commencing permitted activities on such lands.
4. The permittee is authorized to take (harass by survey) the coastal California gnatcatcher (*Polioptila californica californica*); take (survey by pursuit) the Quino checkerspot butterfly (*Euphydryas editha quino*) and El Segundo blue butterfly (*Euphilotes battoides allyni*); and take (harass by survey, capture, handle and release) the San Bernardino kangaroo rat (*Dipodomys merriami parvus*) in conjunction with survey activities for the purpose of enhancing their survival, as specified in the permittee's November 4, 2015, permit renewal request, in accordance with the conditions stated below.
5. Permitted activities are restricted to the following geographic area in California:

Throughout the range of the species.

Notifications to conduct activities at the above authorized locations pursuant to this permit shall be submitted in writing to the Recovery Permit Coordinator at the appropriate Fish and Wildlife Office (FWO) of the U.S. Fish and Wildlife Service (Service) at least 15 days prior to conducting such activities. The appropriate FWO is determined as follows:

Carlsbad Fish and Wildlife Office (CFWO):

For areas from Los Angeles County east of the Santa Monica pier and east of the 405 freeway, south of and including the San Gabriel Mountains, and east and north of the San Andreas Rift Zone; in Kern County south and east of the Tehachapi Mountains and east of the Piute and Scodie Mountains; in Inyo County east of the Owens Valley; then south to the U.S. border with Mexico including San Bernardino, Riverside, Orange, Imperial, and San Diego Counties in their entirety, contact the Carlsbad Fish and Wildlife Office, 2177 Salk Avenue, Suite 250, Carlsbad, California 92008 (telephone: 760-431-9440).

Ventura Fish and Wildlife Office (VFWO):

Appendix B

Avian Species Observed/Detected in the Survey Area

Avian Species Observed/Detected in the Survey Area

Scientific Name	Common Name
Odontophoridae	New World Quail
<i>Callipepla californica</i>	California quail
Cathartidae	New World Vultures
<i>Cathartes aura</i>	turkey vulture
Accipitridae	Hawks, Kites, and Eagles
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Accipiter cooperii</i>	Cooper's hawk
Apodidae	Swifts
<i>Aeronautes saxatalis</i>	white-throated swift
Columbidae	Pigeons & Doves
<i>Zenaida macroura</i>	mourning dove
Trochilidae	Hummingbirds
<i>Calypte anna</i>	Anna's hummingbird
<i>Selasphorus sasin</i>	Allen's hummingbird
Picidae	Woodpeckers and Sapsuckers
<i>Colaptes auratus</i>	northern flicker
<i>Picoides nuttallii</i>	Nuttall's woodpecker
Tyrannidae	Tyrant Flycatchers
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Sayornis nigricans semiatra</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Tyrannus vociferans</i>	Cassin's kingbird
Corvidae	Crows, Jays, and Magpies
<i>Apelocoma californica</i>	California scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
Aegithalidae	Bushtit
<i>Psaltiriparus minimus</i>	bushtit
Troglodytidae	Wrens
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Troglodytes aedon</i>	house wren
<i>Salpinctes obsoletus</i>	rock wren
Sylviidae	Old World Warblers and CAGNs
<i>Polioptila californica californica</i>	coastal California gnatcatcher
Timaliidae	Babblers
<i>Chamaea fasciata</i>	wrentit
Mimidae	Mockingbirds and Thrashers
<i>Mimus polyglottos</i>	northern mockingbird
<i>Toxostoma redivivum</i>	California thrasher

The Metropolitan Water District of Southern California
Rialto Feeder Access Road Maintenance and Improvements Project

Scientific Name	Common Name
Ptilonotidae	Silky Flycatchers
<i>Phainopepla nitens</i>	phainopepla
Emberizidae	Emberizids
<i>Melospiza melodia</i>	song sparrow
<i>Melospiza crissalis</i>	California towhee
<i>Pipilo maculatus</i>	spotted towhee
<i>Chondestes grammacus</i>	lark sparrow
Fringillidae	Finches
<i>Spinus psaltria</i>	lesser goldfinch
<i>Haemorhous mexicanus</i>	house finch



The Metropolitan Water District of Southern California

Rialto Feeder Access Road Maintenance and Improvements Project

San Bernardino Kangaroo Rat Trapping Focused Survey Report

prepared for
The Metropolitan Water District of Southern California
700 North Alameda
Los Angeles, CA 90012

prepared by
Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003



July 2019

Rialto Feeder Access Road Maintenance and Improvements Project

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Appendices

Appendix A	USFWS 10(a)(1)(A) permit, Kelly Rios
Appendix B	Representative Transect Photographs

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1 Introduction

Rincon Consultants, Inc. (Rincon) herein presents the results of a focused small mammal live-trapping effort conducted on behalf of The Metropolitan Water District of Southern California (Metropolitan) for the Rialto Feeder Access Road Maintenance and Improvements project (project). Rincon completed the survey to determine the presence/absence of the federally listed endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus*; SBKR) on or in the vicinity of the project site prior to project activities. The project location is located within the current range of the species; therefore, a survey was conducted to determine if SBKR was present within the project area and, if documented, to then determine if burrows within the project footprint were being used by SBKR.

The project site is located in the City of Rancho Cucamonga, San Bernardino County, California (Figures 1 and 2). The purpose of the proposed project is to address maintenance issues and includes grading an access road within San Sevaine Creek, which may include moving existing rocks and dirt to smooth out ruts as well as trimming vegetation away from the access road.

All surveys for the SBKR were conducted by Rincon biologist Kelly Rios under USFWS permit number TE-018909-5 (USFWS 2017; Appendix A).

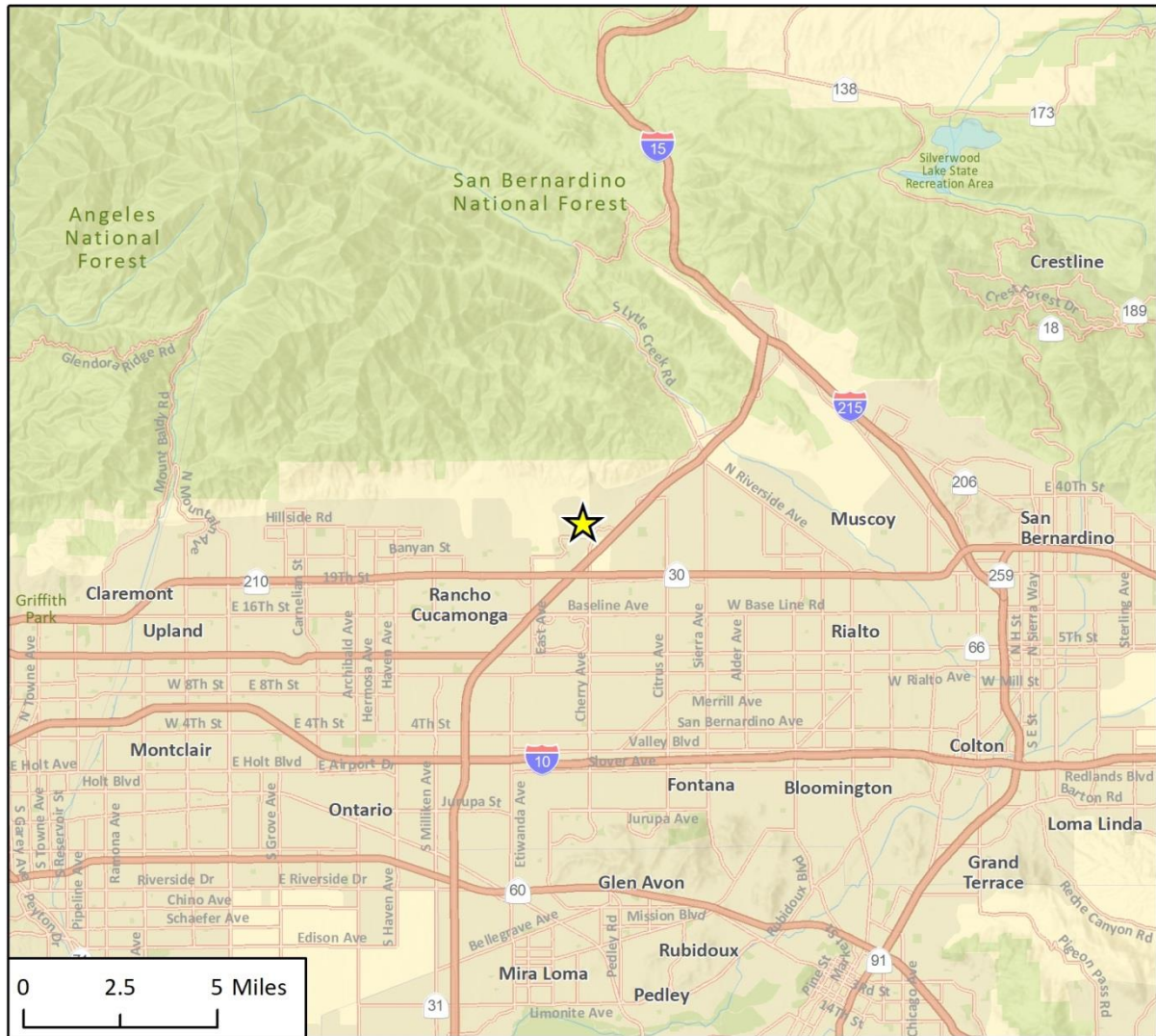
2 Methodology

Notification to commence protocol trapping surveys for SBKR was submitted to the USFWS Carlsbad Field Office via email on May 13, 2019 by Kelly Rios. Trapping efforts were led by Rincon Biologist Kelly Rios (Permit # TE-018909-5) with assistance from Rincon biologist, Jared Reed. Focused surveys for SBKR were conducted according to established U.S. Fish and Wildlife Service (USFWS) protocols for 10(a)(1)(A) permit specifications (USFWS TE018909-5). The current protocol requires five consecutive nights of trapping, conducted when the animal is active aboveground at night, and preferably during a new moon phase. One trapping session was conducted from June 16-21, 2019.

A total of 100 twelve-inch Sherman live traps were placed in five distinct transects located along the sides of the dirt access road. The five transects were referred to as Transect 1 through Transect 5 (Figure 3). The traps were placed in areas of suitable habitat containing sandy soils, suitable vegetation, and nearby burrow locations (Appendix B). Drainage features subject to active flooding, as well as larger rocks and boulders were observed in the east and west end of the project site. No suitable burrows were observed in these locations; therefore, traps were not placed in these areas. Trapping was conducted on five consecutive nights for a total of 500 trap nights. Each trap was baited with a mixture of birdseed that was placed at the back of the traps. The traps were left in the same place for five nights. Traps were checked consistently every morning, at which time any captured animals were released and traps were rebated. In the event kangaroo rats were captured, midnight traps checks would also be employed; however, because no kangaroo rats were captured, midnight trap checks were not necessary. All animals were identified using field guides (Burt 1986; Hall 1981), recorded in a field notebook, and released at the point of capture.

The Metropolitan Water District of Southern California
Rialto Feeder Access Road Maintenance and Improvements Project

Figure 1 Regional Location of Project Site



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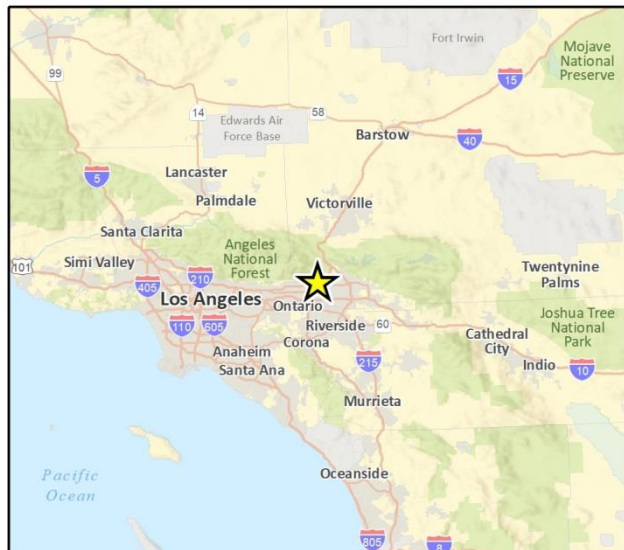
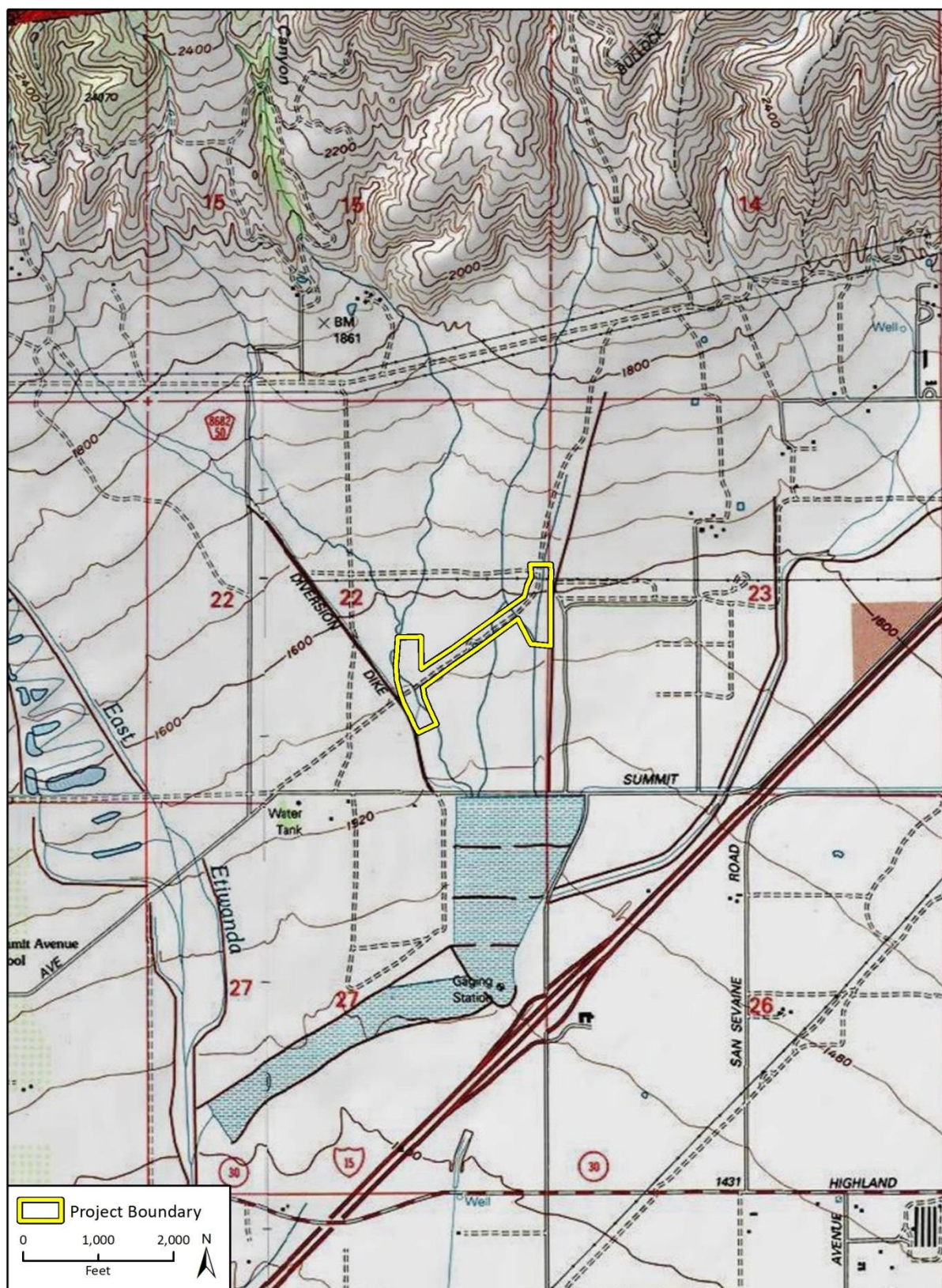


Fig 1 Regional Location

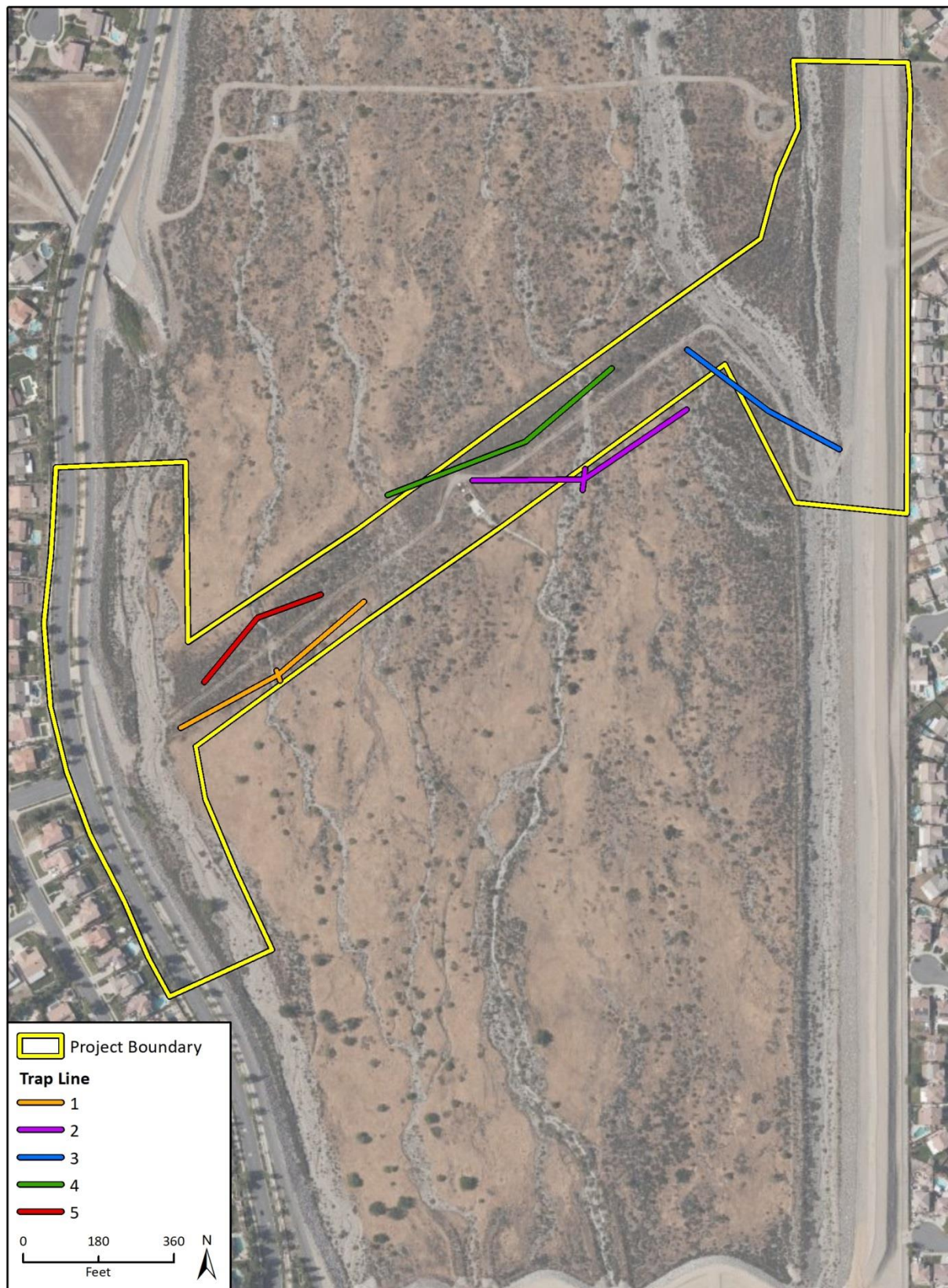
Figure 2 Local Vicinity Map



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Fig 2 Local Vicinity Map

Figure 3 **Transect Location Map**



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Fig 3 Transect Location Map_SBKR

3 Project Location and Environmental Setting

The approximate 25-acre project site is generally located north of Wilson Avenue, south of Lytle Creek, east of Interstate 15, and west of San Sevaine Road, in the City of Rancho Cucamonga. The survey area is within the Devore U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 2). The project site is located within federally designated Critical Habitat for the SBKR.

The survey area is located within an alluvial fan extending from San Sevaine Canyon to the north, with East Etiwanda Creek located to the west of the site. The topography of the survey area is moderately sloping from the north to the south and available soil maps indicate that the majority of the survey area consists of Psamments, Fluvents, and Frequently Flooded Soils. An isolated portion located in the northeast portion of the site contains Soboba Stony Loamy Sand.

The survey area is comprised of a native vegetation community, Riversidean alluvial fan sage scrub (RAFSS). Intermittent areas of bare ground, including an access road, are also located within the survey area. Riversidean alluvial fan sage scrub is present along the north and south sides of the access road. Vegetation in this community consists of a relatively dense shrub layer characterized by the dominant presence of a few species, including California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber*), California sagebrush, (*Artemisia californica*), and scalebroom (*Lepidospartum squamatum*). Other shrub species observed in this community include white sage (*Salvia apiana*), black sage (*S. mellifera*), chamise (*Adenostoma fasciculatum*), and blue elderberry (*Sambucus nigra*). This community supports a relatively dense herbaceous understory dominated by native species such as common sandaster (*Corethrogyne filaginifolia*), California croton (*Croton californicus*), golden yarrow (*Eriophyllum confertiflorum*), popcorn flower (*Cryptantha* sp.), and phacelia (*Phacelia* sp.). This community is designated as a sensitive community by the California Department of Fish and Wildlife (CDFW).

Adjacent land use consists of open space within the alluvial fan to the north and south, San Sevaine Road to the west of the survey area followed by a residential development, and a residential development to the east of the survey area.

4 Species Background

The SBKR is one of three subspecies of the Merriam's kangaroo rat (*Dipodomys merriami*). The Merriam's kangaroo rat is a widespread species that can be found from the inland valleys to the deserts of Southern California. The subspecies known as SBKR, however, is confined to inland valley scrub communities, and more particularly, to scrub communities occurring along rivers, streams and drainages. Most of these systems have been historically altered as a result of flood control efforts and the increased use of river resources, including mining, off-road vehicle use and road and housing development. This increased use of river resources has resulted in a reduction in both the amount and quality of habitat available for SBKR. The past habitat losses and potential losses prompted an emergency listing of SBKR as an endangered species (USFWS 1998a).

SBKR is one of several kangaroo rat species in its range. The Dulzura kangaroo rat (*Dipodomys simulans*), the Pacific kangaroo rat (*Dipodomys agilis*), and the Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) occur in areas also occupied by SBKR, but these other species have a wider habitat range. SBKR habitat is described as being confined to primary and secondary alluvial fan sage scrub habitats, with sandy soils deposited by fluvial (water) rather than aeolian (wind) processes. Burrows are dug in loose soil, usually near or beneath shrubs.

5 Survey Results and Discussion

Weather conditions during the trapping survey included morning temperatures ranging from 62-64 degrees Fahrenheit with overcast skies. On June 16, the first night of the trapping survey, the moon was waxing gibbous with 99 percent illumination.

Table 1 summarizes the results from the 2019 trapping survey. A total of six small mammal species were trapped and include deer mouse (*Peromyscus maniculatus*), brush mouse (*Peromyscus boylii*), California mouse (*Peromyscus californicus*), long-tailed pocket mouse (*Chaetodipus formosus*), California pocket mouse (*Chaetodipus californicus*), and San Diego desert woodrat (*Neotoma lepida*). No SBKR, or kangaroo rat of any kind, were captured during the 5-night trapping survey.


Table 1 SBKR Trapping Results

Night No.	Deer Mouse	Brush Mouse	California Mouse	Long-tailed Pocket Mouse	California Pocket Mouse	San Diego Desert Woodrat
1	6	6	0	0	7	9
2	2	8	3	1	9	18
3	1	13	4	2	3	17
4	2	6	8	5	5	19
5	2	12	4	5	5	24
Total	13	45	19	13	29	87

Wildlife activity was low to moderate, with most of the wildlife represented by bird species. Mule deer (*Odocoileus hemionus*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Otospermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*), were observed within the survey area. Reptiles were observed mainly within the rocks of the channel bank. One juvenile western spadefoot toad (*Spea hammondi*), a California Department of Fish and Wildlife Species of Special Concern, was captured in a trap during the third trap night.

6 Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signed: 

Kelly Rios
Senior Biologist
TE-018909-5

Date: July 29, 2019

7 References

- Burt, W.H. 1986. A Field Guide to the Mammals in North American North of Mexico. Houghton Mifflin Company, Boston, Massachusetts.
- Hall, E.R. 1981. The Mammals of North America, Volumes I and II. John Wiley and Sons, New York, New York.
- U.S. Fish and Wildlife. 2017. Native Endangered & Threatened Species Recovery 10(a)(1)(B) permit TE-018909-5.
- U.S. Fish and Wildlife Service, 1998a. *Emergency Rule to List the San Bernardino Kangaroo Rat, San Bernardino and Riverside Counties in Southern California, as Endangered*. Vol. 63, No. 17, pp. 3835 - 3843.

Appendix A

USFWS 10(a)(1)(A) Permit



Permit Number: TE018909-5
Effective: 02/02/2017 Expires: 02/01/2022

Issuing Office:

Department of the Interior
U.S. FISH & WILDLIFE SERVICE
Endangered Species Permit Office
2800 Cottage Way, Suite W-2606
Sacramento, CA 95825-1846
permitsR8ES@fws.gov

Permittee:

KELLY M. RIOS
500 EAST FIR STREET
BREA, CA 92821
U.S.A.

**ANGELA
PICCO**

Digitally signed by
ANGELA PICCO
Date: 2017.02.23 09:38:57
-08'00'

ACTING ENDANGERED SPECIES DIVISION CHIEF

Authority: Statutes and Regulations: 16 USC 1539(a), 16 USC 1533(d), 16 USC 703-712; 50 CFR 17.22, 50 CFR 17.32, 50 CFR 21.23 & 21.27, 50 CFR 13.

Location where authorized activity may be conducted:

ON LANDS SPECIFIED WITHIN THE ATTACHED SPECIAL TERMS AND CONDITIONS

Reporting requirements:

ANNUAL REPORT DUE: 1/31

See permit conditions for further reporting requirements.

Conditions and Authorizations:

- A. General conditions set out in Subpart B of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.
- B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.
- C. Valid for use by permittee named above.

SPECIAL TERMS AND CONDITIONS

Kelly M. Rios

1. This permit was previously issued on December 9, 2011. The terms and conditions set forth in that permit are hereby superseded by this amendment.
2. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the "General Permit Procedures and Permit Regulations for Native Endangered and Threatened Wildlife Species Permits," 50 CFR Part 13, 50 CFR 17.21 and 17.22 (endangered wildlife) and/or 50 CFR 17.31 and 17.32 (threatened wildlife), as applicable found at: <http://www.fws.gov/carlsbad/r8permits/permitprocedures-regulations.htm>
3. The permittee must have all other applicable State and Federal permits prior to the commencement of activities authorized by this permit. In addition, this permit does not authorize access to Federal, Tribal, State, local government, or private lands as it is the responsibility of the permittee to obtain land owner permission prior to commencing permitted activities on such lands.
4. The permittee is authorized to take (harass by survey) the coastal California gnatcatcher (*Poliioptila californica californica*); take (survey by pursuit) the Quino checkerspot butterfly (*Euphydryas editha quino*) and El Segundo blue butterfly (*Euphilotes battoides allyni*); and take (harass by survey, capture, handle and release) the San Bernardino kangaroo rat (*Dipodomys merriami parvus*) in conjunction with survey activities for the purpose of enhancing their survival, as specified in the permittee's November 4, 2015, permit renewal request, in accordance with the conditions stated below.
5. Permitted activities are restricted to the following geographic area in California:

Throughout the range of the species.

Notifications to conduct activities at the above authorized locations pursuant to this permit shall be submitted in writing to the Recovery Permit Coordinator at the appropriate Fish and Wildlife Office (FWO) of the U.S. Fish and Wildlife Service (Service) at least 15 days prior to conducting such activities. The appropriate FWO is determined as follows:

Carlsbad Fish and Wildlife Office (CFWO):

For areas from Los Angeles County east of the Santa Monica pier and east of the 405 freeway, south of and including the San Gabriel Mountains, and east and north of the San Andreas Rift Zone; in Kern County south and east of the Tehachapi Mountains and east of the Piute and Scodie Mountains; in Inyo County east of the Owens Valley; then south to the U.S. border with Mexico including San Bernardino, Riverside, Orange, Imperial, and San Diego Counties in their entirety, contact the Carlsbad Fish and Wildlife Office, 2177 Salk Avenue, Suite 250, Carlsbad, California 92008 (telephone: 760-431-9440).

Ventura Fish and Wildlife Office (VFWO):

Appendix B

Representative Transect Photographs



Photo 1: Date: 6/20/19. Transect 1; facing northeast



Photo 2: Date: 6/20/19. Transect 2; facing northeast



Photo 3: Date: 6/20/19. Transect 3; facing northeast.



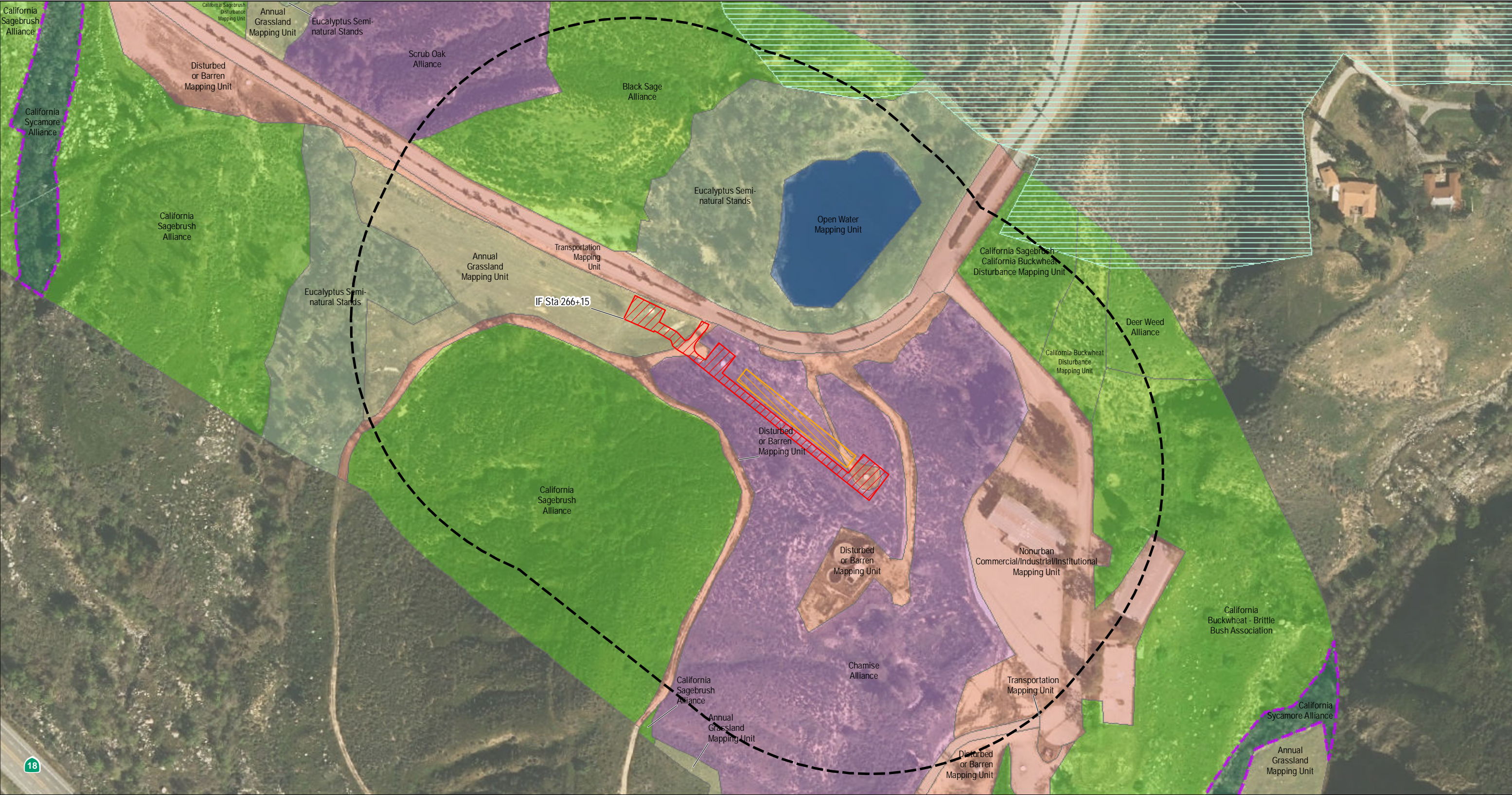
Photo 4: Date: 6/20/19. Transect 4; facing southwest



Photo 5: Date: 6/20/19. Transect 5; facing southwest.

Appendix F-7

Biological Resources Mapbook



Survey Area

Sensitive Vegetation Community

Impacts

Permanent

Temporary

Critical Habitat

Thread-Leaved Brodiaea

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Riparian Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-natural Land Covers/Unvegetated Communities

Developed

Water

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

0 85 170 Feet

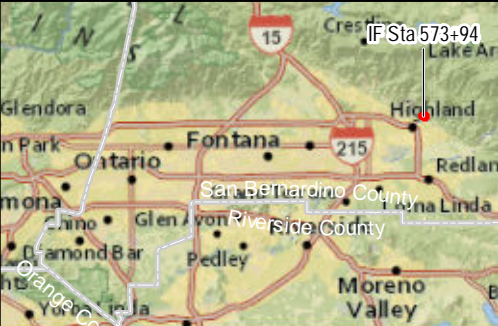
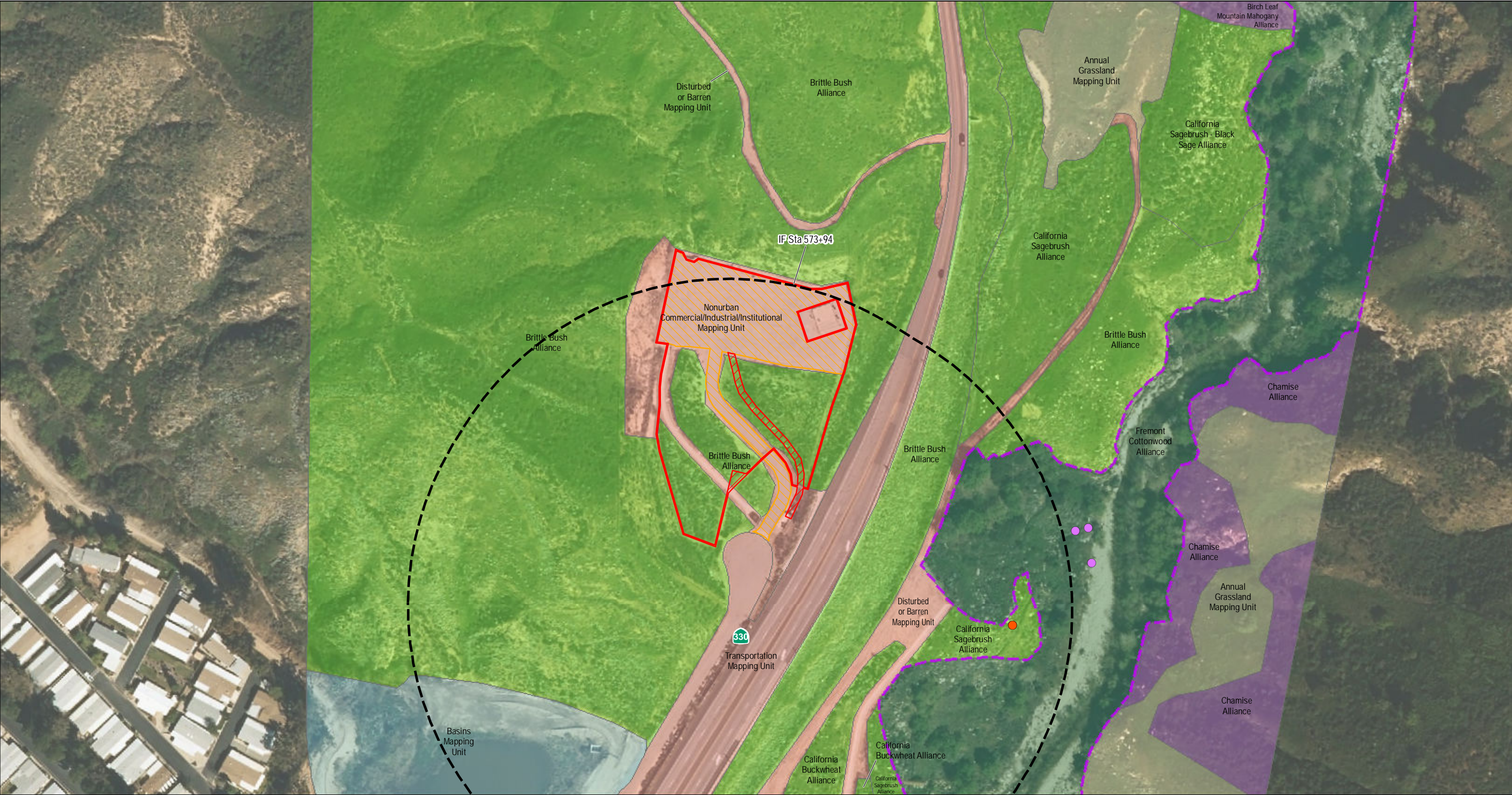
SOURCE: Eagle Aerial 2015













APPENDIX F-7B


Biological Resources - Work Area IF Sta 266+15

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



 Survey Area	 Permanent	Herbaceous Alliances and Stands	Shrubland Alliances and Stands
 California Gnatcatcher Occurrence	 Temporary	 Annual Grassland	 Coastal Scrub
 Least Bell's Vireo Occurrence		Non-natural Land Covers/Unvegetated Communities	 Mixed Chaparral
 Sensitive Vegetation Community	Forest and Woodlands Alliances and Stands	 Basins and Watercourses	
	 Riparian Forest	 Developed	

 0 70 140 Feet

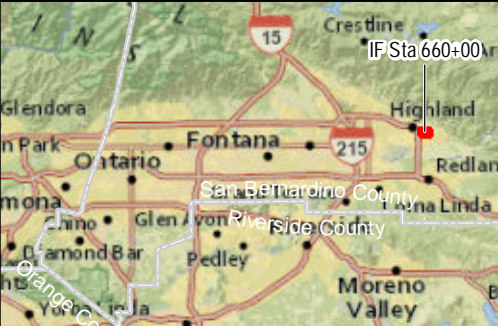
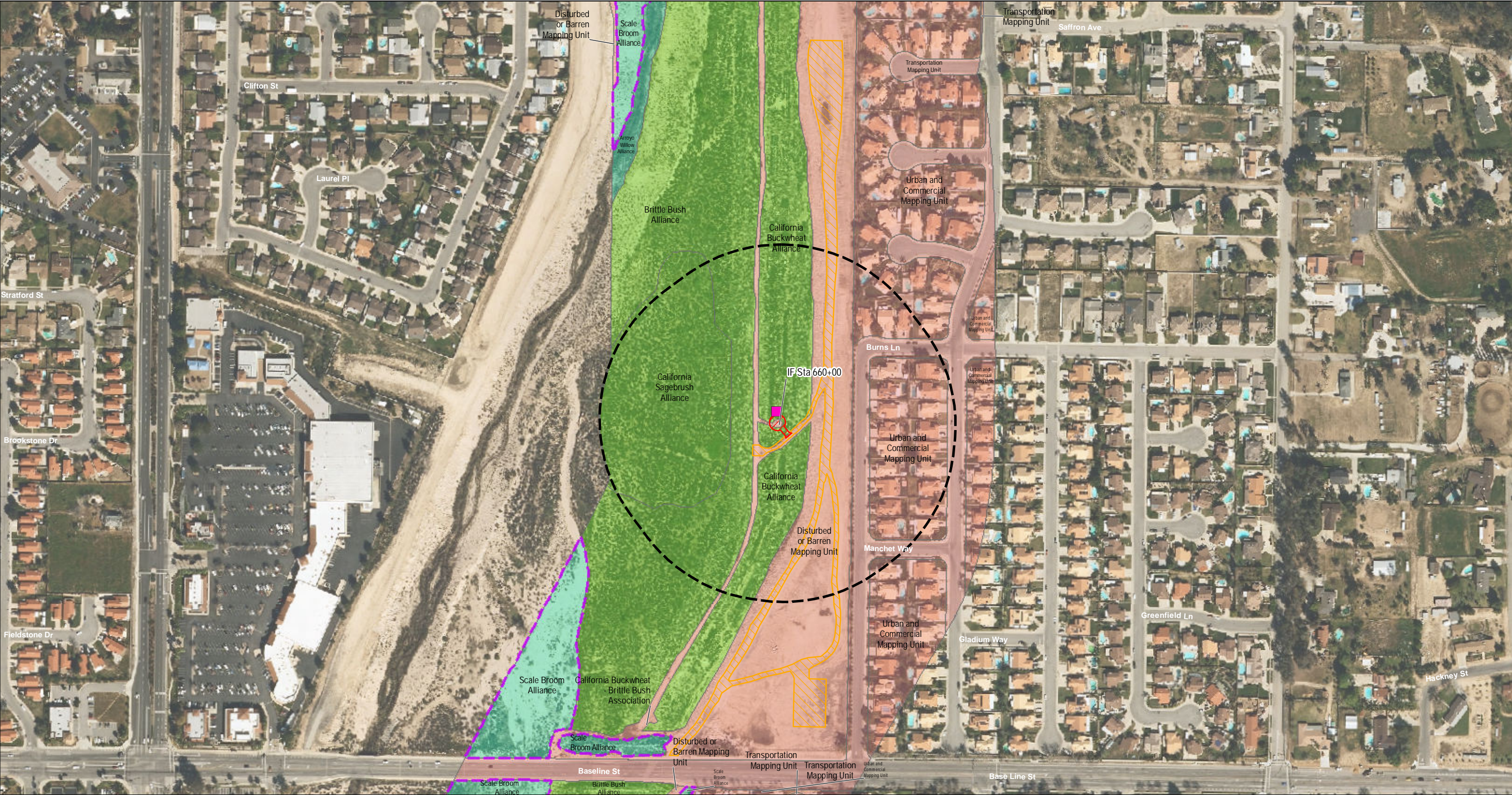
SOURCE: Eagle Aerial 2015

APPENDIX F-7E

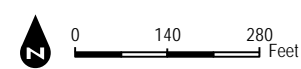
Biological Resources - Work Area IF Sta 573+94

The Metropolitan Water District of Southern California

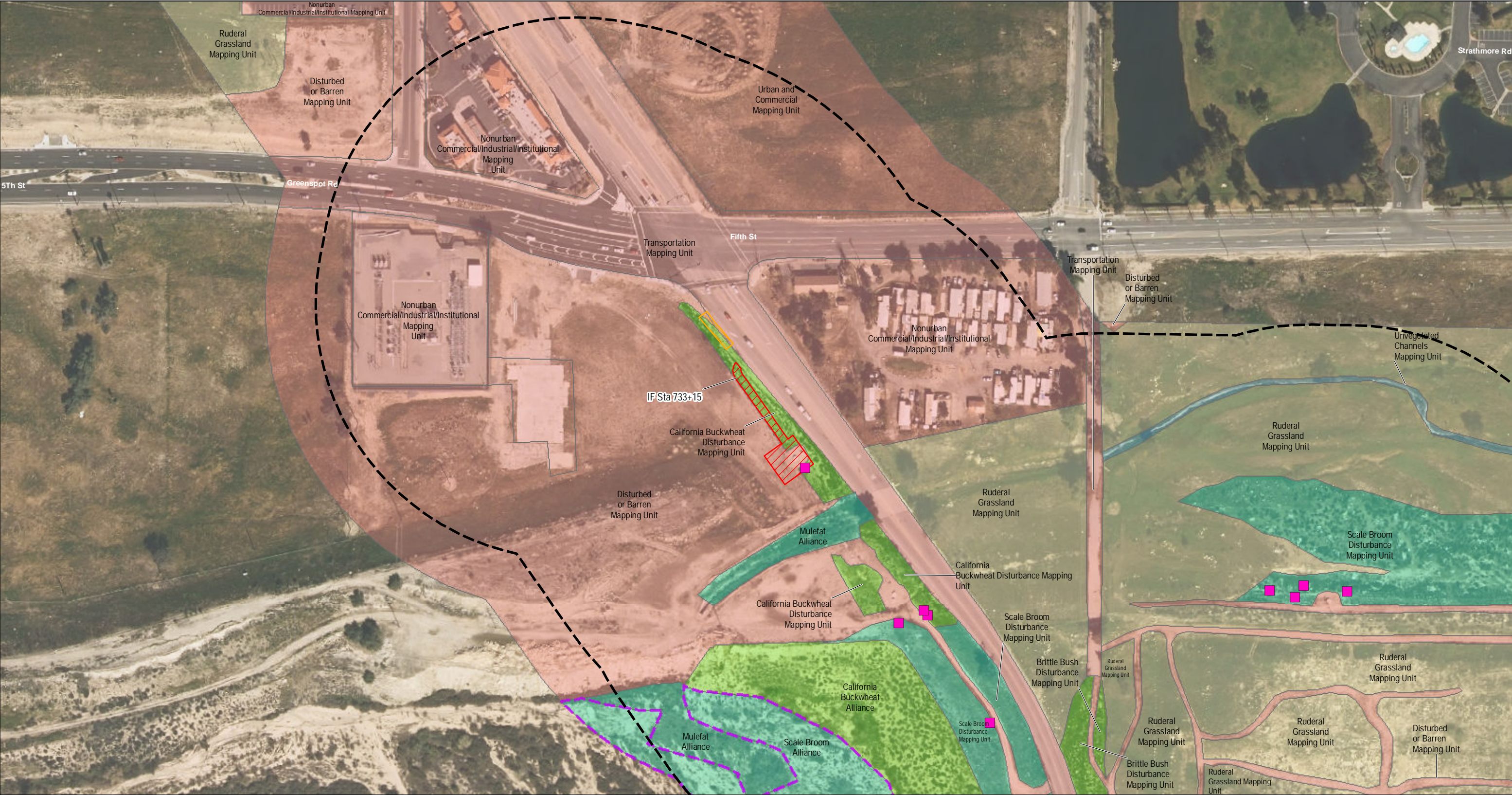
Western San Bernardino County Distribution System Infrastructure Protection Program



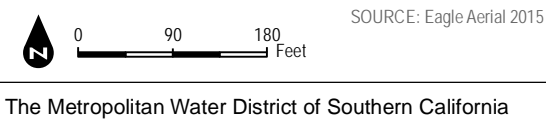
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|--------------------------------|--|----------------|--|---------------------------------------|
| Survey Area | San Bernardino Kangaroo Rat Positive Trapping Location | Impacts | Non-natural Land Covers/Unvegetated Communities | Shrubland Alliances and Stands |
| Sensitive Vegetation Community | | Permanent | Developed | Coastal Scrub |
| | | Temporary | | Riparian Scrub |



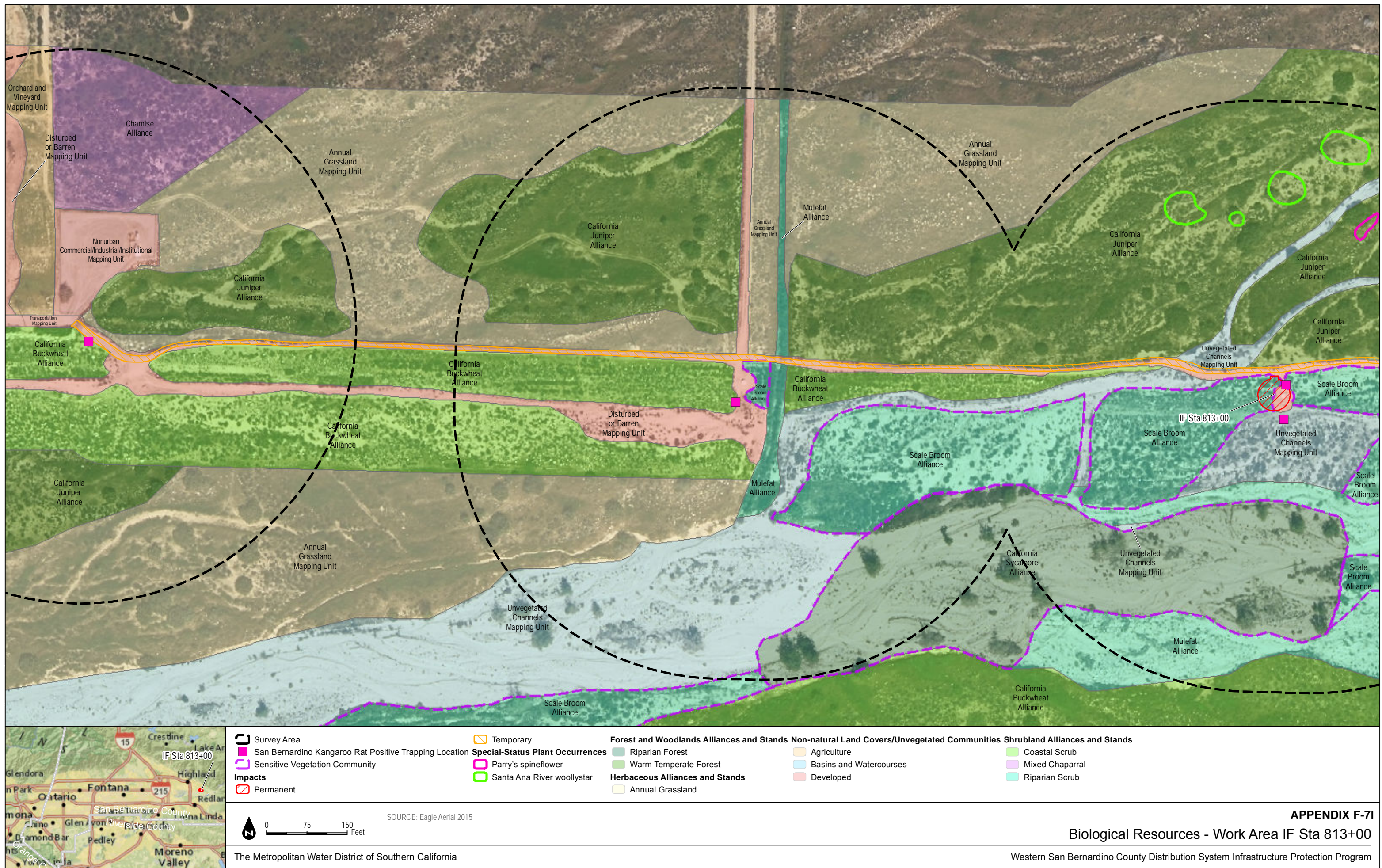
SOURCE: Eagle Aerial 2015

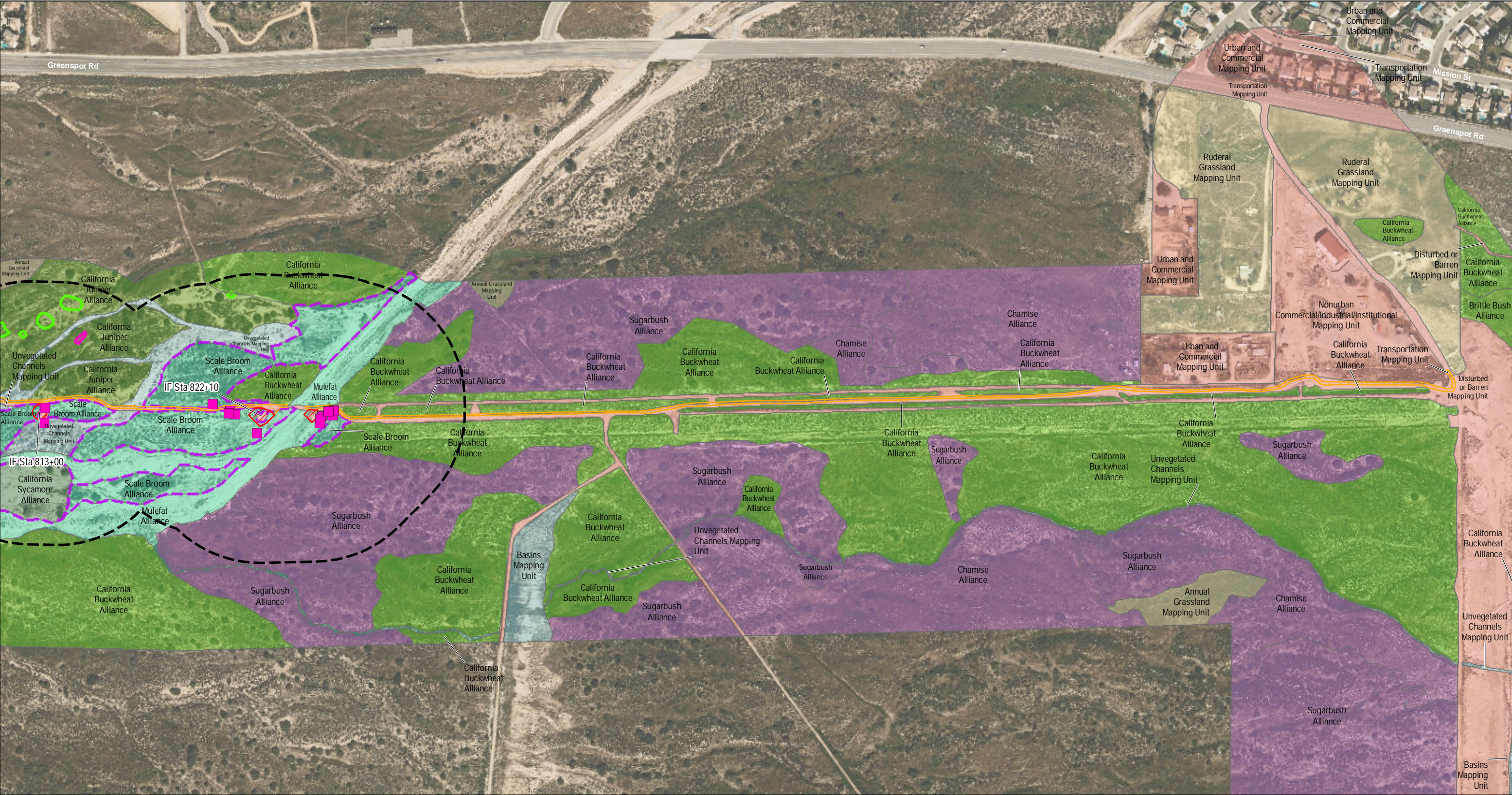


- | | | | | |
|--|----------------|--|--|---------------------------------------|
| Survey Area | Impacts | Herbaceous Alliances and Stands | Non-natural Land Covers/Unvegetated Communities | Shrubland Alliances and Stands |
| San Bernardino Kangaroo Rat Positive Trapping Location | Permanent | Annual Grassland | Basins and Watercourses | Coastal Scrub |
| Sensitive Vegetation Community | Temporary | | Developed | Riparian Scrub |



APPENDIX F-7H
Biological Resources - Work Area IF Sta 733+15





Survey Area

San Bernardino Kangaroo Rat Positive Trapping Location

Sensitive Vegetation Community

Impacts

Permanent

Temporary

Special-Status Plant Occurrences

Parry's spineflower

Santa Ana River woollystar

Forest and Woodlands Alliances and Stands

Riparian Forest

Warm Temperate Forest

Herbaceous Alliances and Stands

Annual Grassland

Non-natural Land Covers/Unvegetated Communities

Basins and Watercourses

Developed

Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral

Riparian Scrub

0 190 380 Feet

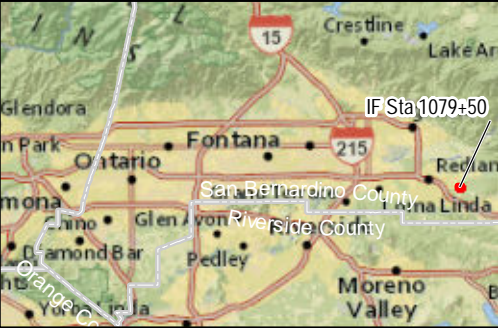
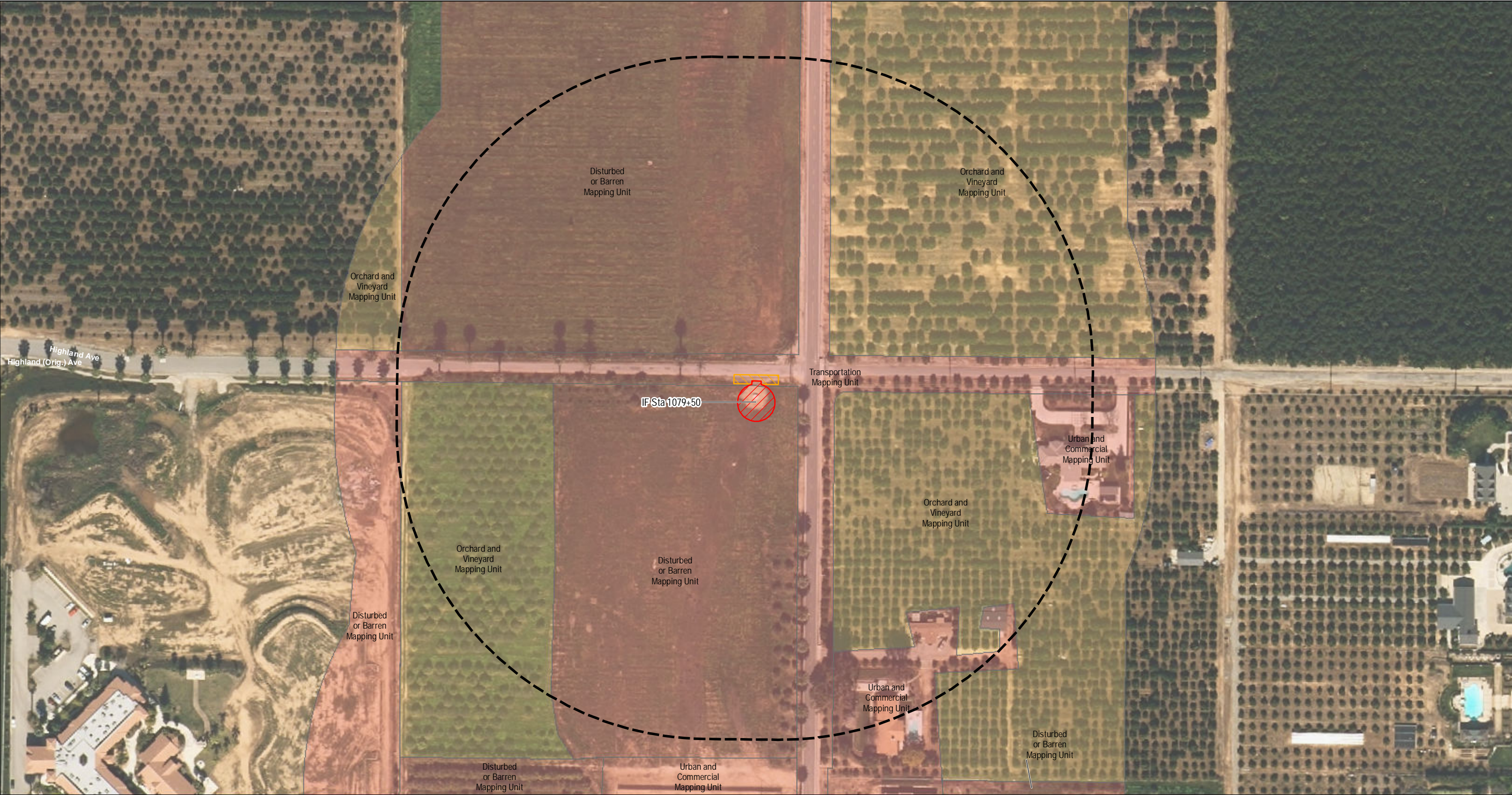
SOURCE: Eagle Aerial 2015

APPENDIX F-7J

Biological Resources - Work Area IF Sta 822+10

The Metropolitan Water District of Southern California

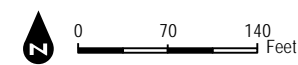
Western San Bernardino County Distribution System Infrastructure Protection Program



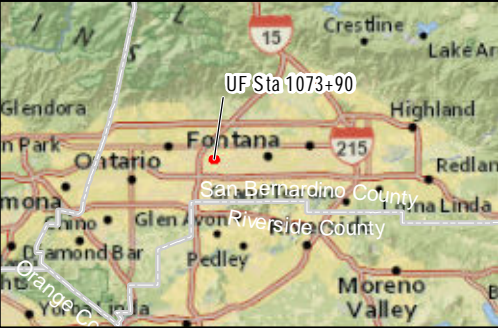
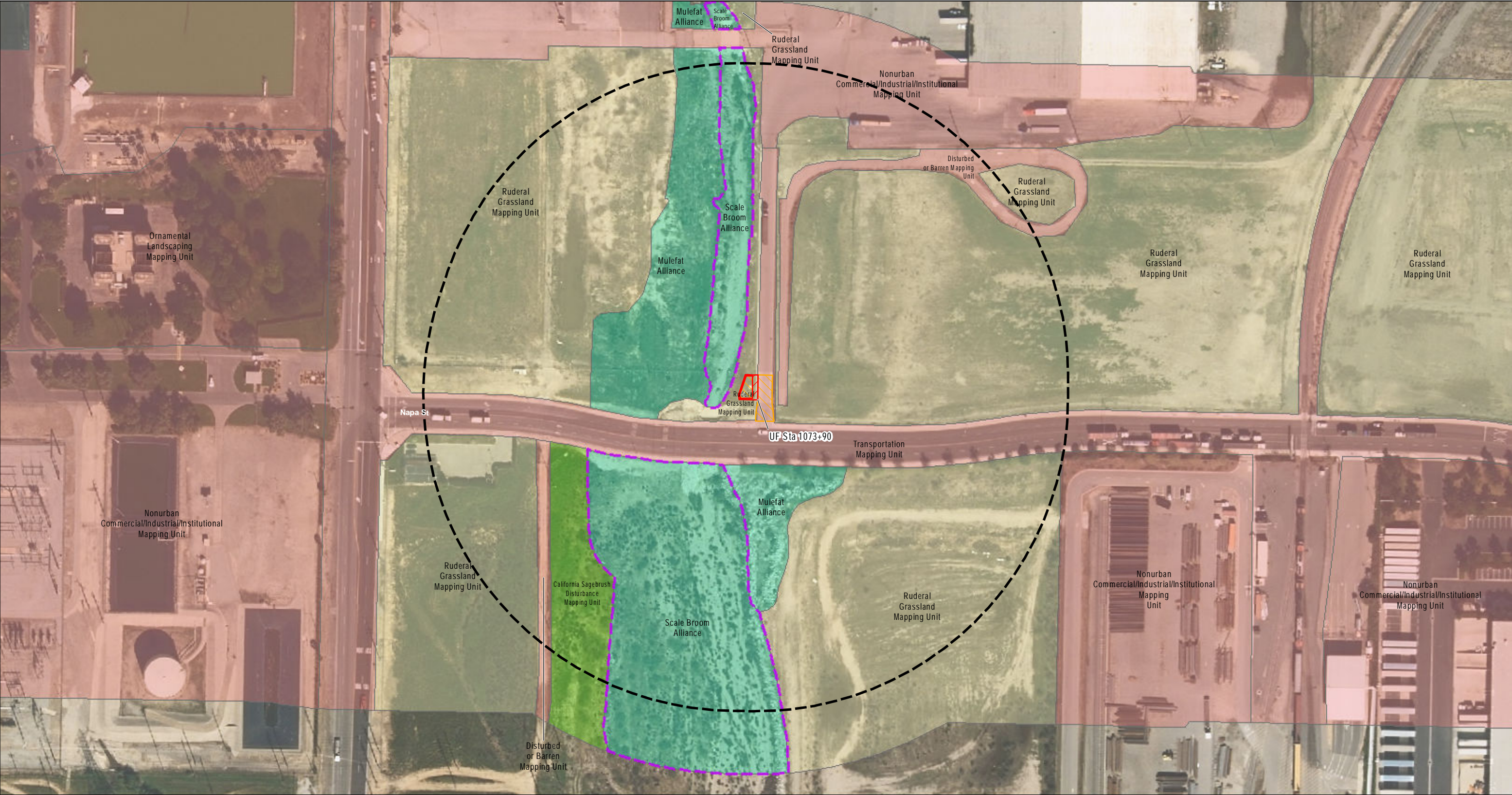
 Survey Area  Temporary  Developed

Impacts  Permanent  Agriculture

Non-natural Land Covers/Unvegetated Communities



SOURCE: Eagle Aerial 2015



Survey Area

Sensitive Vegetation Community

Permanent

Temporary

Herbaceous Alliances and Stands

Annual Grassland

Non-natural Land Covers/Unvegetated Communities

Developed

Shrubland Alliances and Stands

Coastal Scrub

Riparian Scrub

0 70 140 Feet

SOURCE: Eagle Aerial 2015

APPENDIX F-7M

Biological Resources - Work Area UF Sta 1073+90

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program

Appendix F-8

Special-Status Plant Species Potential to Occur

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Abronia villosa</i> var. <i>aurita</i> chaparral sand-verbena None/None/1B.1 Chaparral, coastal scrub, desert dunes; sandy/annual herb/Jan–Sep/246–5253	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, there are no recent occurrence records of the species within the vicinity of the program area, and the 3 occurrences of this species recorded within 10 miles of the program area are all extirpated.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, there are no recent occurrence records of the species within the vicinity of the program area, and the 3 occurrences of this species recorded within 10 miles of the program area are all extirpated.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, there are no recent occurrence records of the species within the vicinity of the program area, and the 3 occurrences of this species recorded within 10 miles of the program area are all extirpated.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, there are no recent occurrence records of the species within the vicinity of the program area, and the 3 occurrences of this species recorded within 10 miles of the program area are all extirpated.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, there are no recent occurrence records of the species within the vicinity of the program area, and the 3 occurrences of this species recorded within 10 miles of the program area are all extirpated.
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i> Cushenbury oxytheca FE/None/1B.1 Pinyon and juniper woodland (carbonate, talus); sandy, carbonate/annual herb/May–Oct/3999–7803	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present within the program area, and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, minimal suitable habitat is present within the program area, and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present within the program area, and there are no occurrence records of the species within the vicinity of the program area.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present within the program area, and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present within the program area, and there are no occurrence records of the species within the vicinity of the program area.
<i>Allium howellii</i> var. <i>clokeyii</i> Mt. Pinos onion None/None/1B.3 Great Basin scrub, pinyon and juniper woodland, meadows and seeps (edges)/Apr-Jun/1385-1800	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Allium marvinii</i> Yucaipa onion None/None/1B.2 Chaparral (clay, openings)/perennial bulbiferous herb/Apr–May/2493–3498	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. No suitable habitat is present within the program area and the nearest occurrence record for this species is approximately 8 miles to the southeast.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no records within the vicinity.
<i>Ambrosia monogyra</i> singlewhorl burrobrush None/None/2B.2 Chaparral, Sonoran desert scrub; sandy/perennial shrub/Aug–Nov/33–1644	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present within the program area and no recent species occurrences from within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and there are two historic records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present within the program area and no recent records within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present within the program area and no recent records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat is present within the program area and no recent records within the vicinity.
<i>Ambrosia pumila</i> San Diego ambrosia FE/None/1B.1 Chaparral, coastal scrub, valley and foothill grassland, vernal pools; sandy loam or clay, often in disturbed areas, sometimes alkaline/perennial rhizomatous herb/Apr–Oct/66–1366	Etiwanda Pipeline	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of this species within 25 miles of the program area.
	Inland Feeder	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of this species within 20 miles of the program area.
	Rialto Pipeline	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of this species within 30 miles of the program area.
	Upper Feeder	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of this species within 20 miles of the program area.
	Yorba Linda Feeder	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of this species within 25 miles of the program area.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i> San Gabriel manzanita None/None/1B.2 Chaparral (rocky)/perennial evergreen shrub/Mar/1952–4925	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and no occurrence records within the vicinity of the program.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and no occurrence records within the vicinity of the program.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and recent records within the vicinity occur within the San Bernardino National Forest, approximately 4.5 miles north of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and no occurrence records within the vicinity of the program.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and no occurrence records within the vicinity of the program.
<i>Arenaria lanuginosa</i> var. <i>saxosa</i> rock sandwort None/None/2B.3 Subalpine coniferous forest, upper montane coniferous forest; mesic, sandy/perennial herb/July–Aug/5906–8534	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.
<i>Arenaria paludicola</i> marsh sandwort	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no records within the vicinity.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
FE/CE/1B.1 Marshes and swamps (freshwater or brackish); sandy, openings/perennial stoloniferous herb/May–Aug/10–562	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no recent records within the vicinity.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no recent records within the vicinity.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat within the program area and no recent records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, minimal suitable habitat within the program area and no records within the vicinity.
<i>Asclepias nyctaginifolia</i> Mojave milkweed None/None/2B.1 Mojavean desert scrub, pinyon and juniper woodland/perennial herb/May–June/2871–5581	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and there are no occurrence records of this species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, minimal suitable habitat is present and there are no occurrence records of this species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and there are no occurrence records of this species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and there are no occurrence records of this species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and there are no occurrence records of this species within the vicinity of the program area.
<i>Astragalus brauntonii</i> Braunton's milk-vetch	Etiwanda Pipeline	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
FE/None/1B.1 Chaparral, coastal scrub, valley and foothill grassland; recent burns or disturbed areas, usually sandstone with carbonate layers/perennial herb/Jan–Aug/13–2104	Inland Feeder	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. Minimal suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's milk-vetch None/None/1B.1 Meadows and seeps, playas; lake margins, alkaline/annual herb/May–Oct/197–2793	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
<i>Astragalus lentiginosus</i> var. <i>antonius</i> San Antonio milk-vetch None/None/1B.3 Lower montane coniferous forest, upper montane coniferous forest/perennial herb/Apr–July/4921–8534	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat present within the program area and no records of the species within the vicinity.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat present within the program area and no records of the species within the vicinity.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat present within the program area and no records of the species within the vicinity.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat present within the program area and no records of the species within the vicinity.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat present within the program area and no records of the species within the vicinity.
<i>Astragalus lentiginosus</i> var. <i>coachellae</i> Coachella Valley milk-vetch FE/None/1B.2 Desert dunes, Sonoran desert scrub (sandy)/annual / perennial herb/Feb–May/131–2153	Etiwanda Pipeline	Not expected to occur. The program area is not within the known geographic range for this species, no suitable habitat present and no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. The program area is not within the known geographic range for this species, no suitable habitat present and no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is not within the known geographic range for this species, no suitable habitat present and no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is not within the known geographic range for this species, no suitable habitat present and no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is not within the known geographic range for this species, no suitable habitat present and no occurrence records of the species within the vicinity of the program area.
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Big Bear Valley milk-vetch None/None/1B.2 Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, upper montane	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range for this species. Minimal suitable habitat is present and no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
coniferous forest; gravelly or rocky/perennial herb/Apr–Aug/5906–8534	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
<i>Astragalus leucolobus</i> Big Bear Valley woollypod None/None/1B.2 Lower montane coniferous forest, pebble plain, pinyon and juniper woodland, upper montane coniferous forest; rocky/perennial herb/May–July/3609–9469	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range for this species. Minimal suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
<i>Astragalus pachypus</i> var. <i>jaegeri</i> Jaeger's bush milk-vetch None/None/1B.1	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky/perennial shrub/Dec–June/1198–3006	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and no occurrence records of the species within the vicinity of the program area.
<i>Atriplex coronata</i> var. <i>notatior</i> San Jacinto Valley crowscale FE/None/1B.1 Playas, valley and foothill grassland (mesic), vernal pools; alkaline/annual herb/Apr–Aug/456–1644	Etiwanda Pipeline	Not expected to occur. Suitable habitat (vernal pools with alkaline soils) is not present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. Suitable habitat (vernal pools with alkaline soils) is not present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. Suitable habitat (vernal pools with alkaline soils) is not present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. Suitable habitat (vernal pools with alkaline soils) is not present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. Suitable habitat (vernal pools with alkaline soils) is not present within the program area and there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Atriplex coulteri</i> Coulter's saltbush None/None/1B.2 Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/10–1513	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat (scrub/grassland with clay soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat (scrub/grassland with clay soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat (scrub/grassland with clay soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable habitat (scrub/grassland with clay soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat (scrub/grassland with clay soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
<i>Atriplex parishii</i> Parish's brittle scale None/None/1B.1 Chenopod scrub, playas, vernal pools; alkaline/annual herb/June–Oct/82–6238	Etiwanda Pipeline	Not expected to occur. No suitable habitat (chenopod scrub/playa/vernal pools with alkaline soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. No suitable habitat (chenopod scrub/playa/vernal pools with alkaline soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat (chenopod scrub/playa/vernal pools with alkaline soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat (chenopod scrub/playa/vernal pools with alkaline soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. No suitable habitat (chenopod scrub/playa/vernal pools with alkaline soils) is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
<i>Atriplex serenana</i> var. <i>dauidsonii</i> Davidson's saltscale None/None/1B.2 Coastal bluff scrub, coastal scrub; alkaline/annual herb/Apr–Oct/33–660	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and there is no suitable habitat present.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrences recorded within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrences recorded within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and there are no occurrences recorded within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range, no suitable habitat is present and there are no occurrences recorded within the vicinity of the program area.
<i>Baccharis malibuensis</i> Malibu baccharis None/None/1B.1 Chaparral, cismontane woodland, coastal scrub, riparian woodland/perennial deciduous shrub/Aug/492–1005	Etiwanda Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is not within the known geographic range for this species. No occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
<i>Berberis nevini</i> Nevin's barberry	Etiwanda Pipeline	Not expected to occur. Minimal suitable habitat is present within the program area and there are no occurrence records within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
FE/CE/1B.1 Chaparral, cismontane woodland, coastal scrub, riparian scrub; sandy or gravelly/perennial evergreen shrub/Mar–June/230–2711	Inland Feeder	Moderate potential to occur. Suitable habitat is present within the program area and there are recent occurrence records of the species from the vicinity.
	Rialto Pipeline	Moderate potential to occur. Suitable habitat is present within the program area and there is a recent occurrence record of the species from the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no occurrence records within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no occurrence records of the species from the vicinity.
<i>Boechnera dispar</i> pinyon rockcress None/None/2B.3 Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; granitic, gravelly/perennial herb/Mar–June/3937–8337	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Boechnera parishii</i> Parish's rockcress None/None/1B.2 Pebble plain, pinyon and juniper woodland, upper montane coniferous forest; rocky, quartzite on clay, or sometimes carbonate/perennial herb/Apr–May/5807–9814	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Boechera shockleyi</i> Shockley's rockcress None/None/2B.2 Pinyon and juniper woodland (carbonate or quartzite, rocky, or gravelly)/perennial herb/May–June/2871–7583	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Botrychium ascendens</i> upswept moonwort None/None/2B.3 Lower montane coniferous forest, Meadows and seeps; mesic/perennial rhizomatous herb/(June)July–Aug/3655–9990	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Botrychium crenulatum</i> scalloped moonwort None/None/2B.2	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater), upper montane coniferous forest/perennial rhizomatous herb/June–Sep/4160–10765	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Botrychium minganense</i> Mingan moonwort None/None/2B.2 Bogs and fens, lower montane coniferous forest, upper montane coniferous forest; mesic/perennial rhizomatous herb/July–Sep/4774–7156	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Brodiaea filifolia</i> thread-leaved brodiaea FT/CE/1B.1 Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools; often clay/perennial bulbiferous herb/Mar–June/82–3679	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present within the program area and one recent occurrence record of the species was documented along the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily None/None/1B.2 Chaparral, coastal scrub, valley and foothill grassland/perennial bulbiferous herb/Mar–June/1050–3285	Etiwanda Pipeline	Moderate potential to occur. Suitable habitat is present within the program area, but there are no recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Suitable habitat is present within the program area, but there are no recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present within the program area and numerous recent occurrence records of the species from the vicinity.
	Upper Feeder	Moderate potential to occur. Suitable habitat is present within the program area, but there are no recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and there are no occurrence records of the species within the vicinity of the program area.
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa lily None/None/1B.2 Chaparral, lower montane coniferous forest, meadows and seeps; mesic/perennial bulbiferous herb/Apr–July/2329–7845	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present within the program area and one occurrence record of the species from the vicinity, within a vernal moist area in yellow-pine forest.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. No suitable habitat is present and no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species. Minimal suitable habitat is present and no occurrence records of the species within the vicinity of the program area.
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa lily None/None/1B.2 Chaparral, coastal scrub, valley and foothill grassland; rocky, calcareous/perennial bulbiferous herb/May–July/344–2809	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Inland Feeder	Not expected to occur. Suitable habitat is present but clay soils are absent and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Upper Feeder	Low potential to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Yorba Linda Feeder	High potential to occur. Suitable habitat is present within the program area and numerous recent occurrence records of the species from the vicinity.
<i>Calystegia felix</i> lucky morning-glory None/None/1B.1 Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial); Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline/annual rhizomatous herb/Mar–Sep/95–705	Etiwanda Pipeline	Not expected to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Inland Feeder	Not expected to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Rialto Pipeline	Not expected to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Upper Feeder	Not expected to occur. Minimal suitable habitat is present within the program area, but no occurrence records of the species from the vicinity.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat is present within the program area and recent occurrence records of the species from the vicinity.
<i>Calyptridium pygmaeum</i> pygmy pussypaws	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/1B.2 Subalpine coniferous forest, upper montane coniferous forest; sandy or gravelly/annual herb/June–Aug/6496–10207	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Carex comosa</i> bristly sedge None/None/2B.1 Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland/perennial rhizomatous herb/May–Sep/0–2055	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of this species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of this species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of this species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of this species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no occurrence records of this species within the vicinity of the program area.
<i>Carex occidentalis</i> western sedge None/None/2B.3 Lower montane coniferous forest, meadows and seeps/perennial rhizomatous herb/June–Aug/5397–10289	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Castilleja cinerea</i> ash-gray paintbrush FT/None/1B.2 Mojavean desert scrub, meadows and seeps, pebble plain, pinyon and juniper woodland, upper montane coniferous forest (clay openings)/perennial herb (hemiparasitic)/June–Aug/5906–9715	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Castilleja gleasoni</i> Mt. Gleason paintbrush None/Rare/1B.2 Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland; granitic/perennial herb (hemiparasitic)/May–June(Sep)/2180–7120	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Castilleja lasiorhyncha</i> San Bernardino Mountains owl's-clover None/None/1B.2	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Chaparral, meadows and seeps, pebble plain, riparian woodland, upper montane coniferous forest; mesic/annual herb (hemiparasitic)/May–Aug/4265–7845	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant None/None/1B.1 Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools/annual herb/May–Nov/0–1579	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area, but there are no records within the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no records within the vicinity.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present within the program area, but there are no records within the vicinity.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Centromadia pungens</i> ssp. <i>laevis</i> smooth tarplant None/None/1B.1 Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2104	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area, but there are no records within the vicinity.
	Inland Feeder	High potential to occur. Suitable habitat is present within the program area. There are two recent occurrence records of the species, one within 1 mile of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present within the program area. There is one recent occurrence record of the species, within 3 miles of the program area.
	Upper Feeder	High potential to occur. Suitable habitat is present within the program area. There is one recent occurrence record of the species, within 3 miles of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no records within the vicinity.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i> salt marsh bird's-beak FE/CE/1B.2 Coastal dunes, marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct/0–102	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Chorizanthe parryi</i> var. <i>fernandina</i> San Fernando Valley spineflower FC/CE/1B.1 Coastal scrub (sandy), valley and foothill grassland/annual herb/Apr–July/492–4007	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Yorba Linda Feeder	Not expected to occur. Outside of the known geographic range for the species.
<i>Chorizanthe parryi</i> var. <i>parryi</i> Parry's spineflower None/None/1B.1 Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; sandy or rocky, openings/annual herb/Apr–June/902–4007	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area, but there are no recent occurrence records from the vicinity.
	Inland Feeder	Present. Suitable habitat is present and there are numerous recent occurrence records of the species from the vicinity. Observed during 2017 surveys.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are numerous recent occurrence records of the species from the vicinity.
	Upper Feeder	High potential to occur. Suitable habitat is present and there are three recent occurrence records of the species were documented within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area, but there are no recent occurrence records from the vicinity.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower None/None/1B.2 Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools; often clay/annual herb/Apr–July/98– 5024	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area; however, there are no suitable clay soils and there are no species occurrence records from the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area; however, there are no suitable clay soils and there are no species occurrence records from the vicinity.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present within the program area; however, there are no suitable clay soils and there are no species occurrence records from the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area; however, there are no suitable clay soils and there are no species occurrence records from the vicinity.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area and clay soils are present; however, there are no species occurrence records from the vicinity.
<i>Chorizanthe xanti</i> var. <i>leucotheca</i> white-bracted spineflower None/None/1B.2 Coastal scrub (alluvial fans), Mojavean desert scrub, pinyon and juniper woodland; sandy or gravelly/annual herb/Apr–June/984–3941	Etiwanda Pipeline	Low potential to occur. Minimal suitable alluvial fan habitat present and there are no records within the vicinity.
	Inland Feeder	High potential to occur. Suitable habitat is present within the program area and there is one recent record within 3 miles of the species from the vicinity.
	Rialto Pipeline	High potential to occur. Suitable habitat is present within the program area and there is one recent record within 5 miles of the species from the vicinity.
	Upper Feeder	Moderate potential to occur. Suitable alluvial fan habitat present, but there are no records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. No suitable alluvial fan habitat present and there are no records within the vicinity.
<i>Cladium californicum</i> California sawgrass None/None/2B.2	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no recent occurrence records of the species within the vicinity. One historic record (extirpated) was documented within the vicinity.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Meadows and seeps, marshes and swamps; alkaline or freshwater/perennial rhizomatous herb/June–Sep/197–5253	Inland Feeder	Low potential to occur. Minimal habitat is present within the program area but there are no records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no recent occurrence records of the species within the vicinity. One historic record (extirpated) was documented within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no recent occurrence records of the species within the vicinity of the program area. One historic record (extirpated) was documented within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal habitat is present within the program area but there are no records within the vicinity.
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i> Peruvian dodder None/None/2B.2 Marshes and swamps (freshwater)/annual vine (parasitic)/July–Oct/49–923	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Cylindropuntia californica</i> var. <i>californica</i> snake cholla None/None/1B.1 Chaparral, coastal scrub/perennial stem succulent/Apr–May/98–496	Etiwanda Pipeline	Low potential to occur. Suitable coastal scrub habitat is present but there are no occurrences of this species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat is present but there are no occurrences of this species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present but there are no occurrences of this species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Low potential to occur. Suitable habitat is present but there are no occurrences of this species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable coastal scrub habitat is present but there are no occurrences of this species within the vicinity of the program area.
<i>Deinandra mohavensis</i> Mojave tarplant None/CE/1B.3 Chaparral, coastal scrub, riparian scrub; mesic/annual herb/(May) June–Oct (Jan)/2100–5253	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Dodecahema leptoceras</i> slender-horned spineflower FE/CE/1B.1 Chaparral, cismontane woodland, coastal scrub (alluvial fan); sandy/annual herb/Apr–June/656–2497	Etiwanda Pipeline	Low potential to occur. Suitable sandy soils and coastal scrub are present; however, alluvial fan habitat is absent within the program area. There is a record of one recent occurrence of the species within 3 miles of the program area.
	Inland Feeder	High potential to occur. Suitable habitat and soils are present. Three recent occurrence record of the species has been documented within the vicinity with the nearest occurrence within 1 mile of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat and soils are present, suitable alluvial fan habitat is present within Lytle Creek. Three recent occurrence record of the species has been documented within the vicinity with the nearest occurrence within 1 mile of the program area.
	Upper Feeder	Not expected to occur. No suitable alluvial fan habitat is present. Although there are no recent occurrence records of the species within the vicinity of the program area, two extirpated historic records of this species were documented within the vicinity.
	Yorba Linda Feeder	Not expected to occur. No suitable alluvial fan habitat is present and there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Drymocallis cuneifolia</i> var. <i>cuneifolia</i> wedgeleaf woodbeauty None/None/1B.1 Riparian scrub, upper montane coniferous forest; sometimes carbonate/perennial herb/June–Aug/5906–7271	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Drymocallis cuneifolia</i> var. <i>ewanii</i> Ewan's woodbeauty None/None/1B.3 Lower montane coniferous forest (near seeps and springs), meadows and seeps/perennial herb/June–July/6234–7878	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Dudleya abramsii</i> ssp. <i>affinis</i> San Bernardino Mountains dudleya None/None/1B.2 Pebble plain, pinyon and juniper woodland, upper montane coniferous forest; granitic,	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
quartzite, or carbonate/perennial herb/Apr–July/4101–8534	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i> San Gabriel River dudleya None/None/1B.2 Chaparral (granitic)/perennial herb/Apr–July/902–1503	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Yorba Linda Feeder	Not expected to occur. Outside of the known geographic range for the species.
<i>Dudleya densiflora</i> San Gabriel Mountains dudleya None/None/1B.1 Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; granitic, cliffs and canyon walls/perennial herb/Mar–June/801–2005	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Yorba Linda Feeder	Not expected to occur. Outside of the known geographic range for the species.
<i>Dudleya multicaulis</i> many-stemmed dudleya None/None/1B.2 Chaparral, coastal scrub, valley and foothill grassland; often clay/perennial herb/Apr–July/49–2596	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present but clay soils are absent and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. Suitable habitat is present but clay soils are absent and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present but clay soils are absent and although there are no recent occurrence records of the species within the vicinity of the program area, four historic records of this species were documented within the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present and there are numerous recent occurrence records of the species from the vicinity but clay soils are absent.

APPENDIX F-8

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	High potential to occur. Suitable habitat is present within the program area and numerous recent occurrence records of the species from the vicinity.
<i>Eremogone ursina</i> Big Bear Valley sandwort FT/None/1B.2 Meadows and seeps, pebble plain, pinyon and juniper woodland; mesic, rocky/perennial herb/May–Aug/5906–9518	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eremothera boothii</i> ssp. <i>boothii</i> Booth's evening-primrose None/None/2B.3 Joshua tree woodland, pinyon and juniper woodland/annual herb/Apr–Sep/2674–7878	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i> Santa Ana River woollystar FE/CE/1B.1	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat present. There are three recent occurrence records of the species were documented within the region of the program area.

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Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Chaparral, coastal scrub (alluvial fan); sandy or gravelly/perennial herb/Apr–Sep/299–2005	Inland Feeder	Present. Suitable habitat and soils are present and there are numerous recent occurrence records of the species from the vicinity with three occurrences occurring immediately adjacent to the program area. Observed during 2017 surveys.
	Rialto Pipeline	Present. Suitable habitat and soils are present and there are numerous recent occurrence records of the species from the vicinity with three occurrences occurring immediately adjacent to the program area. Observed during 2017 surveys.
	Upper Feeder	Moderate potential to occur. Suitable habitat and soils are present and there are three recent occurrence records of the species were documented within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
<i>Erigeron parishii</i> Parish's daisy FT/None/1B.1 Mojavean desert scrub, pinyon and juniper woodland; usually carbonate, sometimes granitic/perennial herb/May–Aug/2625–6566	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> southern alpine buckwheat None/None/1B.3	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Alpine boulder and rock field, subalpine coniferous forest; granitic, gravelly/perennial herb/July–Sep/8530–11487	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i> southern mountain buckwheat FT/None/1B.2 Lower montane coniferous forest (gravelly), pebble plain/perennial herb/June–Sep/5807–9486	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat None/None/1B.3 Subalpine coniferous forest, upper montane coniferous forest; rocky/perennial deciduous shrub/July–Sep/6001–9604	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

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Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i> Bear Lake buckwheat None/None/1B.1 Great Basin scrub, lower montane coniferous forest; clay outcrops/perennial shrub/July–Aug/6562–6894	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Eriogonum ovalifolium</i> var. <i>vineum</i> Cushenbury buckwheat FE/None/1B.1 Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; carbonate/perennial herb/May–Aug/4593–8009	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Erythranthe exiguus</i> San Bernardino Mountains monkeyflower None/None/1B.2 Meadows and seeps, pebble plain, upper montane coniferous forest; mesic, clay/annual herb/May–July/5906–7599	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Fimbristylis thermalis</i> hot springs fimbristylis None/None/2B.2 Meadows and seeps (alkaline, near hot springs)/perennial rhizomatous herb/July–Sep/361–4400	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Minimal suitable habitat is present and there is one recent occurrence record for this species within the vicinity of the program area. This occurrence was documented approximately less than one mile north of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrence records within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present within the program area, but there are no occurrence records of the species within the vicinity of the program area.
<i>Galium californicum</i> ssp. <i>primum</i> Alvin Meadow bedstraw None/None/1B.2 Chaparral, lower montane coniferous forest; granitic, sandy/perennial herb/May–July/4429–5581	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Galium grande</i>	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
San Gabriel bedstraw None/None/1B.2 Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest/perennial deciduous shrub/Jan–July/1394–4925	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Gilia leptantha</i> ssp. <i>leptantha</i> San Bernardino gilia None/None/1B.3 Lower montane coniferous forest (sandy or gravelly)/annual herb/June–Aug/4921–8403	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Helianthus nuttallii</i> ssp. <i>parishii</i> Los Angeles sunflower None/None/1A Marshes and swamps (coastal salt and freshwater)/perennial rhizomatous herb/Aug–Oct/33–5499	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no records within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present and there are no records within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present and there are no records within the vicinity.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
<i>Hesperocyparis forbesii</i> Tecate cypress None/None/1B.1 Closed-cone coniferous forest, chaparral; clay, gabbroic or metavolcanic/perennial evergreen tree/N.A./262–4925	Etiwanda Pipeline	Not expected to occur. No suitable habitat or soils are present and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Not expected to occur. No suitable habitat or soils are present and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat or soils are present and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat or soils are present and there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat and soils are present but there are no occurrence records of the species within the vicinity of the program area.
<i>Heuchera parishii</i> Parish's alumroot None/None/1B.3 Alpine boulder and rock field, lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest; rocky, sometimes carbonate/perennial rhizomatous herb/June–Aug/4921–12471	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Horkelia bolanderi</i> Bolander's horkelia None/None/1B.2	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Chaparral, lower montane coniferous forest, meadows and seeps, valley and foothill grassland; edges, vernal mesic areas/perennial herb/June–Aug/1476–3613	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Horkelia cuneata</i> var. <i>puberula</i> mesa horkelia None/None/1B.1 Chaparral (maritime), cismontane woodland, coastal scrub; sandy or gravelly/perennial herb/Feb–July (Sep)/230–2661	Etiwanda Pipeline	Low potential to occur. Suitable habitat and soils are present but there are no recent occurrence records within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat and soils are present but there are no recent occurrence records within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat and soils are present and there are three recent occurrence records of the species within 2 miles of the program area and numerous historic occurrence records of the species within the vicinity.
	Upper Feeder	High potential to occur. Suitable habitat and soils are present and three recent occurrence records of the species within 2 miles of the program area and numerous historic occurrence records of the species within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat and soils are present but there are no recent occurrence records within the vicinity of the program area.
<i>Horkelia wilderae</i> Barton Flats horkelia None/None/1B.1 Chaparral (edges), lower montane coniferous forest, upper montane coniferous forest/perennial herb/May–Sep/5495–9600	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Hulsea vestita</i> ssp. <i>pygmaea</i> pygmy hulsea None/None/1B.3 Alpine boulder and rock field, subalpine coniferous forest; granitic, gravelly/perennial herb/June–Oct/9301–12799	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Imperata brevifolia</i> California satintail None/None/2B.1 Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub; mesic/perennial rhizomatous herb/Sep–May/0–3990	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are two recent occurrence records within 1 mile of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present within the program area and there is one recent record of the species within 5 miles of the program area.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no occurrence records of the species within the vicinity of the program area.
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i> silver-haired ivesia None/None/1B.2 Meadows and seeps (alkaline), pebble plain, upper montane coniferous forest/perennial herb/June–Aug/4800–9715	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Juncus nodosus</i> knotted rush None/None/2B.3 Meadows and seeps (mesic), marshes and swamps (lake margins)/perennial rhizomatous herb/July-Sep/98-6500	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species.
	Upper Feeder	Not expected to occur. Outside of the known geographic range for the species.
	Yorba Linda Feeder	Not expected to occur. Outside of the known geographic range for the species.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields None/None/1B.1 Marshes and swamps (coastal salt), playas, vernal pools/annual herb/Feb-June/3-4007	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no records of the species within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present but there are no records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present within the program area and there are no records of the species within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present within the program area and there are no records of the species within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present but there are no records of the species within the vicinity of the program area.
<i>Lepechinia cardiophylla</i> heart-leaved pitcher sage None/None/1B.2	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Low potential to occur. Suitable habitat is present but there are no records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Closed-cone coniferous forest, chaparral, cismontane woodland/perennial shrub/Apr–July/1706–4499	Rialto Pipeline	Low potential to occur. Suitable habitat is present but there are no records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Lewisia brachycalyx</i> short-sepaled lewisia None/None/2B.2 Lower montane coniferous forest, meadows and seeps; mesic/perennial herb/Feb–June (July)/4495–7550	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Lilium parryi</i> lemon lily None/None/1B.2 Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic/perennial bulbiferous herb/July–Aug/4003–9010	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Linanthus concinnus</i> San Gabriel linanthus	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/1B.2 Chaparral, lower montane coniferous forest, upper montane coniferous forest; rocky, openings/annual herb/Apr–July/4987–9190	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Lupinus peirsonii</i> Peirson's lupine None/None/1B.3 Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; gravelly or rocky/perennial herb/Apr–June/3281–8206	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Lycium parishii</i> Parish's desert-thorn None/None/2B.3 Coastal scrub, Sonoran desert scrub/perennial shrub/Mar–Apr/443–3285	Etiwanda Pipeline	Low potential to occur. Suitable coastal scrub habitat is present but there are no recent occurrence records for this species. There is a historic extirpated occurrence record was known within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable coastal scrub habitat is present but there are no recent occurrence records for this species. There is a historic extirpated occurrence record was known within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable coastal scrub habitat is present but there are no recent occurrence records for this species. There is a historic extirpated occurrence record was known within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Low potential to occur. Suitable coastal scrub habitat present but there are no occurrence records within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable coastal scrub habitat present but there are no occurrence records within the vicinity of the program area.
<i>Malacothamnus parishii</i> Parish's bush-mallow None/None/1A Chaparral, coastal scrub/perennial deciduous shrub/June–July/1001–1497	Etiwanda Pipeline	Not expected to occur. Species is presumed to be extinct in California (CalFlora 2017) and there are no occurrence records within the vicinity of the program area.
	Inland Feeder	Not expected to occur. Species is presumed to be extinct in California (CalFlora 2017). Although here are no recent occurrence records for this species, a historic occurrence record was known within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. Species is presumed to be extinct in California (CalFlora 2017) and there are no occurrence records within the vicinity of the program area.
	Upper Feeder	Not expected to occur. Species is presumed to be extinct in California (CalFlora 2017) and there are no occurrence records within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. Species is presumed to be extinct in California (CalFlora 2017) and there are no occurrence records within the vicinity of the program area.
<i>Mentzelia tricuspidis</i> spiny-hair blazing star None/None/2B.1 Mojavean desert scrub; sandy, gravelly, slopes, and washes/annual herb/Mar–May/492–4203	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
Mimulus purpureus little purple monkeyflower	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/1B.2 Meadows and seeps, pebble plain, upper montane coniferous forest/annual herb/May–June/6234–7550	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Monardella australis</i> ssp. <i>jokerstii</i> Jokerst's monardella None/None/1B.1 Chaparral, lower montane coniferous forest; steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes/perennial rhizomatous herb/July–Sep/4429–5745	Etiwanda Pipeline	Not expected to occur. The program area is outside of the known elevation range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the known elevation range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
<i>Monardella hypoleuca</i> ssp. <i>intermedia</i> intermediate monardella None/None/1B.3 Chaparral, cismontane woodland, lower montane coniferous forest (sometimes); usually understory/perennial rhizomatous herb/Apr–Sep/1312–4105	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. There is suitable habitat present but there are no occurrence records within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. There is suitable habitat present but there are no occurrence records within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is not within the known elevation range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is not within the known elevation range for this species.
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella None/None/1B.3 Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/perennial rhizomatous herb/June–Oct/2395–7205	Etiwanda Pipeline	Not expected to occur. The program area is outside of the known elevation range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there is a recent occurrence of the species within 2 miles of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the known elevation range for this species.
<i>Monardella pringlei</i> Pringle's monardella None/None/1A Coastal scrub (sandy)/annual herb/May–June/984–1316	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area. One historic record of this species was documented within the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records within the vicinity.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area. One historic record of this species was documented within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records within the vicinity.
<i>Muhlenbergia utilis</i> aparejo grass None/None/2B.2	Etiwanda Pipeline	Not expected to occur. Marginal habitat present within program area but no regional records within 100 years.
	Inland Feeder	Not expected to occur. Marginal habitat present within program area but no regional records within 100 years.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Meadows and seeps, marshes and swamps, chaparral, coastal scrub, cismontane woodland; sometimes alkaline, sometimes serpentine/Oct-Mar/25-2325	Rialto Pipeline	Not expected to occur. Marginal habitat present within program area but no regional records within 100 years.
	Upper Feeder	Not expected to occur. Marginal habitat present within program area but no regional records within 100 years.
	Yorba Linda Feeder	Not expected to occur. Marginal habitat present within program area but no regional records within 100 years.
<i>Nama stenocarpa</i> mud nama None/None/2B.2 Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan-July/16-1644	Etiwanda Pipeline	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present within the program area but there are no records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present within the program area but there are no records within the vicinity.
<i>Nasturtium gambelii</i> Gambel's water cress FE/CT/1B.1 Marshes and swamps (freshwater or brackish)/perennial rhizomatous herb/Apr-Oct/16-1087	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. Minimal suitable habitat is present within the program area but there are no records within the vicinity.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Navarretia peninsularis</i> Baja navarretia None/None/1B.2 Chaparral (openings), lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland; mesic/annual herb/June–Aug/4921–7550	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Navarretia prostrata</i> prostrate vernal pool navarretia None/None/1B.1 Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools; mesic/annual herb/Apr–July/10–3974	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records within the vicinity. A historic extirpated record of this species was documented within the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records within the vicinity. A historic extirpated record of this species was documented within the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records within the vicinity. A historic extirpated record of this species was documented within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no occurrence records of the species within the vicinity of the program area.
<i>Nemacladus secundiflorus</i> var. <i>robbinsii</i> Robbins' nemacladus None/None/1B.2	Etiwanda Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Chaparral, valley and foothill grassland; openings/annual herb/Apr-June/1148-5581	Rialto Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is not within the known geographic range for this species.
<i>Nolina cismontana</i> chaparral nolina None/None/1B.2 Chaparral, coastal scrub; sandstone or gabbro/perennial evergreen shrub/(Mar) May-July/459-4187	Etiwanda Pipeline	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat and sandy soils are present within the program area but there are no occurrence records of the species within the vicinity of the program area.
<i>Opuntia basilaris</i> var. <i>brachyclada</i> short-joint beavertail None/None/1B.2 Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper	Etiwanda Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
woodland/perennial stem succulent/Apr–June (Aug)/1394–5910	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Oreonana vestita</i> woolly mountain-parsley None/None/1B.3 Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest; gravel or talus/perennial herb/Mar–Sep/5299–11487	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Orobanche valida</i> ssp. <i>valida</i> Rock Creek broomrape None/None/1B.2 Chaparral, pinyon and juniper woodland; granitic/perennial herb (parasitic)/May–Sep/4101–6566	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Oxytropis oreophila</i> var. <i>oreophila</i> rock-loving oxytrope	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/2B.3 Alpine boulder and rock field, subalpine coniferous forest; gravelly or rocky/perennial herb/June–Sep/11155–12471	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Packera bernardina</i> San Bernardino ragwort None/None/1B.2 Meadows and seeps (mesic, sometimes alkaline), pebble plain, upper montane coniferous forest/perennial herb/May–July/5906–7550	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Parnassia cirrata</i> var. <i>cirrata</i> San Bernardino grass-of-Parnassus None/None/1B.3 Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; mesic, streamsides, sometimes calcareous/perennial herb/Aug–Sep/4101–8009	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Pediomelum castoreum</i> Beaver Dam breadroot None/None/1B.2 Joshua tree woodland, Mojavean desert scrub; sandy, washes and roadcuts/perennial herb/Apr–May/2001–5007	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Penstemon californicus</i> California beardtongue None/None/1B.2 Chaparral, lower montane coniferous forest, pinyon and juniper woodland; sandy/perennial herb/May–June (Aug)/3839–7550	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Pentachaeta aurea</i> ssp. <i>allenii</i> Allen's pentachaeta None/None/1B.1	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Coastal scrub (openings), valley and foothill grassland/annual herb/Mar–June/246–1710	Rialto Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity.
<i>Perideridia parishii</i> ssp. <i>parishii</i> Parish's yampah None/None/2B.2 Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest/perennial herb/June–Aug/4806–9847	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Petalonyx linearis</i> narrow-leaf sandpaper-plant None/None/2B.2 Mojavean desert scrub, Sonoran desert scrub; Sandy or rocky canyons/perennial shrub/(Jan–Feb)Mar–May(June–Dec)/-80–3660	Etiwanda Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Phacelia stellaris</i> Brand's star phacelia FC/None/1B.1 Coastal dunes, coastal scrub/annual herb/Mar–June/3–1316	Etiwanda Pipeline	Low potential to occur. Suitable coastal scrub is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable coastal scrub is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Moderate potential to occur. Suitable coastal scrub is present and there is a record of one recent occurrence of the species within 4 miles of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable coastal scrub is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area.
<i>Phlox dolichantha</i> Big Bear Valley phlox None/None/1B.2 Pebble plain, upper montane coniferous forest (openings)/perennial herb/May–July/6004–9748	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Physaria kingii</i> ssp. <i>bernardina</i> San Bernardino Mountains bladderpod FE/None/1B.1	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest; usually carbonate/perennial herb/May–June/6070–8862	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Poa atropurpurea</i> San Bernardino blue grass FE/None/1B.2 Meadows and seeps (mesic)/perennial rhizomatous herb/(Apr) May–July (Aug)/4462–8058	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco None/None/2B.2 Chaparral, cismontane woodland, coastal scrub, riparian woodland; sandy, gravelly/perennial herb/(July) Aug–Nov (Dec)/0–6894	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present within the program area but there are no recent occurrence records of the species within the vicinity of the program area. A historic record of this species was documented within the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present within the program area but there are no records of the species within the vicinity of the program area.
<i>Pyrrocoma uniflora</i> var. <i>gossypina</i> Bear Valley pyrrocoma None/None/1B.2 Meadows and seeps, pebble plain/perennial herb/July–Sep/5249–7550	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Ribes divaricatum</i> var. <i>parishii</i> Parish's gooseberry None/None/1A Riparian woodland/perennial deciduous shrub/Feb–Apr/213–988	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Low potential to occur. Suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. There is no suitable habitat present within the program area and there are no records of the species within the vicinity of the program area.
<i>Sagittaria sanfordii</i> Sanford's arrowhead	Etiwanda Pipeline	Not expected to occur. There is no suitable habitat present within the program area. One recent occurrence record of the species was documented within the vicinity.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/1B.2 Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb/May–Oct (Nov)/0–2137	Inland Feeder	Low potential to occur. Minimal suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. There is no suitable habitat present within the program area. One recent occurrence record of the species was documented within the vicinity.
	Upper Feeder	Not expected to occur. There is no suitable habitat present within the program area. One recent occurrence record of the species was documented within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
<i>Saltugilia latimeri</i> Latimer's woodland-gilia None/None/1B.2 Chaparral, Mojavean desert scrub, pinyon and juniper woodland; rocky or sandy, often granitic, sometimes washes/annual herb/Mar–June/1312–6238	Etiwanda Pipeline	Not expected to occur. There is no suitable habitat present within the program area and there are no records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Schoenus nigricans</i> black bog-rush None/None/2B.2 Marshes and swamps (often alkaline)/perennial herb/Aug–Sep/492–6566	Etiwanda Pipeline	Not expected to occur. There is no suitable habitat present within the program area and there are no records of the species within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Minimal suitable habitat is present and there is one recent occurrence record of the species immediately adjacent to the program area.
	Rialto Pipeline	Not expected to occur. There is no suitable habitat present within the program area.
	Upper Feeder	Not expected to occur. There is no suitable habitat present within the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i> southern mountains skullcap None/None/1B.2 Chaparral, cismontane woodland, lower montane coniferous forest; mesic/perennial rhizomatous herb/June–Aug/1394–6566	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Suitable habitat is present but there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Senecio aphanactis</i> chaparral ragwort None/None/2B.2 Chaparral, cismontane woodland, coastal scrub; sometimes alkaline/annual herb/Jan–Apr/49–2629	Etiwanda Pipeline	Low potential to occur. There is suitable habitat for the species within the program area but there are no recent occurrence records of the species within the vicinity of the program area. A historic record of this species was documented within the vicinity of the program area.
	Inland Feeder	Low potential to occur. There is suitable habitat for the species within the program area but there are no records within the vicinity.
	Rialto Pipeline	Low potential to occur. There is suitable habitat for the species within the program area but there are no records within the vicinity.
	Upper Feeder	Low potential to occur. There is suitable habitat for the species within the program area but there are no recent occurrence records of the species within the vicinity of the program area. A historic occurrence record of the species overlaps with the southern portion of the program area.
	Yorba Linda Feeder	Low potential to occur. There is suitable habitat for the species within the program area but there are no recent occurrence records of the species within the vicinity of the program area. A historic record of this species was documented within the vicinity of the program area.
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i> Parish's checkerbloom	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/CR/1B.2 Chaparral, cismontane woodland, lower montane coniferous forest/perennial herb/June–Aug/3281–8203	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Sidalcea malviflora</i> ssp. <i>dolosa</i> Bear Valley checkerbloom None/None/1B.2 Lower montane coniferous forest (meadows and seeps), meadows and seeps, riparian woodland, upper montane coniferous forest (meadows and seeps)/perennial herb/May–Aug/4905–8813	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Sidalcea neomexicana</i> salt spring checkerbloom None/None/2B.2 Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas; alkaline, mesic/perennial herb/Mar–June/49–5024	Etiwanda Pipeline	Low potential to occur. There is suitable habitat for the species within the program area but there are no records within the vicinity.
	Inland Feeder	Moderate potential to occur. Suitable habitat is present and there is one occurrence record of the species (unknown date) within 5 miles of the program area.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. One historic record of this species was documented within the vicinity.
	Upper Feeder	Moderate potential to occur. Suitable habitat is present and there is one historic occurrence record that overlaps with the western portion of the program area.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. Two historic record of this species was documented within the vicinity.
<i>Sidalcea pedata</i> bird-foot checkerbloom FE/CE/1B.1 Meadows and seeps (mesic), pebble plain/perennial herb/May–Aug/5249–8206	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Sphenopholis obtusata</i> prairie wedge grass None/None/2B.2 Cismontane woodland, meadows and seeps; mesic/perennial herb/Apr–July/984–6566	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present and there are no recent occurrence records of the species within the vicinity. One historic record of this species was documented within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
<i>Streptanthus campestris</i> southern jewelflower	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
None/None/1B.3 Chaparral, lower montane coniferous forest, pinyon and juniper woodland; rocky/perennial herb/(Apr) May–July/2953–7550	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range
<i>Symphyotrichum defoliatum</i> San Bernardino aster None/None/1B.2 Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov/7–6697	Etiwanda Pipeline	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. A historic record of the species was documented within the vicinity.
	Inland Feeder	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. Three historic records of the species were documented within the vicinity.
	Rialto Pipeline	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. Two historic records of the species were documented within the vicinity.
	Upper Feeder	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. Three historic records (two extirpated and one possibly extirpated) of the species occur within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable habitat is present but there are no recent occurrence records of the species within the vicinity of the program area. Two historic records of this species were documented within the vicinity, but are extirpated.
<i>Symphyotrichum greatae</i> Greata's aster None/None/1B.3	Etiwanda Pipeline	Not expected to occur. Outside of the known geographic range for the species. Known to occur in the San Gabriel Mountains.
	Inland Feeder	Not expected to occur. Outside of the known geographic range for the species. Known to occur in the San Gabriel Mountains.

Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland; mesic/perennial rhizomatous herb/June–Oct/984–6598	Rialto Pipeline	Not expected to occur. Outside of the known geographic range for the species. Known to occur in the San Gabriel Mountains.
	Upper Feeder	Not expected to occur. Outside of the known geographic range for the species. Known to occur in the San Gabriel Mountains.
	Yorba Linda Feeder	Not expected to occur. Outside of the known geographic range for the species. Known to occur in the San Gabriel Mountains.
<i>Taraxacum californicum</i> California dandelion FE/None/1B.1 Meadows and seeps (mesic)/perennial herb/May–Aug/5315–9190	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Thelypodium stenopetalum</i> slender-petaled thelypodium FE/CE/1B.1 Meadows and seeps (mesic, alkaline)/perennial herb/May–Sep/5249–8206	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
<i>Thelypteris puberula</i> var. <i>sonorensis</i> Sonoran maiden fern None/None/2B.2 Meadows and seeps (seeps and streams)/perennial rhizomatous herb/Jan–Sep/164–2005	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present and there is one recent occurrence within 3 miles of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
<i>Thysanocarpus rigidus</i> rigid fringe-pod None/None/1B.2 Pinyon and juniper woodland; Dry rocky slopes/annual herb/Feb–May/1969–7222	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat is present and there are no recent occurrence records of the species within the vicinity of the program area. One historic record of this species was documented within the vicinity.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range.
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's trichocoronis None/None/2B.1 Meadows and seeps, marshes and swamps, riparian forest, vernal pools; alkaline/annual herb/May–Sep/16–1431	Etiwanda Pipeline	Not expected to occur. No suitable habitat is present and there are no occurrences within the vicinity.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range.

APPENDIX F-8
Special-Status Plants Detected or Potentially Occurring in the Study Area

Scientific Name Common Name Status (Federal/State/CRPR) Primary Habitat Associations/Life Form/Blooming Period/Elevation Range (feet)	Pipeline	Potential to Occur
	Upper Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrences within the vicinity.
<i>Viola pinetorum</i> var. <i>grisea</i> grey-leaved violet None/None/1B.3 Meadows and seeps, subalpine coniferous forest, upper montane coniferous forest/perennial herb/Apr–July/4921–11159	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
<i>Viola purpurea</i> ssp. <i>aurea</i> golden violet None/None/2B.2 Great Basin scrub, pinyon and juniper woodland; sandy/perennial herb/Apr–June/3281–8206	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known elevation range and not within the known geographic range for this species.

Appendix F-9

Special-Status Wildlife Species Potential to Occur

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Invertebrates		
Crotch bumble bee <i>Bombus crotchii</i> None/CSE Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	Etiwanda Pipeline	Low potential to occur. Food plants are present in the program area, but the species has no records within 75 years.
	Inland Feeder	Low potential to occur. Food plants are present in the program area, but the species has no records within 75 years.
	Rialto Pipeline	Low potential to occur. Food plants are present in the program area, but the species has no records within 75 years.
	Upper Feeder	Low potential to occur. Food plants are present in the program area, but the species has no records within 75 years.
	Yorba Linda Feeder	Low potential to occur. Food plants are present in the program area, but the species has no records within 75 years.
western bumble bee <i>Bombus occidentalis</i> None/CST Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
San Diego fairy shrimp <i>Branchinecta sandiegonensis</i> FE/None Vernal pools, non-vegetated ephemeral pools	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
quino checkerspot butterfly <i>Euphydryas editha quino</i> FE/None Sunny openings within chaparral and coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants: <i>Plantago erecta</i> , <i>P. insularis</i> , and <i>Orthocarpus purpurascens</i> .	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
Delhi Sands flower-loving fly <i>Rhaphiomidas terminatus abdominalis</i> FE/None Delhi fine sandy soils and dunes, scrub and ruderal vegetation in the sand verbena series with <50% cover	Etiwanda Pipeline	Not expected to occur. The program area does not overlap the mapped distribution of Delhi sands.
	Inland Feeder	Not expected to occur. The program area does not overlap the mapped distribution of Delhi sands.
	Rialto Pipeline	Not expected to occur. The program area does not overlap the mapped distribution of Delhi sands.
	Upper Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Not expected to occur. The program area does not overlap the mapped distribution of Delhi sands.
Riverside fairy shrimp <i>Streptocephalus woottoni</i> FE/None Vernal pools, non-vegetated ephemeral pools	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.

APPENDIX F-9

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
Fish		
Santa Ana sucker <i>Catostomus santaanae</i> FT/SSC Small, shallow, cool, clear streams less than 7 meters (23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
arroyo chub <i>Gila orcuttii</i> None/SSC Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present within program area.
steelhead - southern California DPS <i>Oncorhynchus mykiss irideus</i> pop. 10 FE/None Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Santa Ana speckled dace <i>Rhinichthys osculus</i> ssp. 7 None/SSC	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Low potential to occasionally occur. Suitable habitat is seasonally present (no perennial water) and there are historic occurrence records of the species from the region.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system	Rialto Pipeline	Low potential to occasionally occur. Suitable habitat is seasonally present (no perennial water) and there are historic occurrence records of the species upstream of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Mohave tui chub <i>Siphateles bicolor mohavensis</i> FE/SE, FP Lacustrine ponds or pools with minimum water depth of 4 feet and some freshwater flow for a mineralized and alkaline environment; aquatic plants (e.g., <i>Ruppia maritima</i> , <i>Typha</i> spp., and <i>Juncus</i> spp.), that provide habitat for aquatic invertebrate prey and substrate for egg attachment	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Amphibians		
arroyo toad <i>Anaxyrus californicus</i> FE/SSC Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Etiwanda Pipeline	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Inland Feeder	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat present, although there are records upstream from Cajon Wash.
	Upper Feeder	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
large-blotched salamander <i>Ensatina klauberi</i> None/SSC	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat within the program area and there are no records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat present within program area.

APPENDIX F-9

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Moist and shaded evergreen and deciduous woodlands	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present and no occurrence record of the species within the vicinity of the program area.
foothill yellow-legged frog <i>Rana boylei</i> None/CST Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
California red-legged frog <i>Rana draytonii</i> FT/SSC Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Etiwanda Pipeline	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Inland Feeder	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Rialto Pipeline	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Upper Feeder	Not expected to occur. No suitable habitat present and there are no current records within the vicinity.
	Yorba Linda Feeder	Not expected to occur. One potentially suitable habitat feature present but there are no records within the vicinity.
southern mountain yellow-legged frog <i>Rana muscosa</i> FE/SE, SSC Lakes, ponds, meadow streams, isolated pools, and open riverbanks; rocky canyons in narrow canyons and in chaparral	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Not expected to occur. Lower elevation suitable habitat is present in City Creek, but recent USGS surveys in historically occupied upper reaches have been negative.
	Rialto Pipeline	Not expected to occur. No suitable habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present within program area.
western spadefoot <i>Spea hammondi</i> None/SSC Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley-foothill woodlands, pastures, and other agriculture	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within the program area and there are no records within the vicinity.
	Inland Feeder	Not expected to occur. No suitable habitat present within the program area and there are no records within the vicinity.
	Rialto Pipeline	Moderate potential to occur where water detention basins occur or other locations of temporary rain pools.
	Upper Feeder	Not expected to occur. No suitable habitat present within the program area and there are no records within the vicinity.
	Yorba Linda Feeder	Moderate potential to occur where water detention basins occur or other locations of temporary rain pools.
California newt <i>Taricha torosa</i> (Monterey Co. south only) None/SSC (Monterey Co south) Wet forests, oak forests, chaparral, and rolling grassland	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present within program area.
Reptiles		
southern California silvery legless <i>Anniella stebbinsi</i> None/SSC Stabilized dunes, beaches, dry washes, chaparral, scrubs, and pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Etiwanda Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area.
California glossy snake	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat within the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
<i>Arizona elegans occidentalis</i> None/SSC Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable habitat within the program area.
	Yorba Linda Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
orangethroat whiptail <i>Aspidoscelis hyperythra</i> None/SSC Low-elevation coastal scrub, chaparral, and valley-foothill hardwood	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat within the program area and there are no records within the vicinity.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area.
	Upper Feeder	High potential to occur. Suitable habitat within the program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat within the program area and there are no records within the vicinity.
southern rubber boa <i>Charina umbratica</i> None/ST Montane oak-conifer and mixed-conifer forests, montane chaparral, wet meadows; usually in vicinity of streams or wet meadows. Found from approximately 5,000 to 8,200 feet.	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Inland Feeder	Not expected to occur. The program area is well below the lower elevation limit for this species.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range.
red diamondback rattlesnake <i>Crotalus ruber</i> None/SSC	Etiwanda Pipeline	High potential to occur. Suitable habitat is present within the vicinity of the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Rialto Pipeline	High potential to occur. Suitable habitat is present within the vicinity of the program area.
	Upper Feeder	High potential to occur. Suitable habitat is present within the vicinity of the program area.
	Yorba Linda Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
western pond turtle <i>Emys marmorata</i> None/SSC Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat within the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat present within the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat present within the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat within the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat present within the program area.
Blainville's horned lizard <i>Phrynosoma blainvillii</i> None/SSC Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley-foothill hardwood, conifer, riparian, pine-cypress, juniper, and annual grassland habitats	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat within the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are recent occurrence records of the species within the program area.
	Yorba Linda Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are historic occurrence records of the species within the program area.
coast patch-nosed snake <i>Salvadora hexalepis virgultea</i> None/SSC Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Etiwanda Pipeline	Moderate potential to occur in sage scrub areas.
	Inland Feeder	Moderate potential to occur in sage scrub areas.
	Rialto Pipeline	Moderate potential to occur in sage scrub areas.
	Upper Feeder	Moderate potential to occur in sage scrub areas.
	Yorba Linda Feeder	Moderate potential to occur in sage scrub areas with a record within the vicinity.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
two-striped gartersnake <i>Thamnophis hammondi</i> None/SSC Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Etiwanda Pipeline	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Inland Feeder	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Rialto Pipeline	High potential to occur. Suitable habitat within the program area.
	Upper Feeder	Not expected to occur. No suitable habitat within the program area and there are no records within the vicinity.
	Yorba Linda Feeder	High potential to occur. Suitable habitat within the program area.
Birds		
tricolored blackbird <i>Agelaius tricolor</i> (nesting colony) None/ST Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	High potential to occur. Suitable habitat present near the program area and there are recent occurrence records of the species within the program area.
grasshopper sparrow <i>Ammodramus savannarum</i> (nesting) None/SSC Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Etiwanda Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area and there are no occurrence records of the species within the program area.
	Inland Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are no occurrence records of the species within the program area.
	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area and there are no occurrence records of the species within the program area.
	Upper Feeder	Moderate potential to occur. Suitable habitat within the program area and there are no records within the vicinity.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are no occurrence records of the species within the program area.
golden eagle <i>Aquila chrysaetos</i> (nesting & wintering) None/FP, WL Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Low potential to occur. Marginally suitable habitat present within the program area and there are historic occurrence records of the species within the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat present within the proposed program and there are no occurrences within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Low potential to occur. Marginally suitable habitat present within the program area and there are recent occurrence records of the species within the program area.
long-eared owl <i>Asio otus</i> (nesting) None/SSC Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area, though there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are historic occurrence records of the species within the vicinity of the program area.
burrowing owl <i>Athene cunicularia</i> (burrow sites & some wintering sites) None/SSC Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat present within program area, but there are recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat present within program area, but there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat present within program area, but there are recent occurrence records of the species within the vicinity of the program area.

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Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Upper Feeder	Moderate potential to occur. Suitable habitat is present within the program area and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat is present within the program area and there are recent occurrence records of the species within the vicinity of the program area.
Swainson's hawk <i>Buteo swainsoni</i> (nesting) None/ST Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Etiwanda Pipeline	Not expected to occur (nesting). Outside the species known nesting range. Low potential to occur very occasionally occur as a migrant.
	Inland Feeder	Not expected to occur (nesting). Outside the species known nesting range Low potential to occur very occasionally occur as a migrant.
	Rialto Pipeline	Not expected to occur (nesting). Outside the species known nesting range Low potential to occur very occasionally occur as a migrant.
	Upper Feeder	Not expected to occur (nesting). Outside the species known nesting range Low potential to occur very occasionally occur as a migrant.
	Yorba Linda Feeder	Not expected to occur (nesting). Outside the species known nesting range Low potential to occur very occasionally occur as a migrant.
coastal cactus wren <i>Campylorhynchus brunneicapillus sandiegensis</i> None/SSC Southern cactus scrub patches	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within the program area.
	Inland Feeder	High potential to occur. Suitable nesting habitat is present in alluvial scrub vegetation; however, the program area is not within Orange or San Diego counties.
	Rialto Pipeline	Present. This species was confirmed present during geotechnical nesting bird surveys.
	Upper Feeder	Low potential to occur. Suitable nesting habitat limited in distribution.
	Yorba Linda Feeder	Low potential to occur. Suitable nesting habitat limited in distribution.
western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i> (nesting) FT, None/SE Nests in dense, wide riparian woodlands and forest with well-developed understories	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within the program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within the program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within the program area.

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Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within the program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within the program area.
yellow rail <i>Coturnicops noveboracensis</i> None/SSC Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within the program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within the program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable nesting habitat limited in distribution.
black swift <i>Cypseloides niger</i> (nesting) None/SSC Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats	Etiwanda Pipeline	Not expected to occur. The program area is outside of the species' known geographic range and there is No suitable habitat present.
	Inland Feeder	Not expected to occur. The program area is outside of the species' known geographic range and there is No suitable habitat present.
	Rialto Pipeline	Not expected to occur. The program area is outside of the species' known geographic range and there is No suitable habitat present.
	Upper Feeder	Not expected to occur. The program area is outside of the species' known geographic range and there is No suitable habitat present.
	Yorba Linda Feeder	Not expected to occur. The program area is outside of the species' known geographic range and there is No suitable habitat present.
white-tailed kite <i>Elanus leucurus</i> (nesting) None/FP Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Low potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat present within the proposed program and there are no occurrences within the vicinity of the program area.
southwestern willow flycatcher <i>Empidonax traillii extimus</i> (nesting) FE/SE Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Low potential to occur. Marginally suitable habitat present within the program area and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within program area.
American peregrine falcon <i>Falco peregrinus anatum</i> FDL/FP, SDL Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within program area.
bald eagle <i>Haliaeetus leucocephalus</i> (nesting & wintering) FDL, None/SE, FP Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within program area.
yellow-breasted chat <i>Icteria virens</i> (nesting) None/SSC Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.
loggerhead shrike <i>Lanius ludovicianus</i> (nesting) None/SSC Nests and forages in open habitats with scattered shrubs, trees, or other perches	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat within the program area and there are no records within the vicinity.
	Inland Feeder	High potential to occur. High quality suitable habitat within the program area.
	Rialto Pipeline	High potential to occur. High quality suitable habitat within the program area.
	Upper Feeder	Moderate potential to occur. Suitable habitat within the program area, but there are no records within the vicinity.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat within the program area, but there are no records within the vicinity.
California black rail <i>Laterallus jamaicensis coturniculus</i> None/FP, ST Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Low potential to occur. Suitable nesting habitat limited in distribution.
coastal California gnatcatcher <i>Poliophtila californica californica</i> FT/SSC Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Present. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area. Observed during 2017 protocol surveys.
	Rialto Pipeline	Moderate potential to occur. Suitable nesting habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Present. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area. Observed during 2017 protocol surveys.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat present within the program area and there are recent occurrence records of the species within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
purple martin <i>Progne subis</i> (nesting) None/SSC Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways	Etiwanda Pipeline	Not expected to occur. Program area outside current known nesting range.
	Inland Feeder	Not expected to occur. Program area outside current known nesting range.
	Rialto Pipeline	Not expected to occur. Program area outside current known nesting range.
	Upper Feeder	Not expected to occur. Program area outside current known nesting range.
	Yorba Linda Feeder	Not expected to occur. Program area outside current known nesting range.
bank swallow <i>Riparia riparia</i> (nesting) None/ST Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within program area.
yellow warbler <i>Setophaga petechia</i> (nesting) None/SSC Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	High potential to occur. Suitable habitat present within the program area and there are recent occurrence records of the species within the program area.
California least tern <i>Sterna antillarum browni</i> FE/FP, SE Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable nesting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable nesting habitat present within program area.
least Bell's vireo	Etiwanda Pipeline	Not expected to occur. No suitable nesting habitat present within program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
<i>Vireo bellii pusillus</i> (nesting) FE/SE Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Inland Feeder	Present. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area. Observed during 2017 protocol surveys.
	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area though there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable nesting habitat present within program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat present within the program area and there are recent occurrence records of the species within the program area. Not observed during 2016 protocol surveys.
Mammals		
pallid bat <i>Antrozous pallidus</i> None/SSC Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Etiwanda Pipeline	Low potential to occur. Minimal suitable roosting and foraging habitat present within the program area and there are no occurrence documented within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Suitable roosting and foraging habitat present within the program area though there are no occurrences documented within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable roosting and foraging habitat present within the program area though there are no occurrences documented within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable roosting and foraging habitat present within the program area and there is 1 historic occurrence documented within the vicinity of the program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable roosting and foraging habitat present within the program area though there are no occurrences documented within the vicinity of the program area.
Dulzura pocket mouse <i>Chaetodipus californicus femoralis</i> None/SSC	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within program area.
	Inland Feeder	Moderate potential to occur. Marginally suitable habitat present within the program area and there are historic occurrence records of the species within the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Open habitat, coastal scrub, chaparral, oak woodland, chamise chaparral, mixed-conifer habitats; disturbance specialist; 0 to 3,000 feet above mean sea level	Rialto Pipeline	Moderate potential to occur. Marginally suitable habitat present within the program area and there are historic occurrence records of the species within the program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat present within program area.
northwestern San Diego pocket mouse <i>Chaetodipus fallax fallax</i> None/SSC Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland	Etiwanda Pipeline	Moderate potential to occur. Marginally suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
pallid San Diego pocket mouse <i>Chaetodipus fallax pallidus</i> None/SSC Desert wash, desert scrub, desert succulent scrub, and pinyon-juniper woodland	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known elevation range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Mexican long-tongued bat <i>Choeronycteris mexicana</i> None/SSC Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland; roosts in caves, mines, and buildings	Etiwanda Pipeline	Not expected to occur. No suitable roosting habitat present within program area.
	Inland Feeder	Not expected to occur. No suitable roosting habitat present within program area.
	Rialto Pipeline	Not expected to occur. No suitable roosting habitat present within program area.
	Upper Feeder	Not expected to occur. No suitable roosting habitat present within program area.
	Yorba Linda Feeder	Not expected to occur. No suitable roosting habitat present within program area.
San Bernardino kangaroo rat <i>Dipodomys merriami parvus</i>	Etiwanda Pipeline	Low potential to occur. Low quality suitable habitat is present but there are recent occurrence records of the species within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
FE/SSC Sparse scrub habitat, alluvial scrub/coastal scrub habitats on gravelly and sandy soils near river and stream terraces	Inland Feeder	Present. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area. Observed during 2017 protocol surveys.
	Rialto Pipeline	Present. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area. Observed during 2017 protocol surveys.
	Upper Feeder	Low potential to occur. Low quality suitable habitat is present but there are recent occurrence records of the species within the vicinity of the program area. Not observed during 2017 surveys.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Stephens' kangaroo rat <i>Dipodomys stephensi</i> FE/ST Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Low potential. Suitable habitat is limited in distribution.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
western mastiff bat <i>Eumops perotis californicus</i> None/SSC Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Etiwanda Pipeline	Moderate potential to occur. Suitable roosting habitat and Minimal foraging habitat present within the program area and there are recent occurrences documented within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Suitable roosting habitat and marginally suitable foraging habitat present within the program area and there are recent occurrences documented within the vicinity of the program area.
	Rialto Pipeline	Moderate potential to occur. Suitable roosting habitat and marginally suitable foraging habitat present within the program area and there are recent occurrences documented within the vicinity of the program area.
	Upper Feeder	Moderate potential to occur. Suitable roosting habitat and Minimal foraging habitat present within the program area and there are recent occurrences documented within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Moderate potential to occur. Suitable roosting habitat and Minimal foraging habitat present within the program area and there are historic occurrences documented within the vicinity of the program area.
San Bernardino flying squirrel <i>Glaucomys sabrinus californicus</i> None/SSC Coniferous and deciduous forests, including riparian forests	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs below current known elevation range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
western yellow bat <i>Lasiurus xanthinus</i> None/SSC Valley-foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Etiwanda Pipeline	Not expected to occur. No suitable roosting habitat and minimal foraging habitat present within the program area.
	Inland Feeder	Not expected to occur. No suitable roosting habitat and minimal foraging habitat present within the program area.
	Rialto Pipeline	Moderate potential to occur. Suitable roosting habitat and minimal foraging habitat present within the program area. There is a historic occurrence documented within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable roosting habitat and minimal foraging habitat present within the program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable roosting habitat and minimal foraging habitat present within the program area. There is a historic occurrence documented within the vicinity of the program area.
lesser long-nosed bat <i>Leptonycteris yerbabuenae</i> FE/None Sonoran desert scrub, semi-desert grasslands, lower oak woodlands	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
San Diego black-tailed jackrabbit <i>Lepus californicus bennettii</i> None/SSC	Etiwanda Pipeline	Not expected to occur. No suitable habitat present within the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.

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Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Rialto Pipeline	Present. This species was confirmed present during geotechnical nesting bird surveys.
	Upper Feeder	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
south coast marsh vole <i>Microtus californicus stephensi</i> None/SSC Tidal marshes	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
San Diego desert woodrat <i>Neotoma lepida intermedia</i> None/SSC Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Etiwanda Pipeline	Low potential to occur. Marginally suitable habitat present within the program area and there are recent occurrence records of the species within the program area.
	Inland Feeder	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Moderate potential to occur. Suitable habitat present within the program area and there are recent occurrence records of the species within the program area.
	Yorba Linda Feeder	Low potential to occur. Marginally suitable habitat present within the program area.
pocketed free-tailed bat <i>Nyctinomops femorosaccus</i> None/SSC Pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, and buildings	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
	Yorba Linda Feeder	Low potential to occur. Minimal suitable habitat is present and there are no occurrence records of the species within the vicinity of the program area.
big free-tailed bat <i>Nyctinomops macrotis</i> None/SSC Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	Etiwanda Pipeline	Low potential to occur. Low quality foraging habitat, but minimal roosting habitat present within the program area.
	Inland Feeder	Low potential to occur. Suitable foraging habitat present within the program area though there are no occurrences documented within the vicinity of the program area.
	Rialto Pipeline	Low potential to occur. Suitable foraging habitat present within the program area. One recent occurrence within the vicinity of the program area.
	Upper Feeder	Low potential to occur. Low quality foraging habitat, but minimal roosting habitat present within the program area.
	Yorba Linda Feeder	Low potential to occur. Suitable foraging habitat present within the program area though there are no occurrences documented within the vicinity of the program area.
southern grasshopper mouse <i>Onychomys torridus ramona</i> None/SSC Grassland and sparse coastal scrub	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Rialto Pipeline	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Upper Feeder	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat is present and there are recent occurrence records of the species within the vicinity of the program area.
desert bighorn sheep <i>Ovis canadensis nelsoni</i> None/FP Steep slopes and cliffs, rough and rocky topography, sparse vegetation; also canyons, washes, and alluvial fans	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.

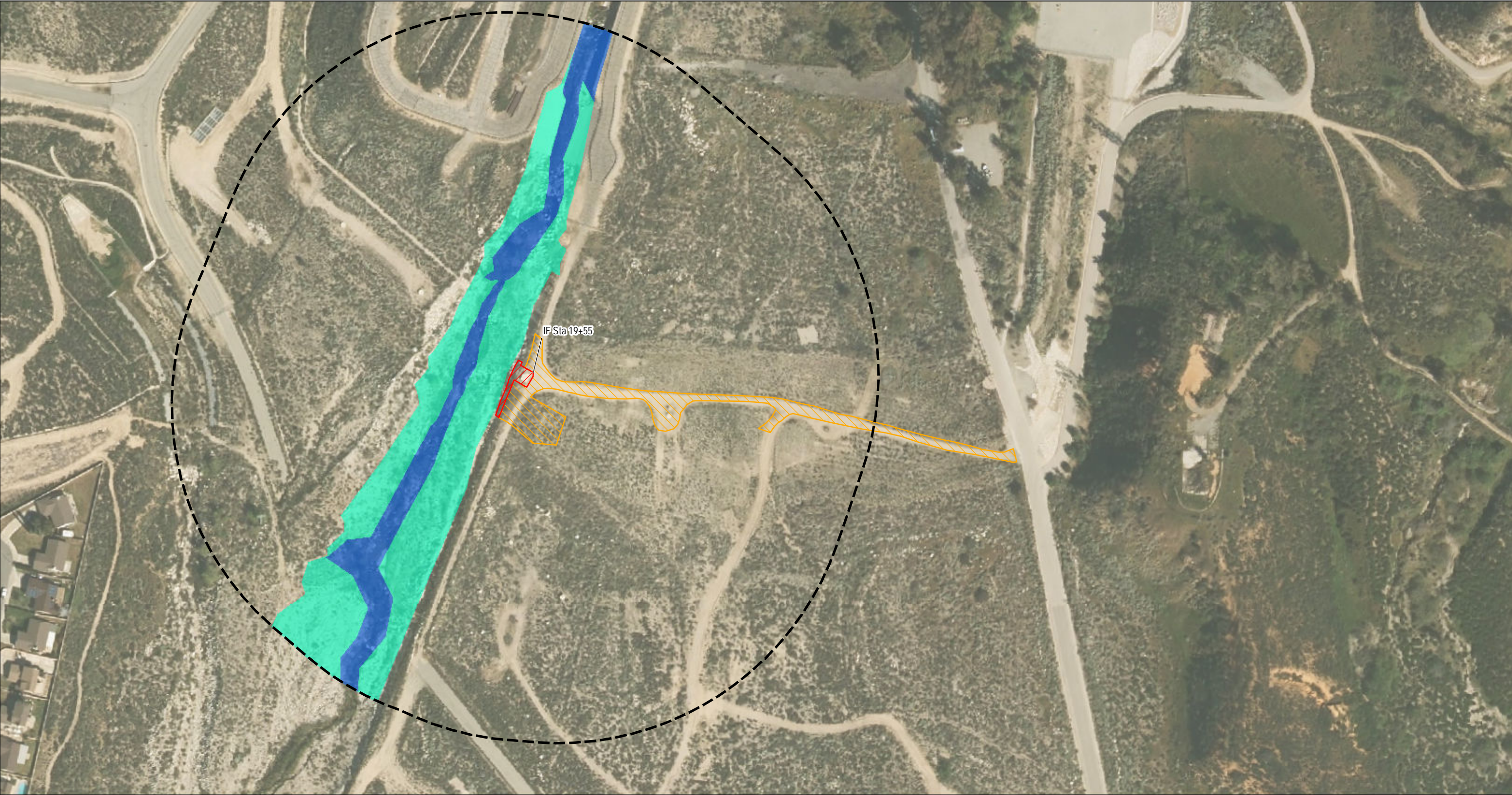
APPENDIX F-9

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

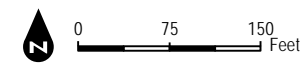
Common Name Scientific Name Status (Federal/State) Habitat	Pipeline	Potential to Occur
white-eared pocket mouse <i>Perognathus alticolus alticolus</i> None/SSC Arid ponderosa pine communities	Etiwanda Pipeline	Not expected to occur. Program area occurs outside current known range.
	Inland Feeder	Not expected to occur. Program area occurs outside current known range.
	Rialto Pipeline	Not expected to occur. Program area occurs outside current known range.
	Upper Feeder	Not expected to occur. Program area occurs outside current known range.
	Yorba Linda Feeder	Not expected to occur. Program area occurs outside current known range.
Los Angeles pocket mouse <i>Perognathus longimembris brevinasus</i> None/SSC Lower-elevation grassland, alluvial sage scrub, and coastal scrub	Etiwanda Pipeline	Low potential to occur. Minimal suitable vegetation and sandy substrate present, but there are no historic occurrence records of the species within the program area.
	Inland Feeder	High potential to occur. Suitable habitat present within the program area and there are historic occurrence records of the species within the program area.
	Rialto Pipeline	High potential to occur. Suitable habitat present within the program area and there are historic occurrence records of the species within the program area.
	Upper Feeder	Low potential to occur. Minimal suitable vegetation and sandy substrate present, but there are no historic occurrence records of the species within the program area.
	Yorba Linda Feeder	Not expected to occur. No suitable habitat/soils present within program area.
American badger <i>Taxidea taxus</i> None/SSC Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Etiwanda Pipeline	Low potential to occur. Minimal suitable habitat present within the proposed program and there are no occurrences within the vicinity of the program area.
	Inland Feeder	Moderate potential to occur. Suitable habitat present within the proposed program, but there are no occurrences within the vicinity of the program area.
	Rialto Pipeline	Moderate potential to occur. Suitable habitat present within the proposed program, but there are no occurrences within the vicinity of the program area.
	Upper Feeder	Not expected to occur. No suitable habitat present within program area.
	Yorba Linda Feeder	Moderate potential to occur. Suitable habitat present within the proposed program, but there are no occurrences within the vicinity of the program area.

Appendix F-10

Jurisdictional Wetlands




- | | | |
|-----------------------------------|--|-----------|
| Survey Area | Waters of the U.S. and State (Wetland) | Temporary |
| Jurisdictional Delineation | | |
| Waters of the State Only | Permanent | |




SOURCE: Eagle Aerial 2015




 Survey Area

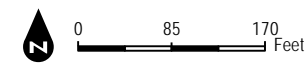
Jurisdictional Delineation

 Waters of the State Only

Impacts

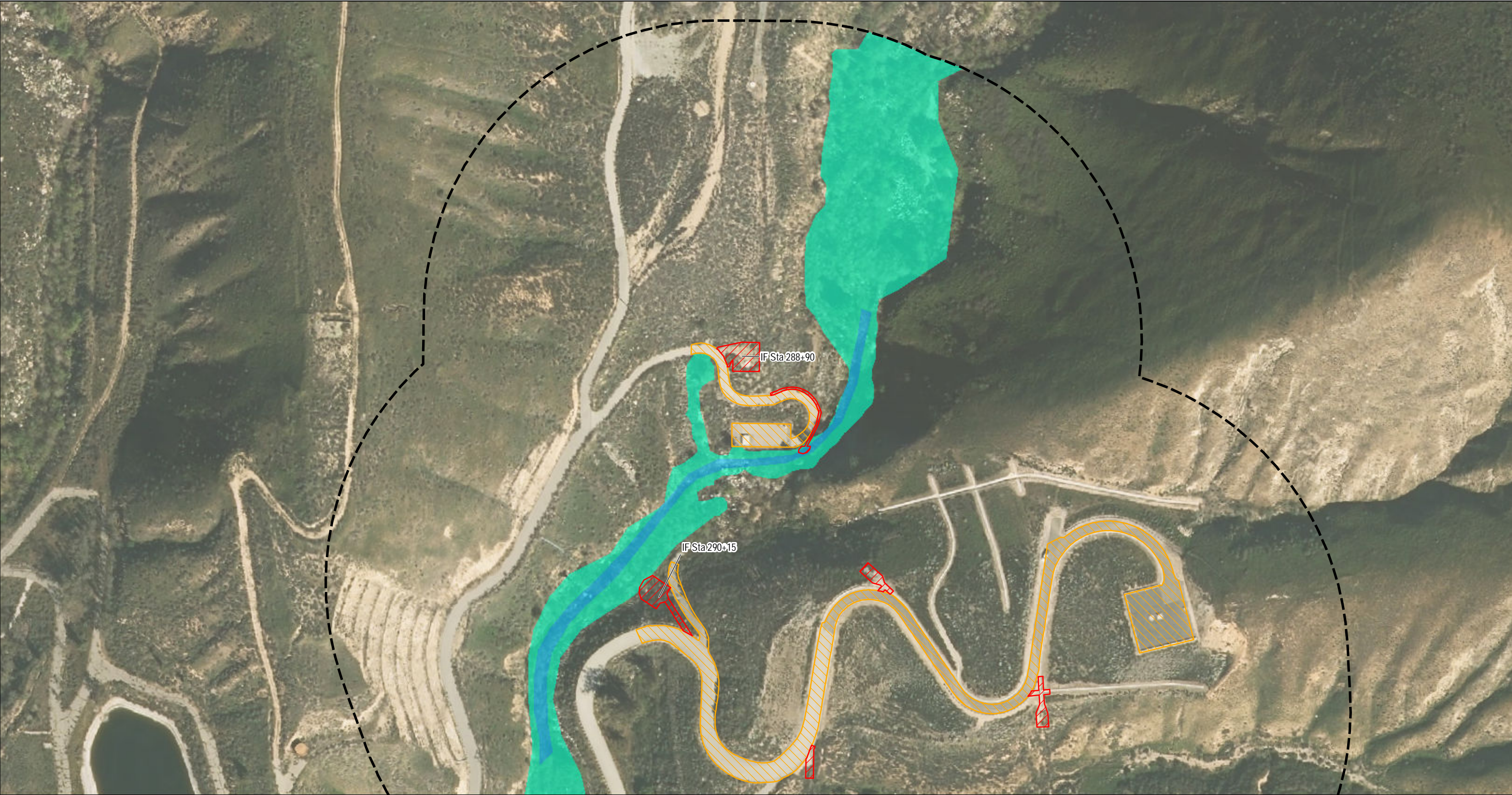
 Permanent





 Temporary




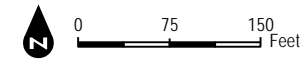
SOURCE: Eagle Aerial 2015

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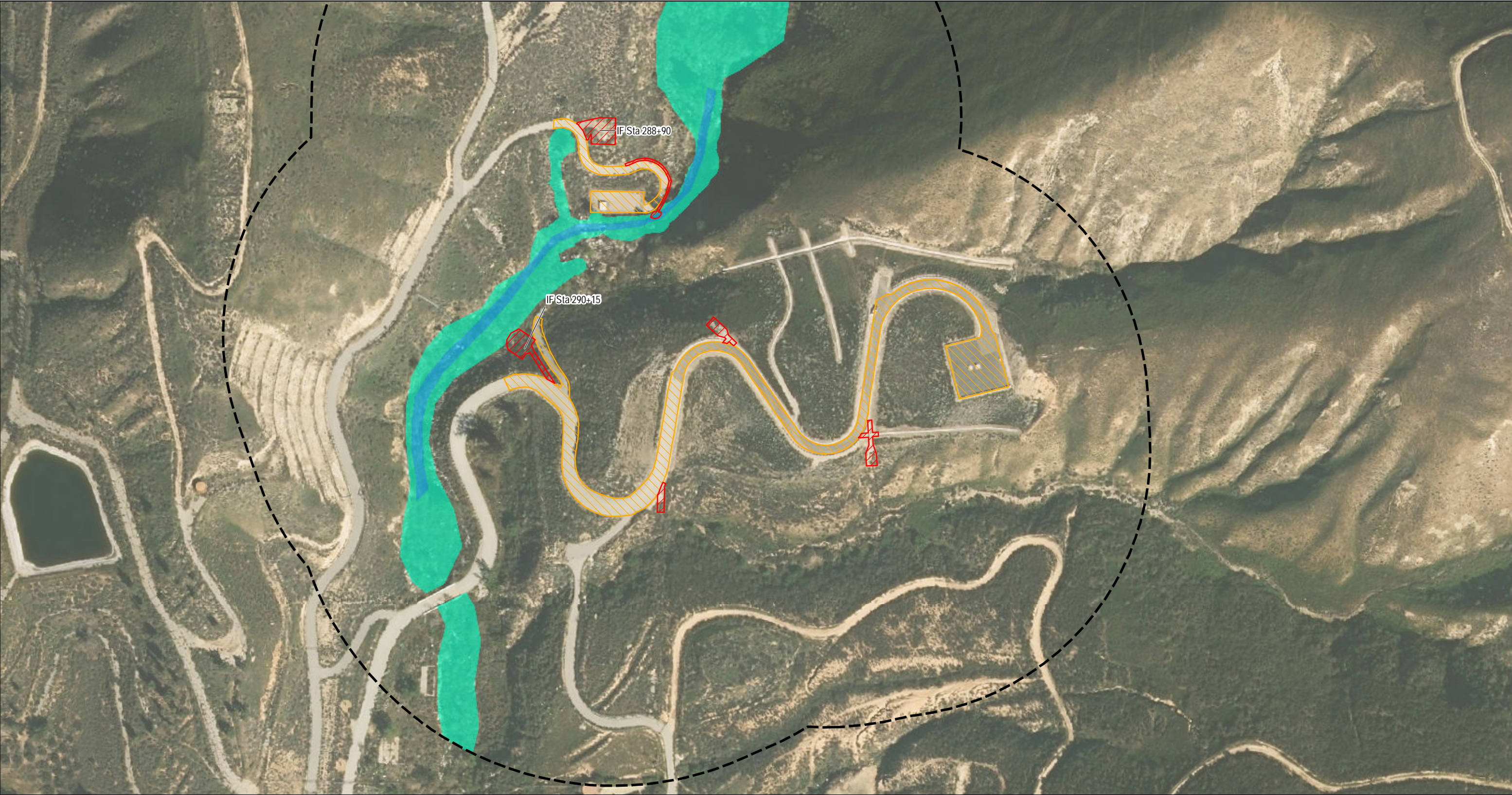







 Survey Area
Jurisdictional Delineation
 Waters of the State Only
 Waters of the U.S. and State (Nonwetland Waters)
 Temporary

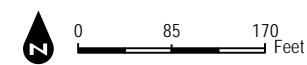
Impacts
 Permanent



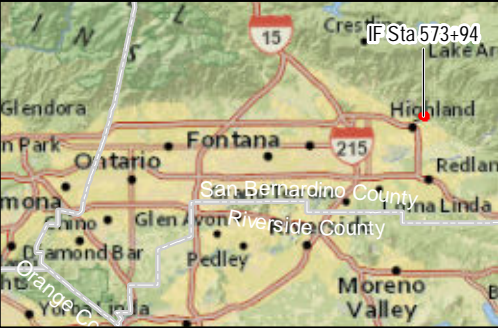
SOURCE: Eagle Aerial 2015



-  Survey Area
-  Waters of the U.S. and State (Nonwetland Waters)
-  Temporary
- Jurisdictional Delineation**
-  Waters of the State Only
-  Permanent



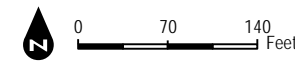
SOURCE: Eagle Aerial 2015



Survey Area Temporary

Impacts


Permanent





SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



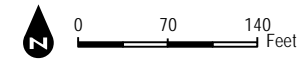
-  Survey Area

 Jurisdictional Delineation

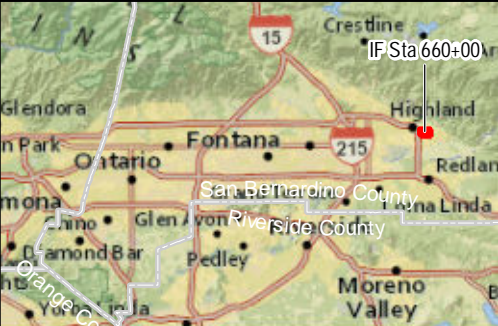
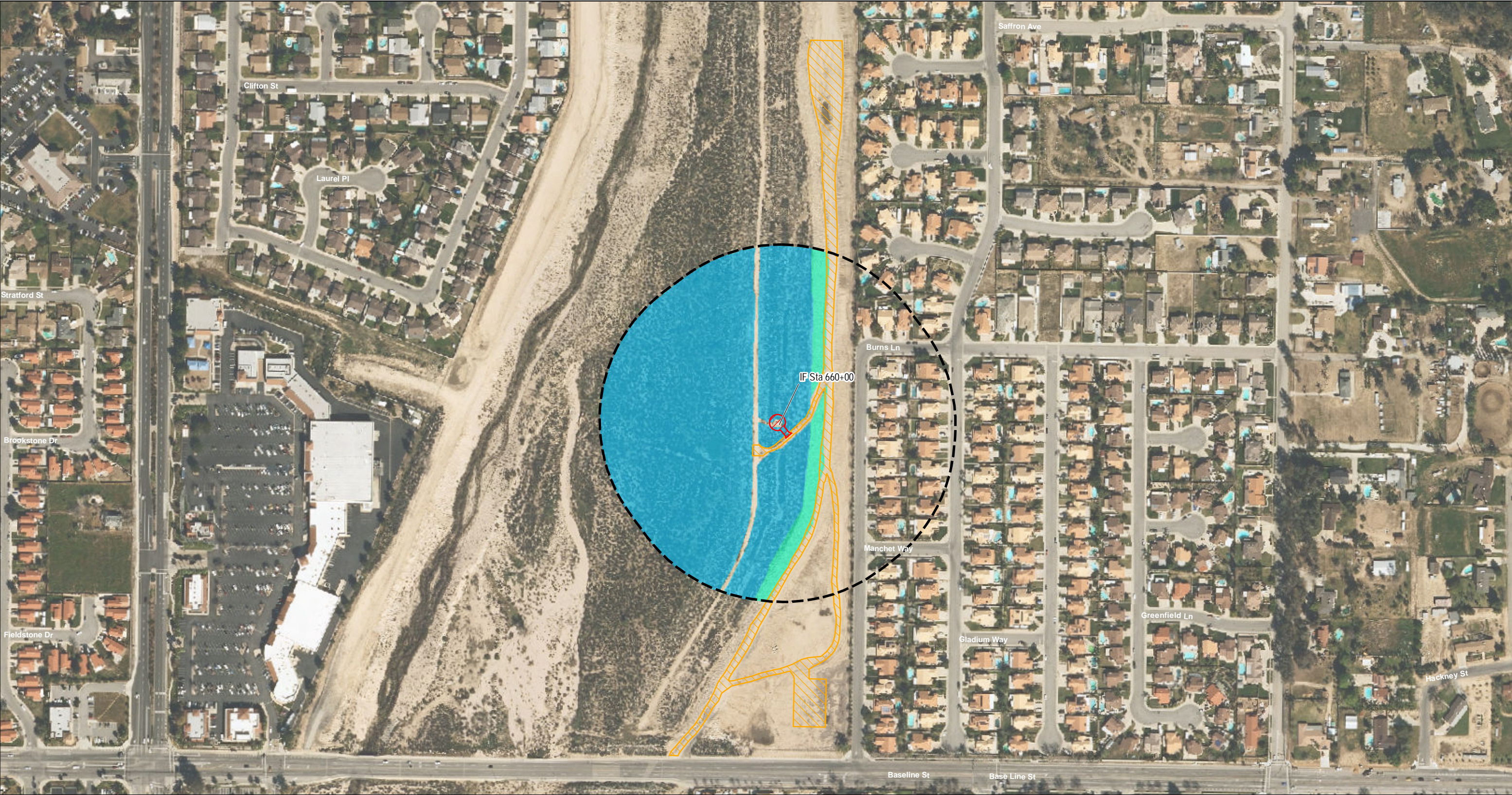
 Waters of the State Only
- Impacts




 Permanent

 Temporary





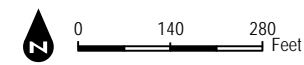
SOURCE: Eagle Aerial 2015



 Survey Area  Waters of the U.S. and State (Nonwetland Waters)  Temporary

Jurisdictional Delineation **Impacts**

 Waters of the State Only  Permanent

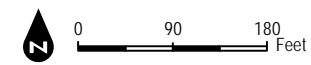


SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

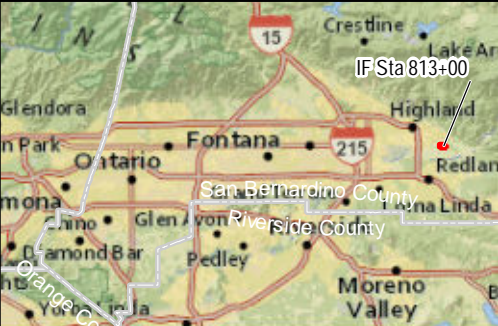
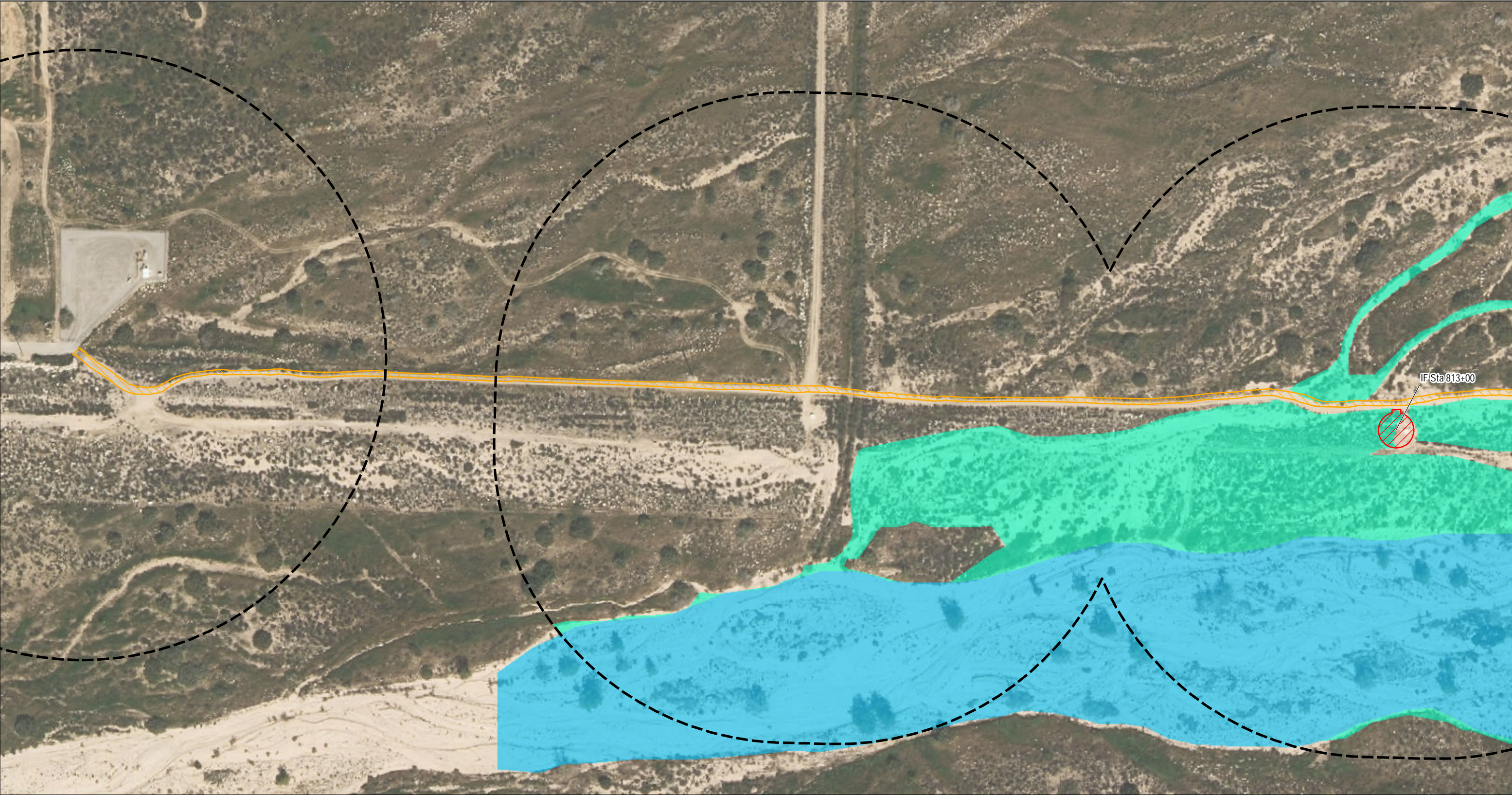


- | | | |
|-----------------------------------|--|-----------|
| Survey Area | Waters of the U.S. and State (Nonwetland Waters) | Temporary |
| Jurisdictional Delineation | Impacts | |
| Waters of the State Only | Permanent | |

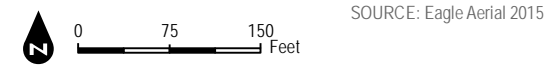


SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

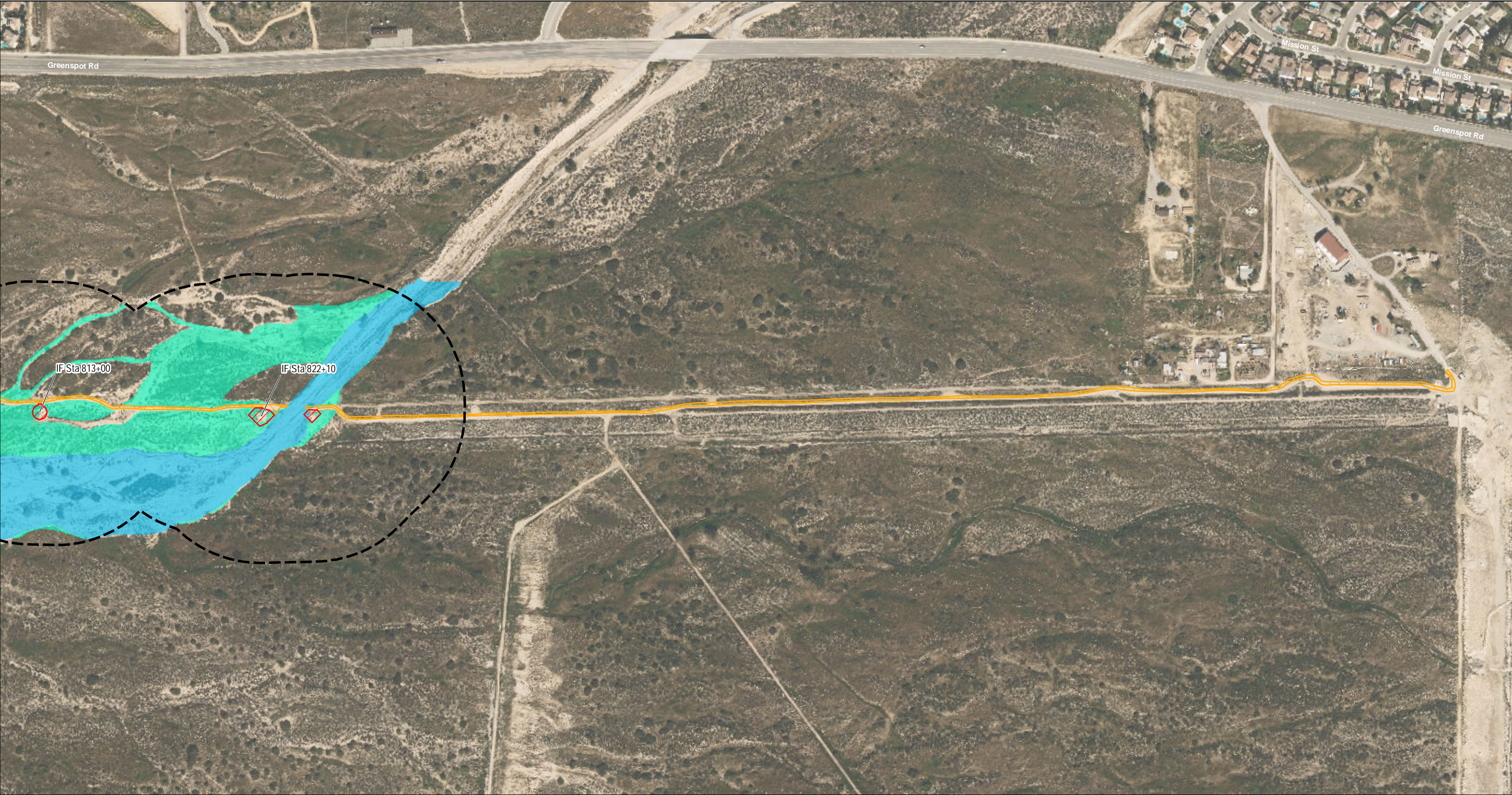


- Survey Area Waters of the U.S. and State (Nonwetland Waters) Temporary
- Jurisdictional Delineation** **Impacts**
- Waters of the State Only Permanent

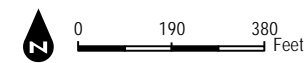


SOURCE: Eagle Aerial 2015

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- | | | |
|-----------------------------------|--|-----------|
| Survey Area | Waters of the U.S. and State (Nonwetland Waters) | Temporary |
| Jurisdictional Delineation | Impacts | |
| Waters of the State Only | Permanent | |



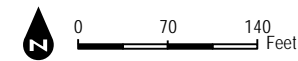
SOURCE: Eagle Aerial 2015



 Survey Area  Temporary

Impacts

 Permanent



SOURCE: Eagle Aerial 2015



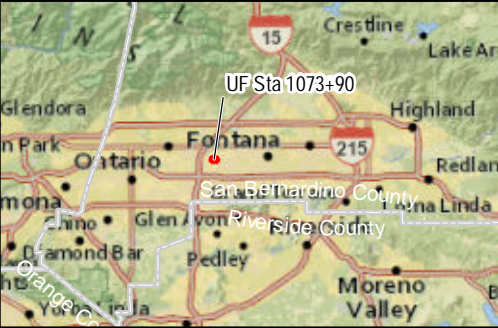
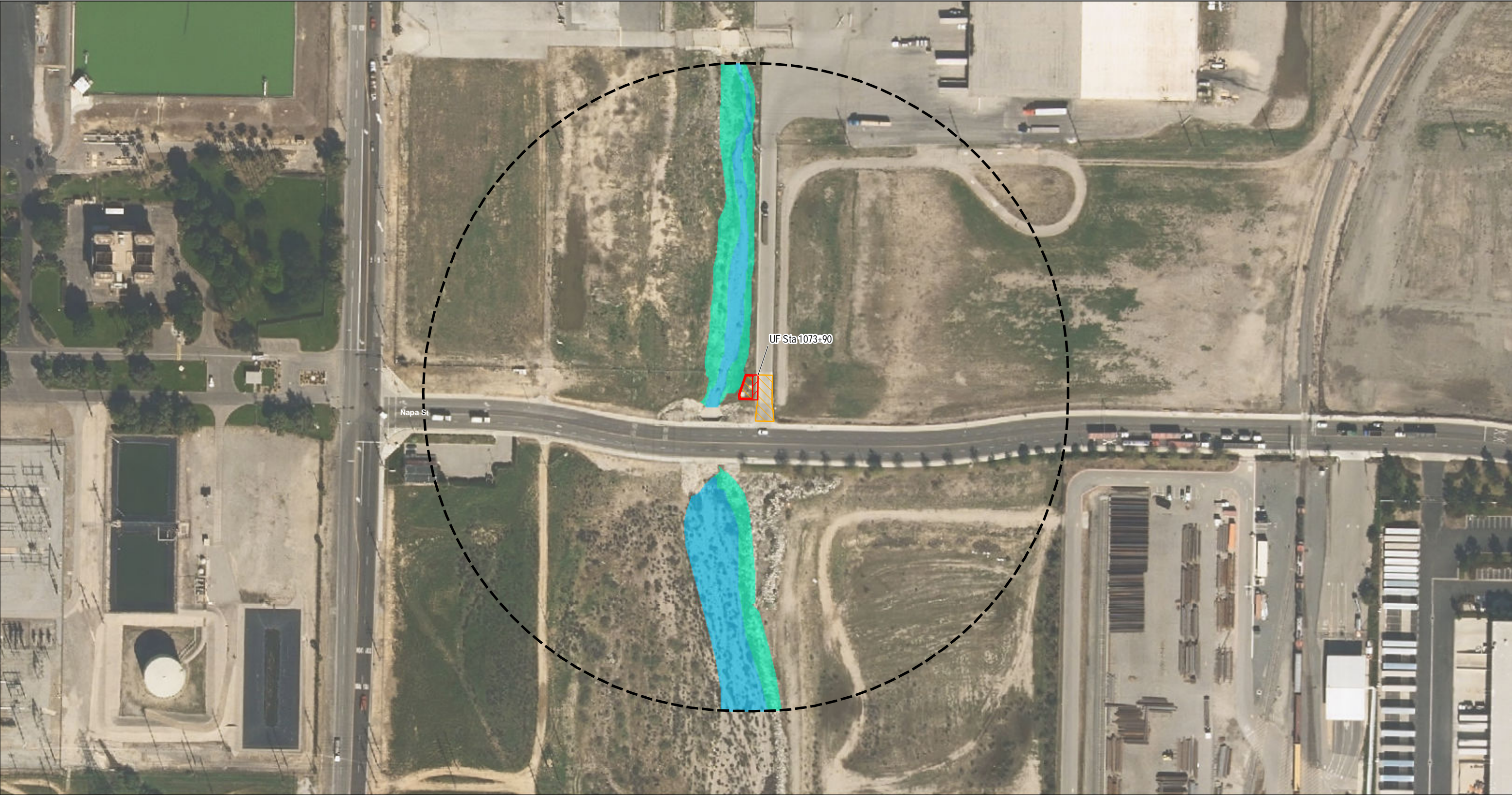
Survey Area [Dashed Line]	Waters of the U.S. and State (Nonwetland Waters) [Blue]	Impacts [Red Hatched] Permanent [Orange Hatched] Temporary
Jurisdictional Delineation [Green] Waters of the State Only	Single-Occurrence O&M Activity Crossing [Yellow Diamond]	






SOURCE: Eagle Aerial 2015

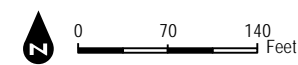
0 145 290 Feet

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APPENDIX F-10L
Jurisdictional Wetlands/Waters - Work Area RPL Sta 3571+01
Western San Bernardino County Distribution System Infrastructure Protection Program



 Survey Area
Jurisdictional Delineation
 Waters of the U.S. and State (Nonwetland Waters)
 Waters of the State Only
Impacts
 Temporary
 Permanent

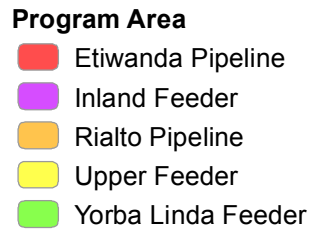


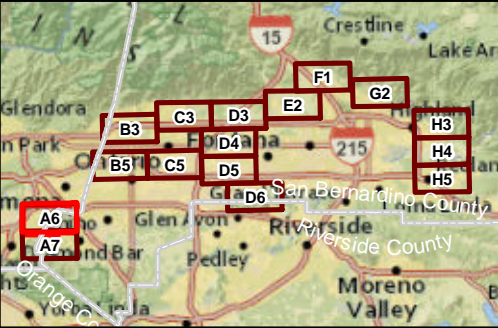
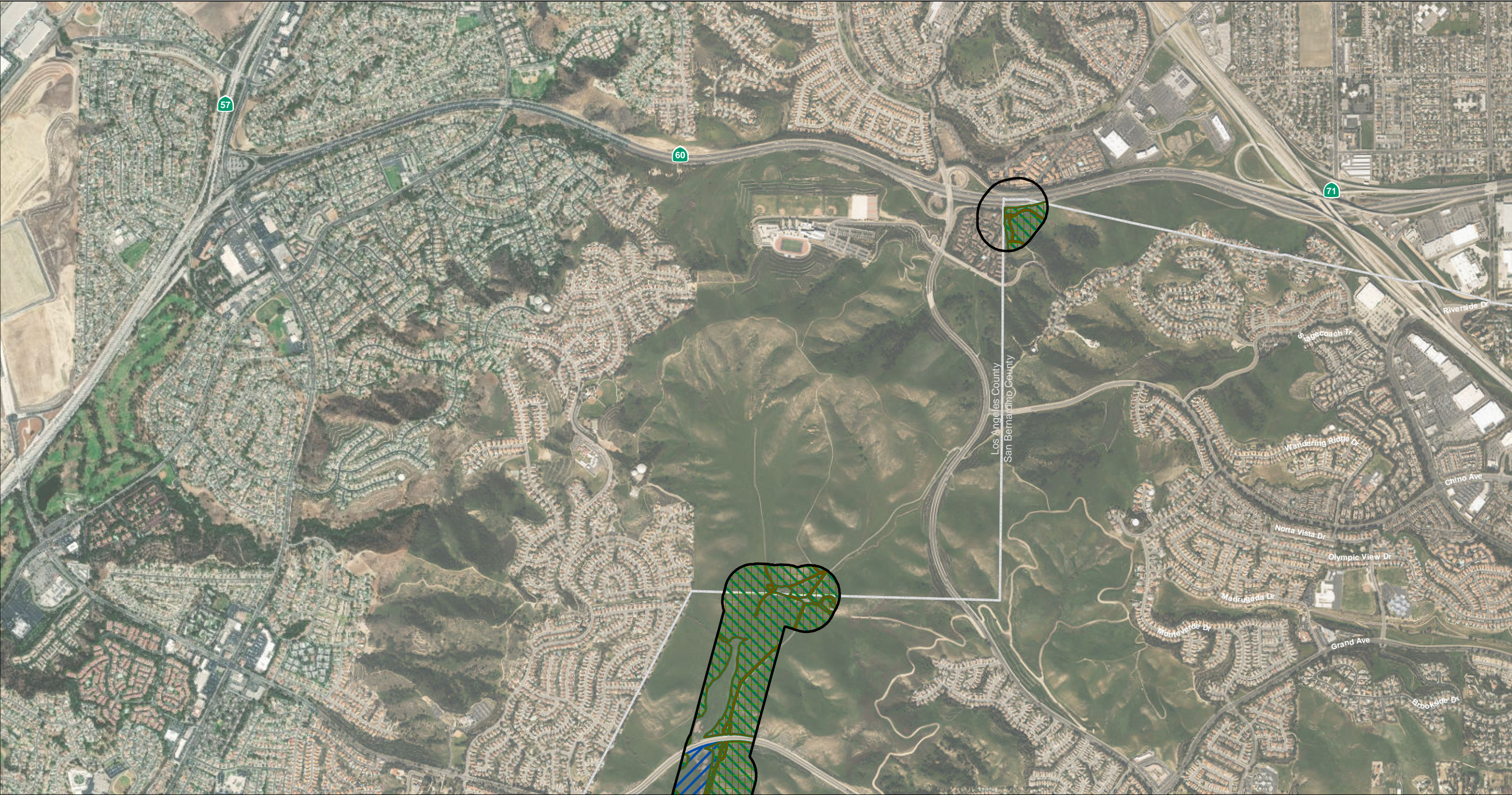
SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

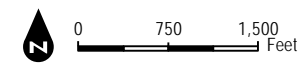
Appendix F-11

Special-Status Species Modeled Habitat

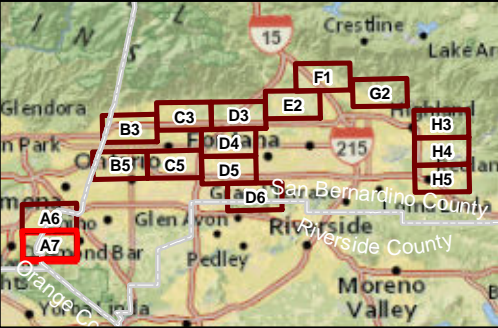
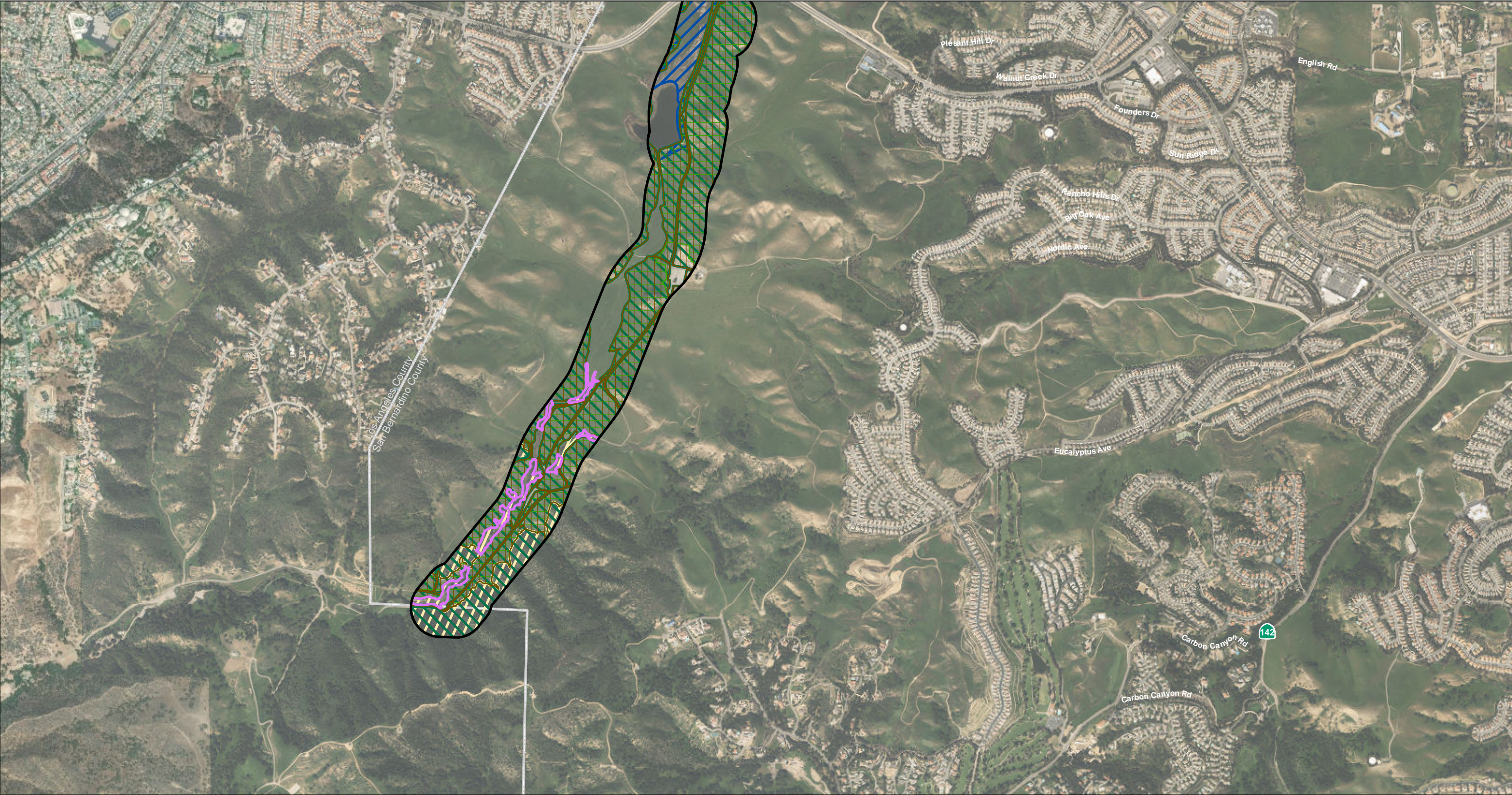




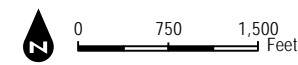
- | | | |
|--|----------------------|----------------|
| Program Area | grasshopper sparrow | long-eared owl |
| least Bell's vireo, yellow-breasted chat, yellow warbler | tricolored blackbird | |
| burrowing owl | loggerhead shrike | |



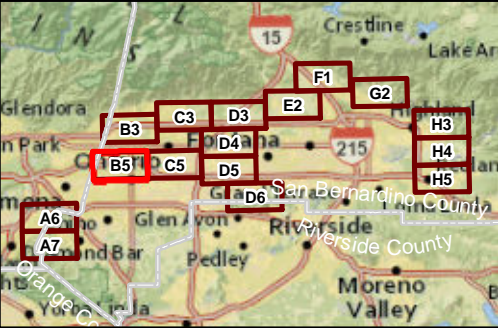
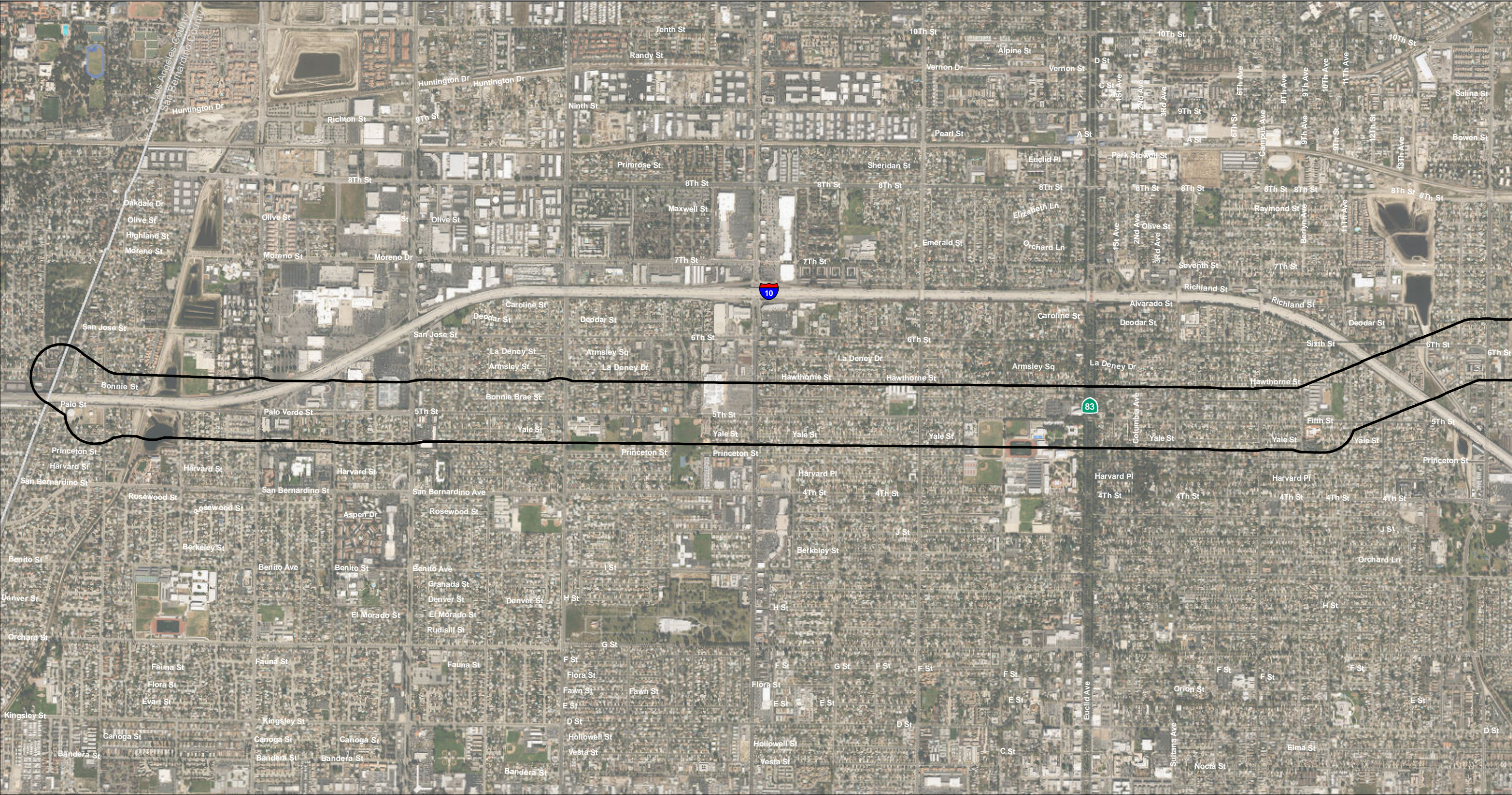
SOURCE: Eagle Aerial 2015





- | | | |
|--|--|----------------------|
| Program Area | grasshopper sparrow | long-eared owl |
| Special-Status Bird Modeled Habitat | least Bell's vireo, yellow-breasted chat, yellow warbler | tricolored blackbird |
| burrowing owl | loggerhead shrike | |







SOURCE: Eagle Aerial 2015




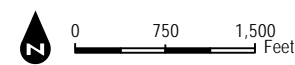
-  Program Area

 coastal California gnatcatcher

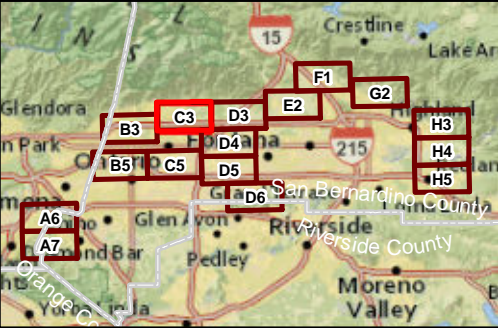
 loggerhead shrike
-  grasshopper sparrow


 long-eared owl
-  burrowing owl


 least Bell's vireo, yellow-breasted chat, yellow warbler







SOURCE: Eagle Aerial 2015

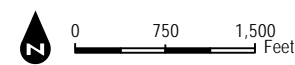


-  Program Area

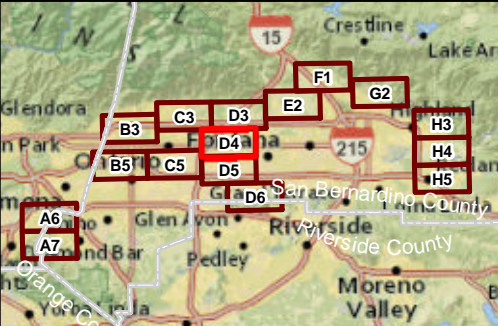
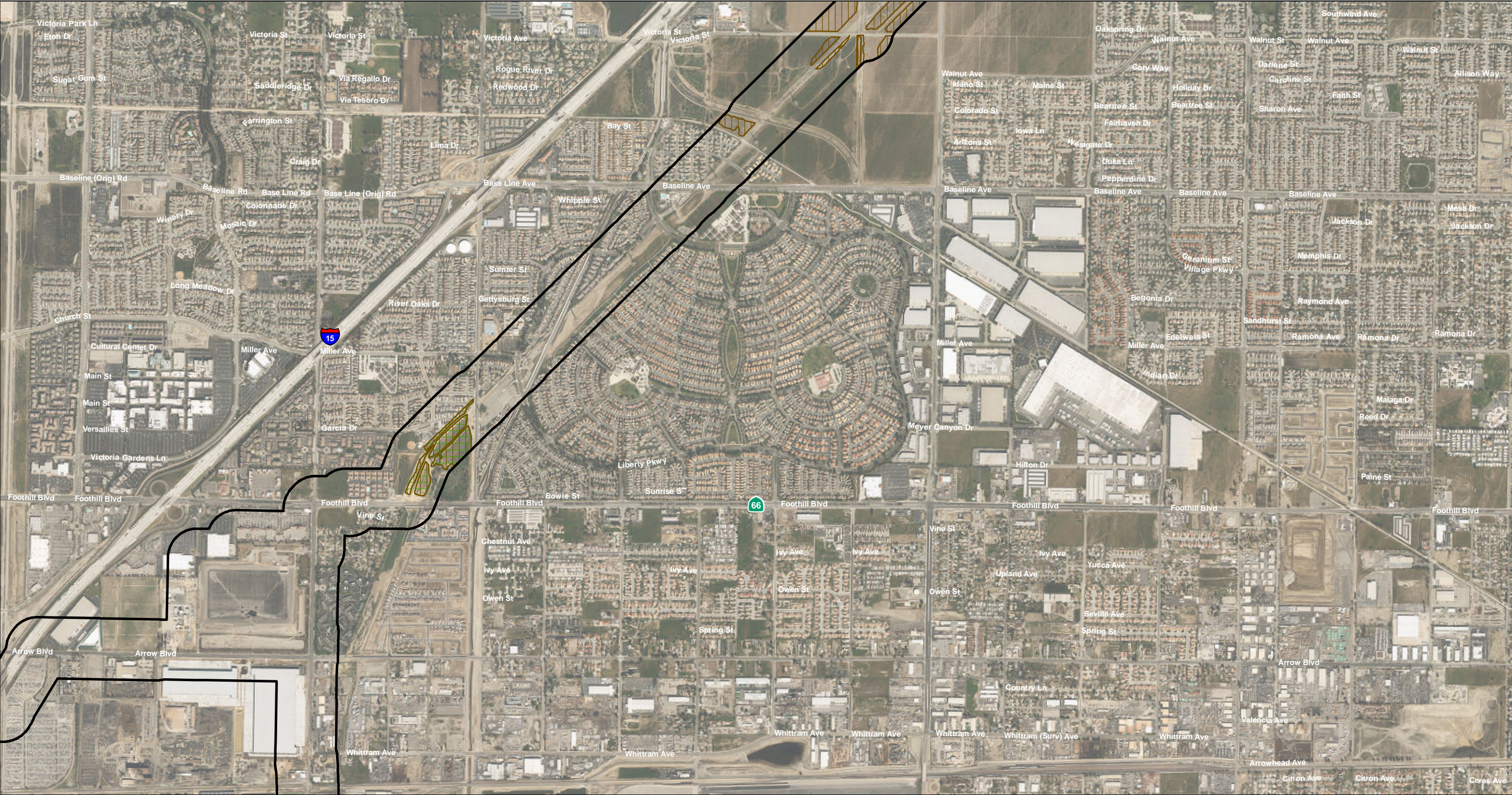
 coastal California gnatcatcher

 loggerhead shrike
-  grasshopper sparrow

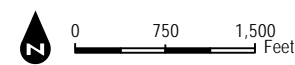
 long-eared owl
-  least Bell's vireo, yellow-breasted chat, yellow warbler



SOURCE: Eagle Aerial 2015

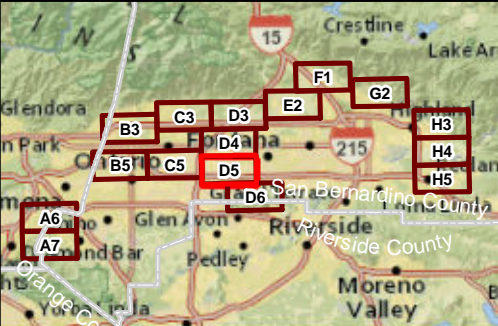
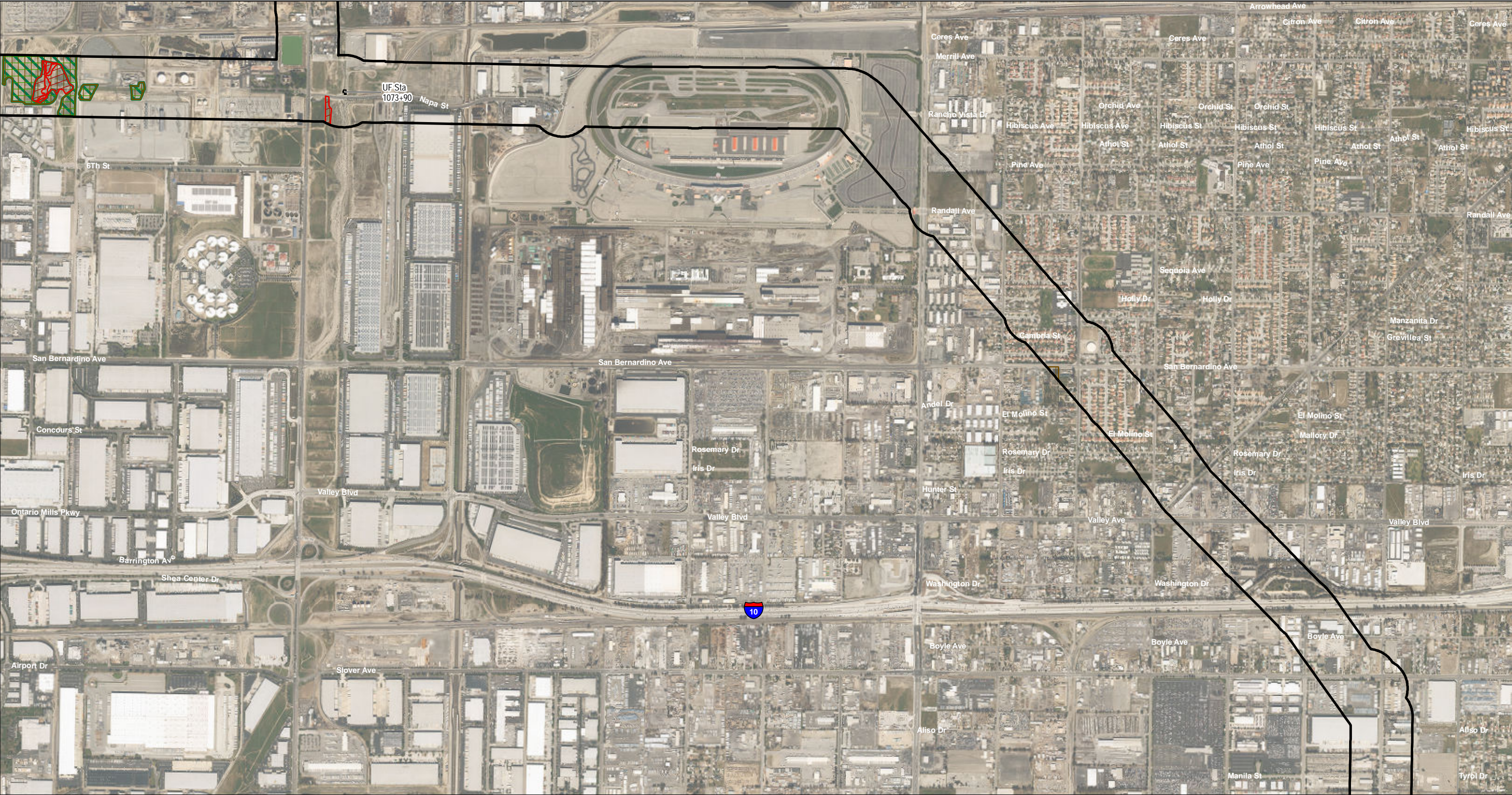


- | | | |
|--|--|-------------------|
| Program Area | coastal California gnatcatcher | loggerhead shrike |
| Special-Status Bird Modeled Habitat | grasshopper sparrow | long-eared owl |
| burrowing owl | least Bell's vireo, yellow-breasted chat, yellow warbler | |

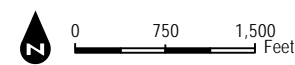


SOURCE: Eagle Aerial 2015

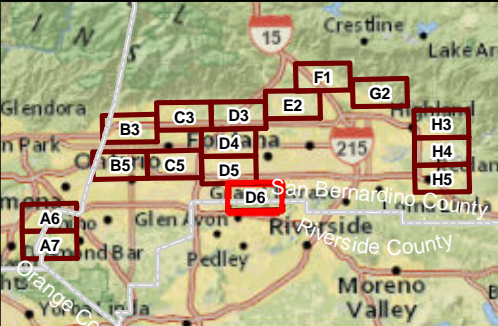
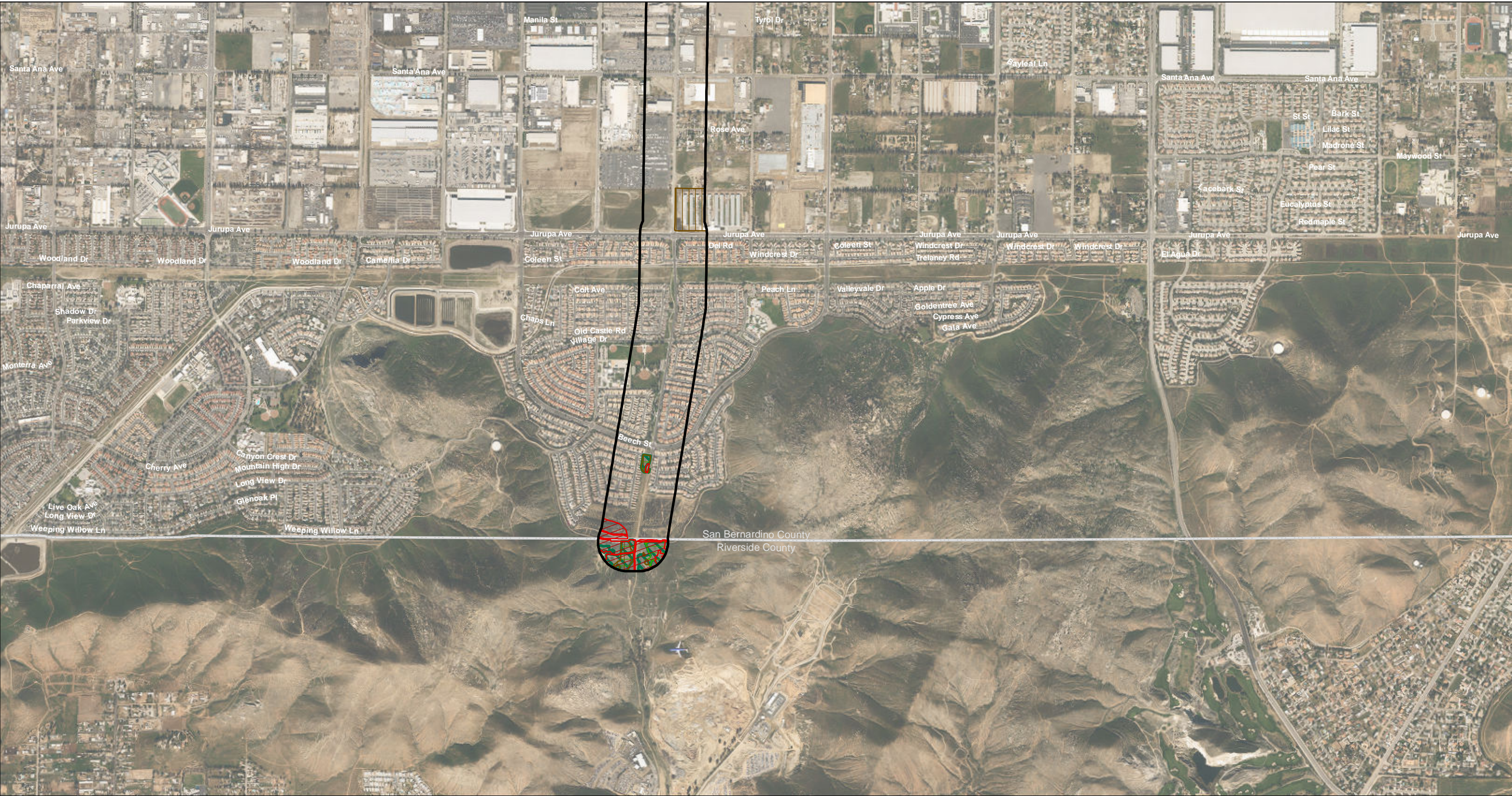
The Metropolitan Water District of Southern California










- Program Area** **Special-Status Bird Modeled Habitat**
- Work Areas
 - grasshopper sparrow
 - long-eared owl
 - burrowing owl
 - least Bell's vireo, yellow-breasted chat, yellow warbler
 - coastal California gnatcatcher
 - loggerhead shrike

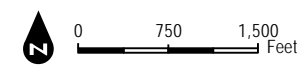


SOURCE: Eagle Aerial 2015

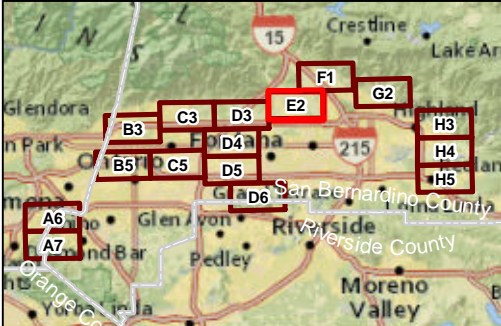
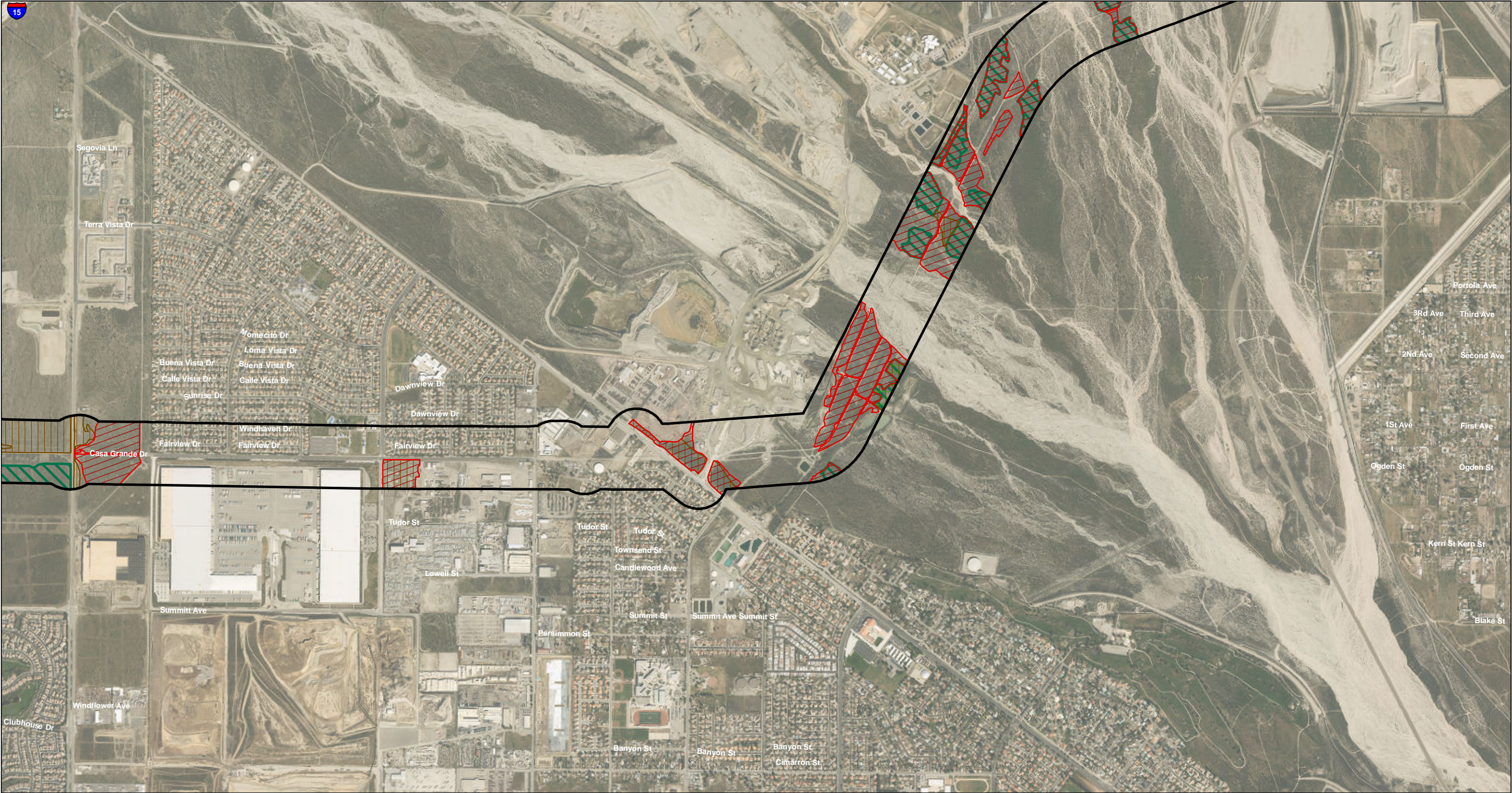









-  Program Area
- Special-Status Bird Modeled Habitat**
-  coastal California gnatcatcher
-  grasshopper sparrow
-  least Bell's vireo, yellow-breasted chat, yellow warbler
-  burrowing owl

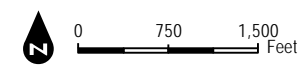
-  loggerhead shrike
-  long-eared owl



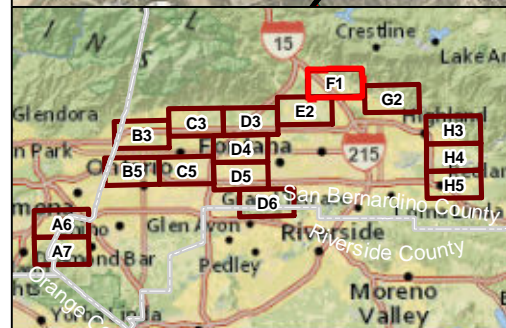
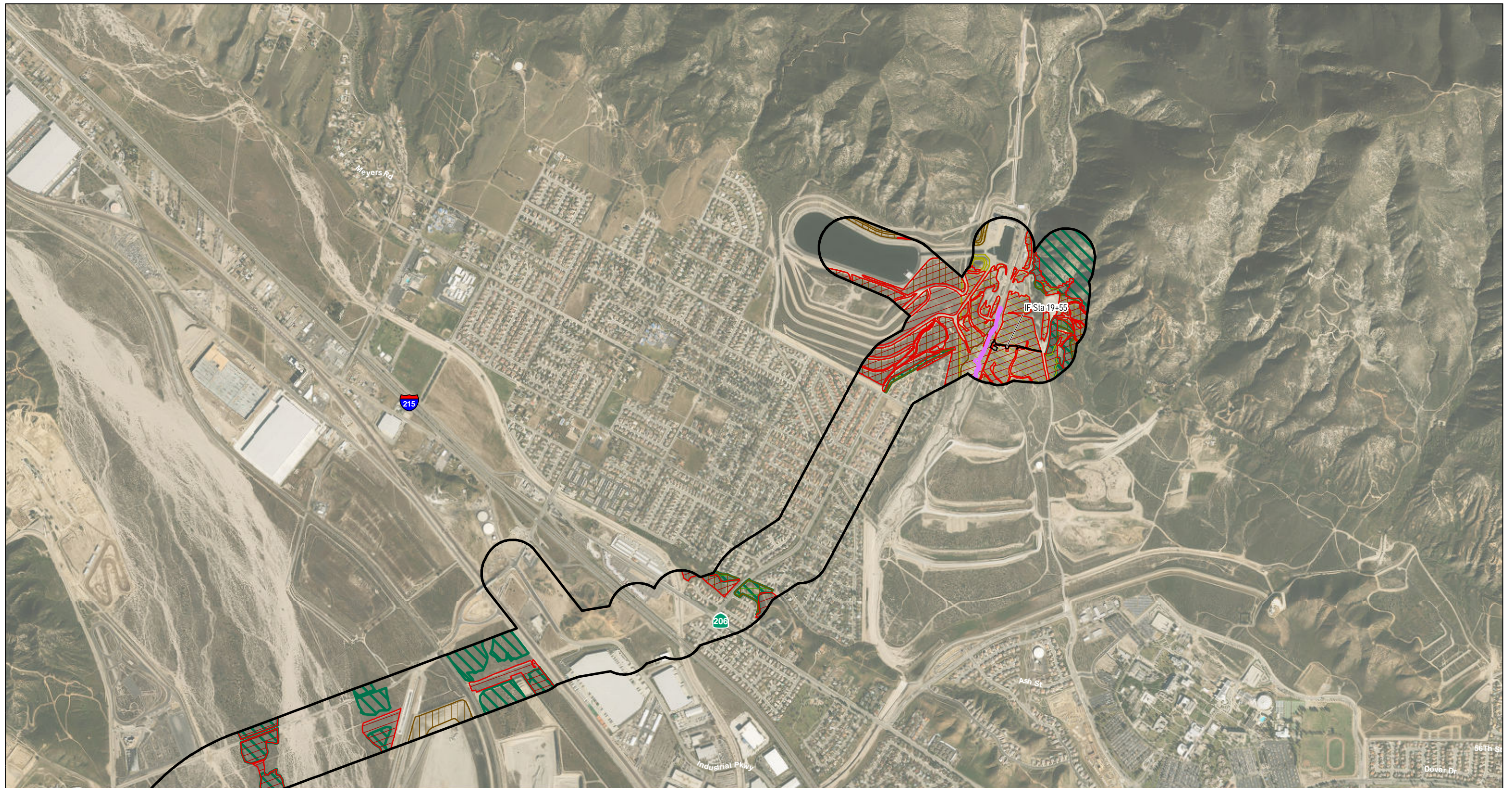
SOURCE: Eagle Aerial 2015



-  Program Area
- Special-Status Bird Modeled Habitat**
-  coastal California gnatcatcher
-  grasshopper sparrow
-  loggerhead shrike
-  long-eared owl
-  burrowing owl
-  least Bell's vireo, yellow-breasted chat, yellow warbler








SOURCE: Eagle Aerial 2015



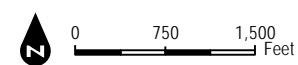
- ☒ Program Area
- ☐ Work Areas

a Special-Status Bird Modeled Habitat

-  burrowing owl
-  coastal California gnatcatcher

 coastal cactus wren
 grasshopper sparrow
 least Bell's vireo, yellow-breasted chat, yellow warbler

- loggerhead shrike
- long-eared owl



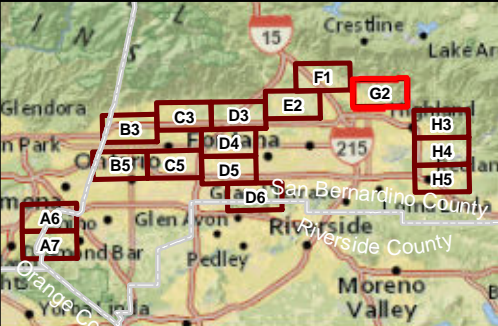
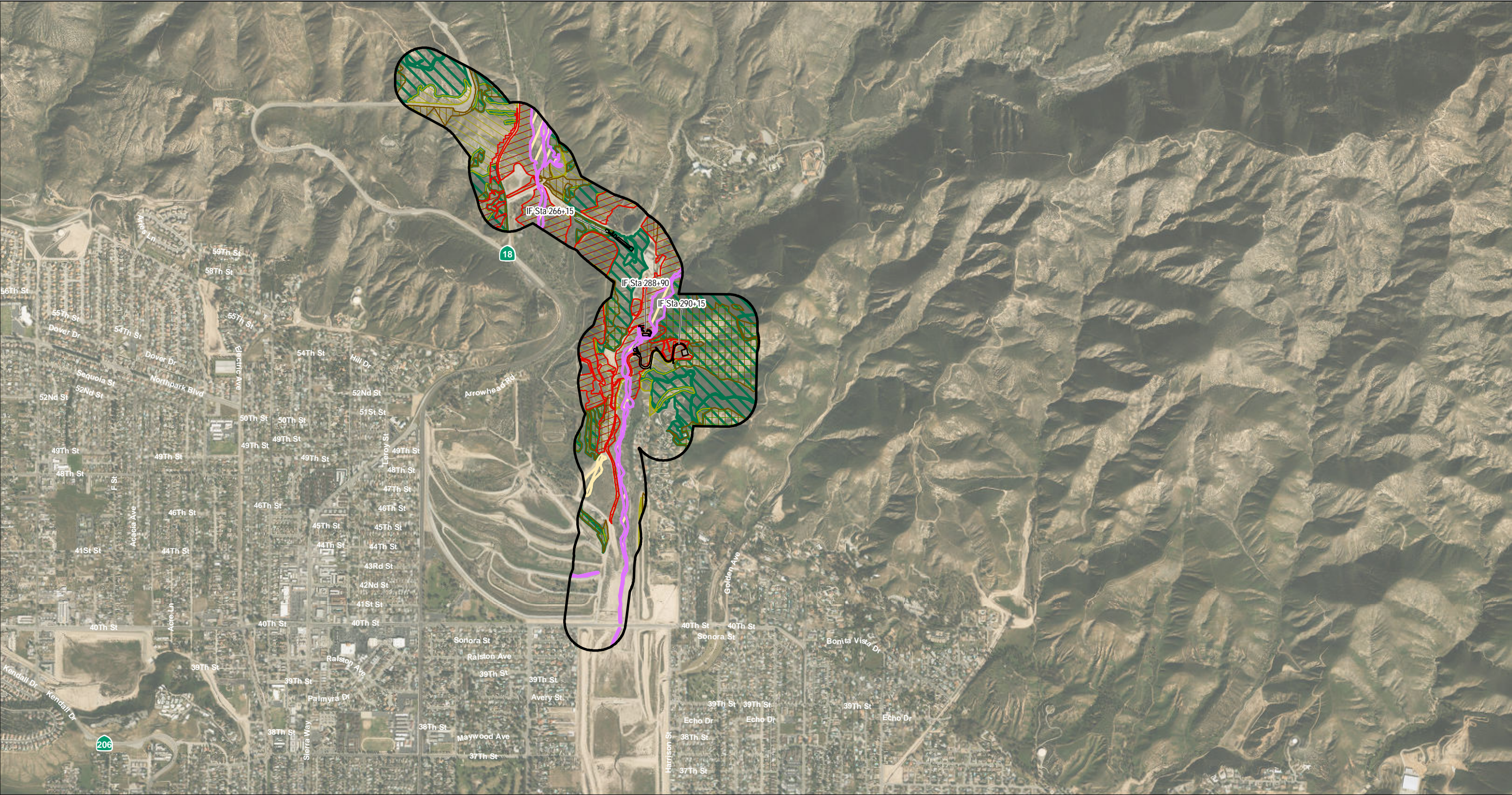
SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

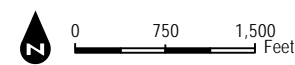
APPENDIX F-11A-12

Special-Status Species Modeled Habitat: Birds - Grid F1

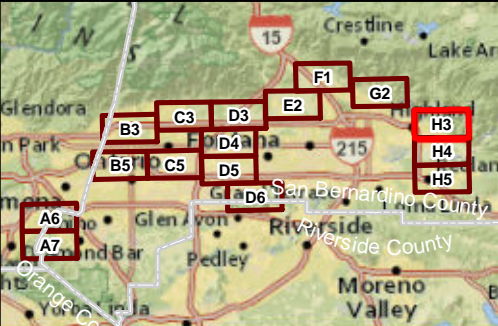
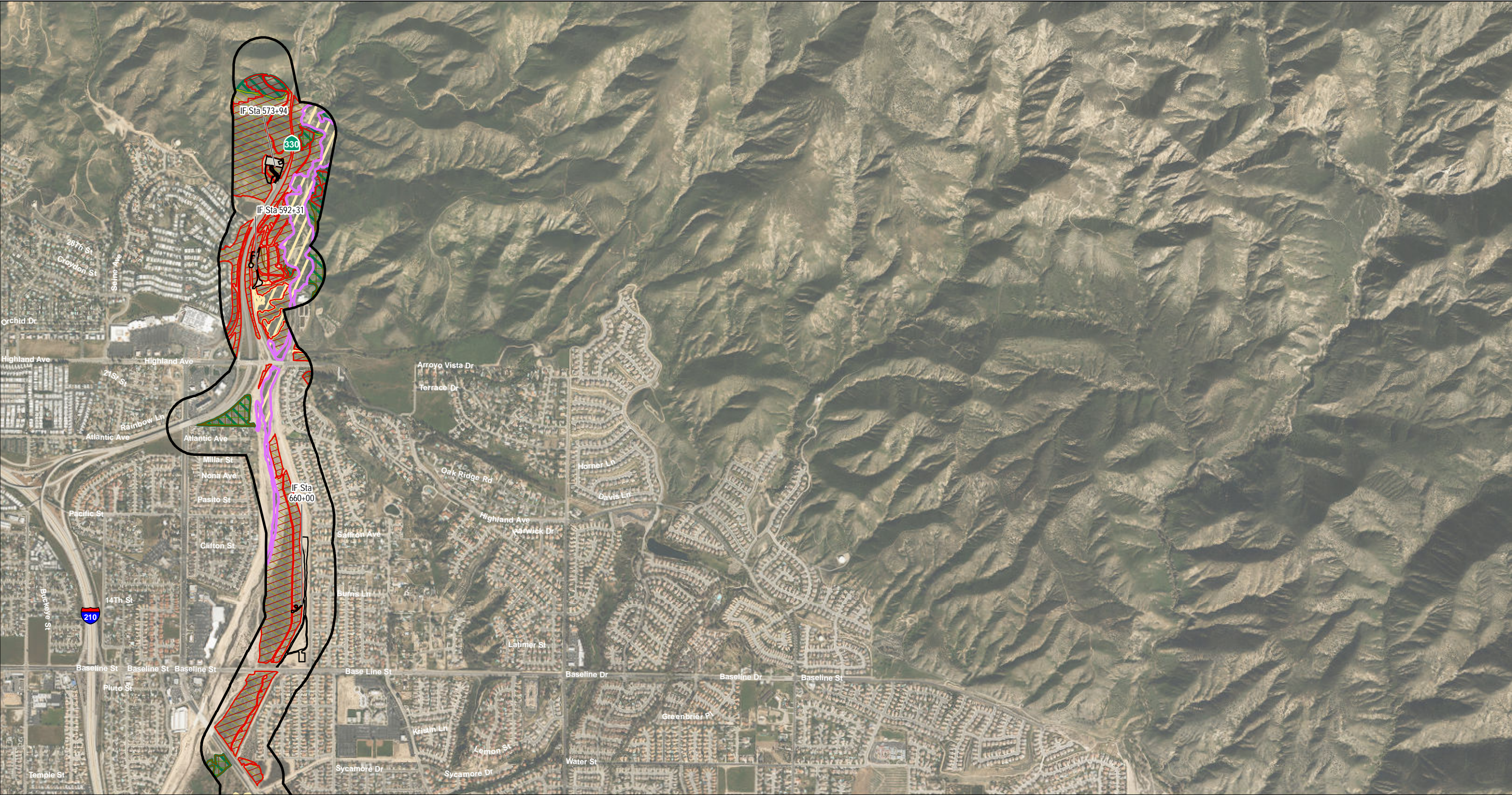
Western San Bernardino County Distribution System Infrastructure Protection Program



- Program Area** **Special-Status Bird Modeled Habitat**
- Work Areas
 - coastal cactus wren
 - loggerhead shrike
 - burrowing owl
 - grasshopper sparrow
 - long-eared owl
 - coastal California gnatcatcher
 - least Bell's vireo, yellow-breasted chat, yellow warbler



SOURCE: Eagle Aerial 2015

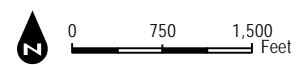


Program Area
Work Areas

Special-Status Bird Modeled Habitat
burrowing owl
coastal California gnatcatcher

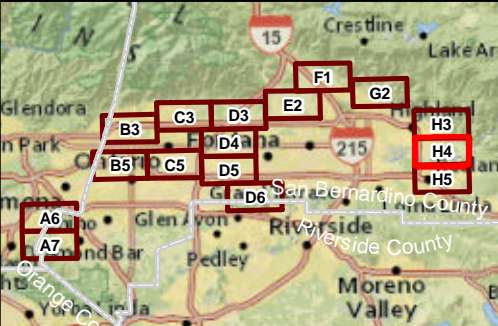
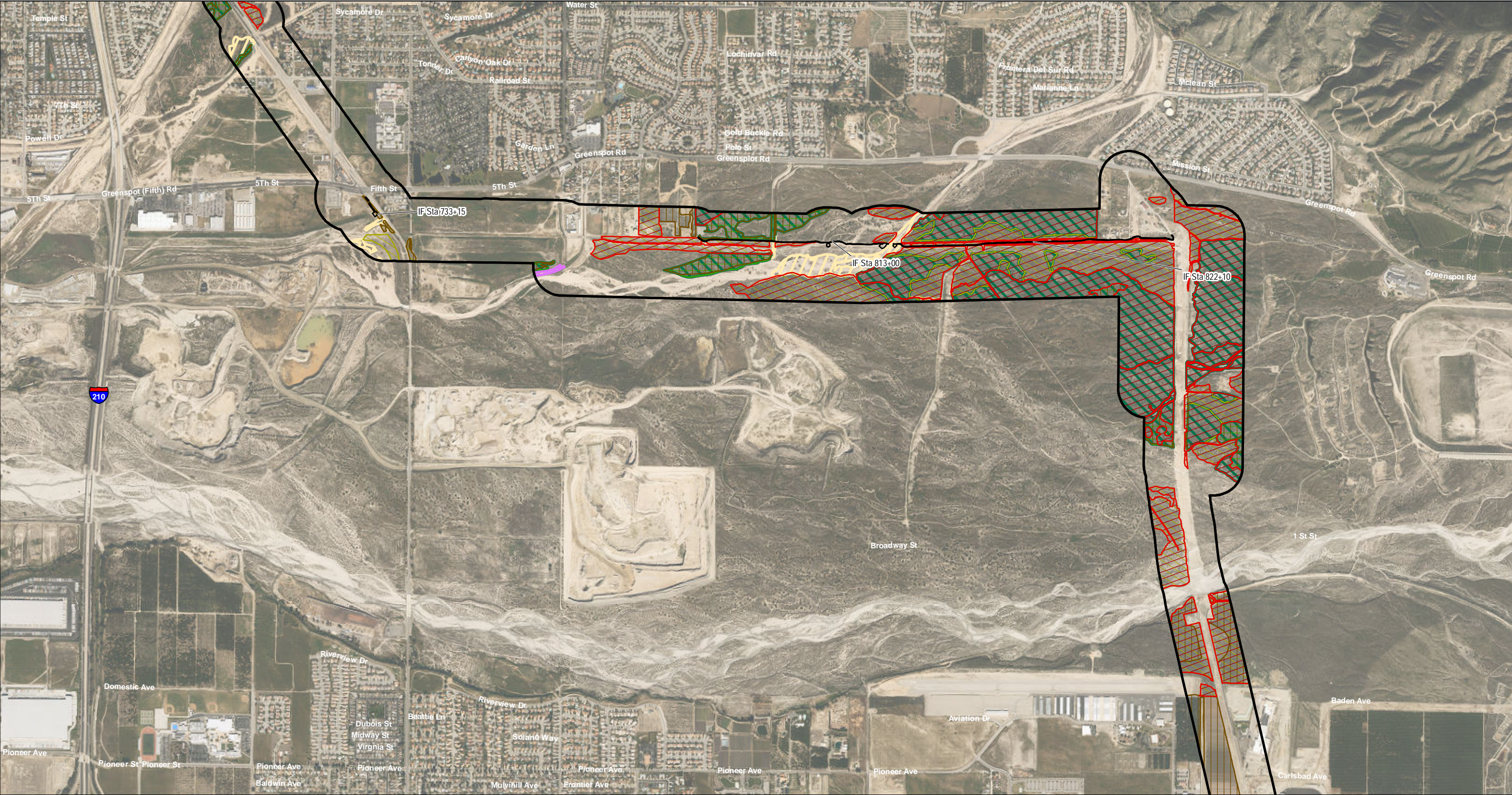
coastal cactus wren
grasshopper sparrow
least Bell's vireo, yellow-breasted chat, yellow warbler

loggerhead shrike
long-eared owl

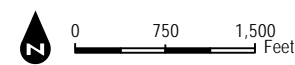


SOURCE: Eagle Aerial 2015

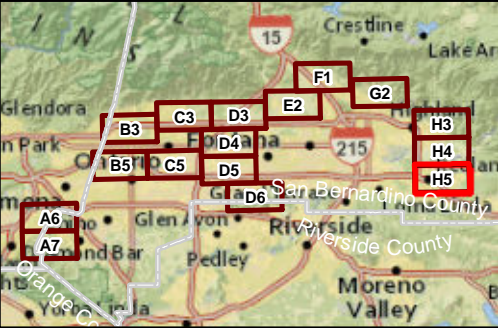
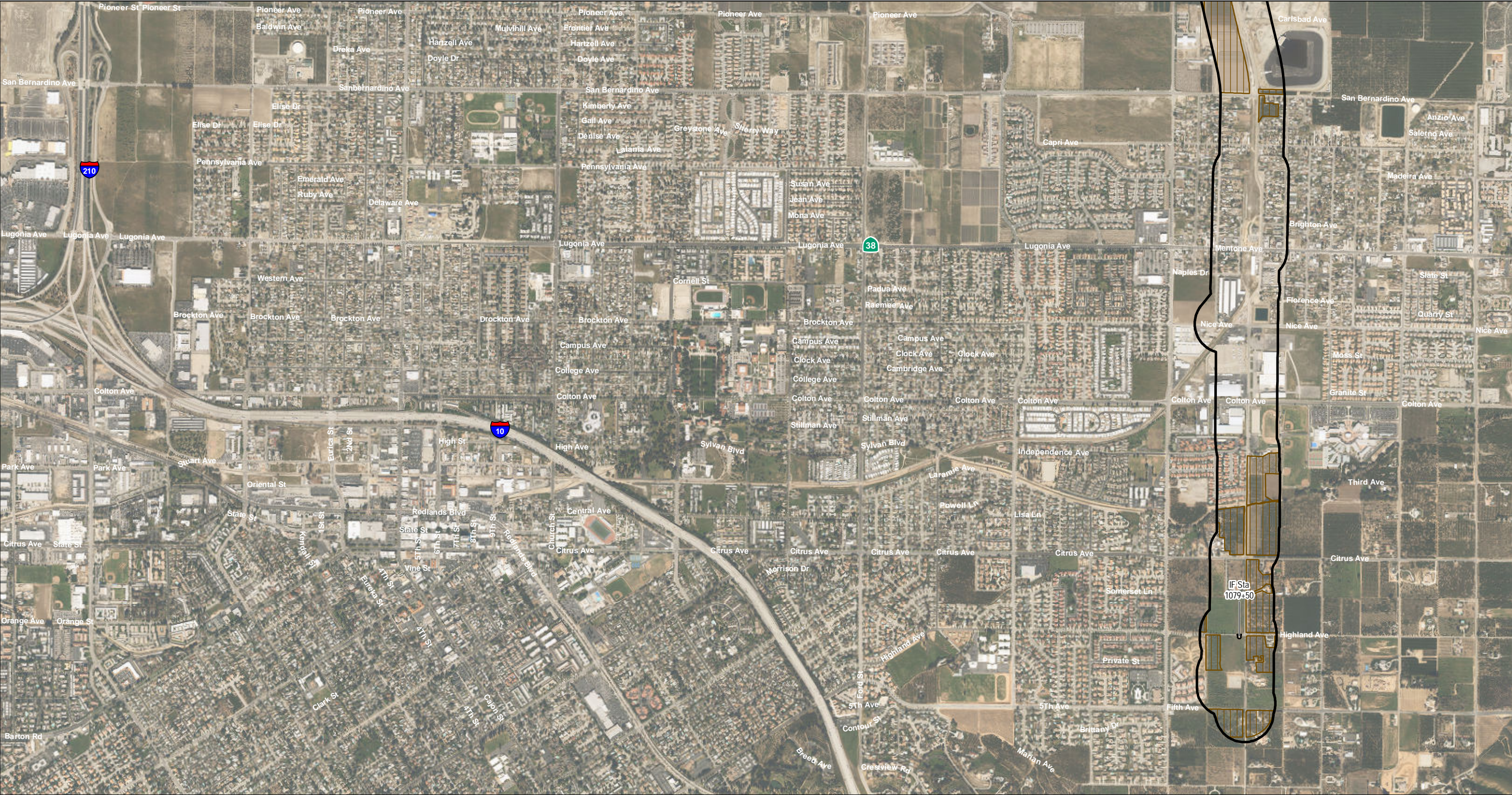
The Metropolitan Water District of Southern California



- | | | | |
|--------------|-------------------------------------|--|-------------------|
| Program Area | Special-Status Bird Modeled Habitat | coastal cactus wren | loggerhead shrike |
| Work Areas | burrowing owl | grasshopper sparrow | long-eared owl |
| | coastal California gnatcatcher | least Bell's vireo, yellow-breasted chat, yellow warbler | |



SOURCE: Eagle Aerial 2015



- Program Area

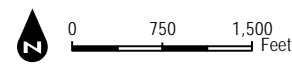
Work Areas
- Special-Status Bird Modeled Habitat

burrowing owl

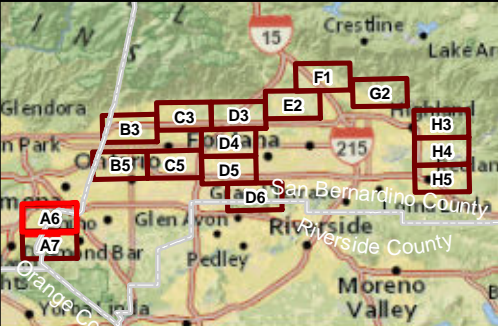
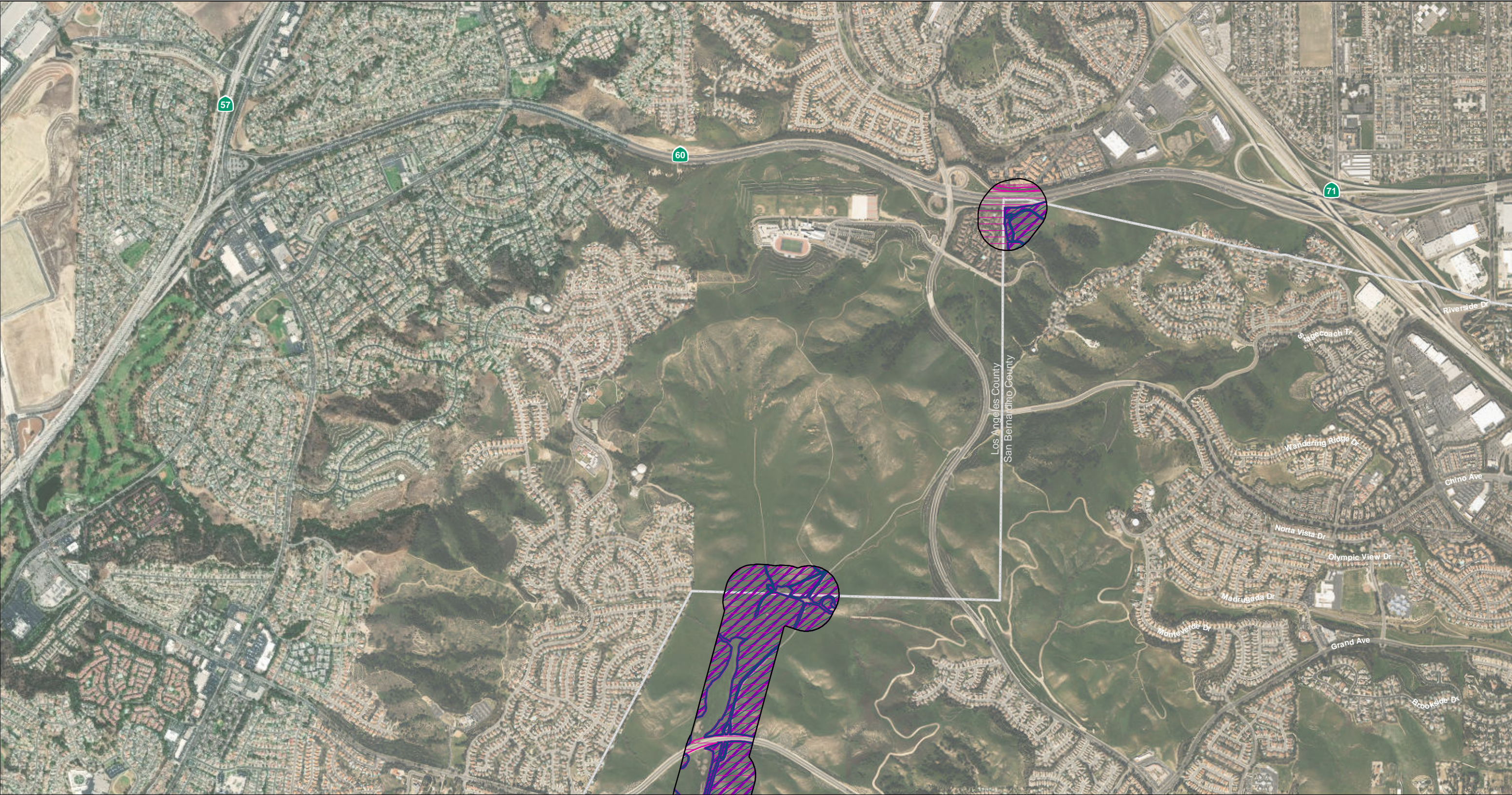
coastal California gnatcatcher
- grasshopper sparrow

least Bell's vireo, yellow-breasted chat, yellow warbler

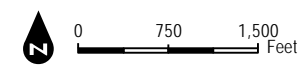
loggerhead shrike
- long-eared owl



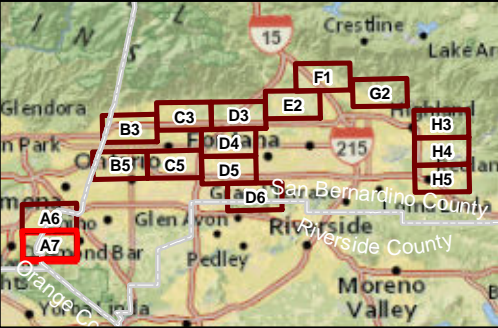
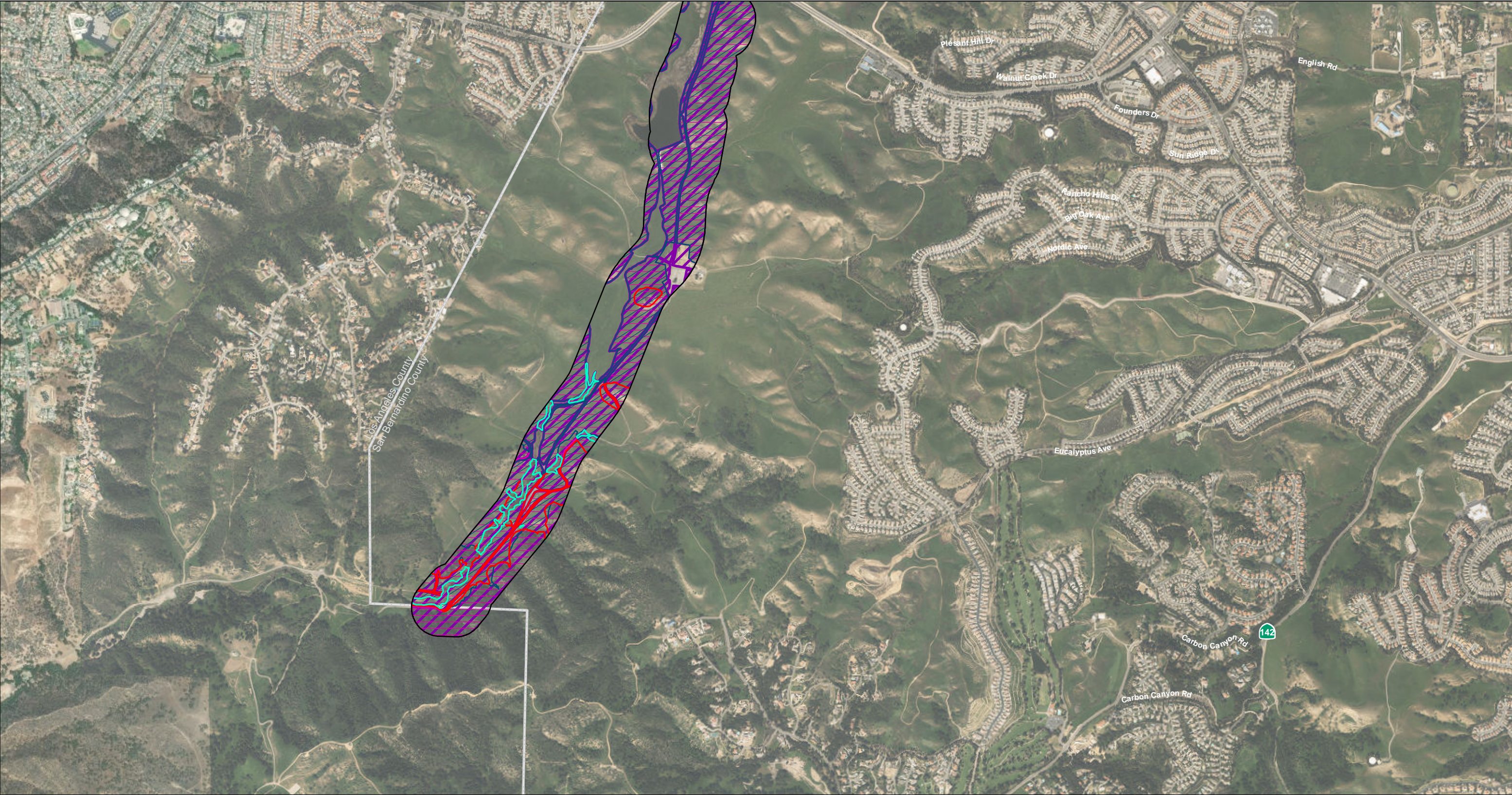
SOURCE: Eagle Aerial 2015





- Program Area
- Special-Status Mammal Modeled Habitat**
- | | |
|-----------------------------------|---------------------|
| San Diego black-tailed jackrabbit | western yellow bat |
| pallid bat | |
| American badger | western mastiff bat |





SOURCE: Eagle Aerial 2015





-  Program Area

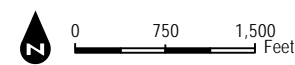
 San Diego black-tailed jackrabbit

 western yellow bat
- Special-Status Mammal Modeled Habitat**

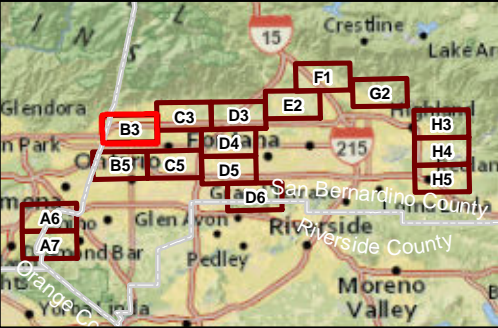
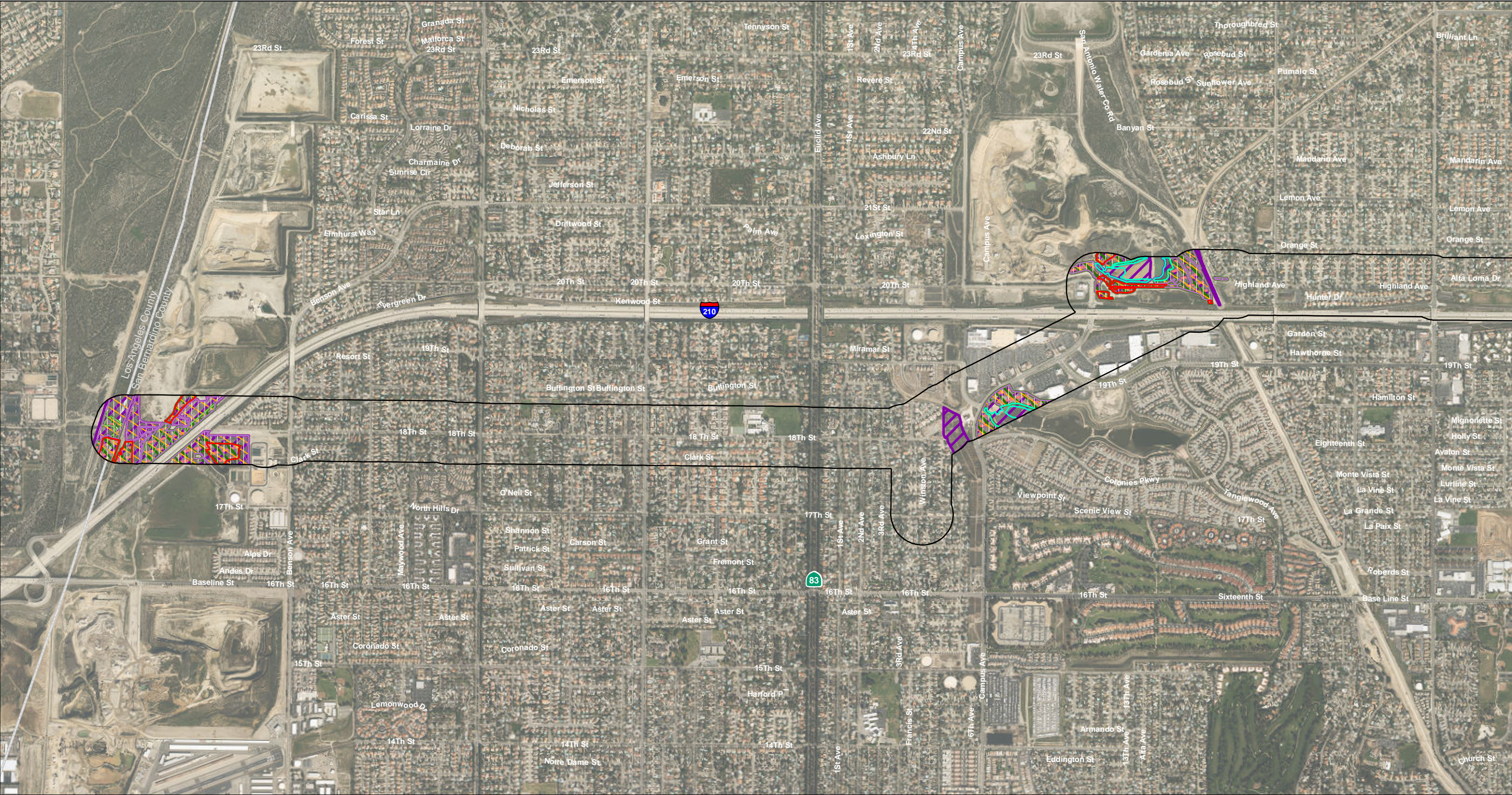
 pallid bat

 American badger

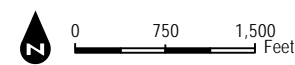
 western mastiff bat



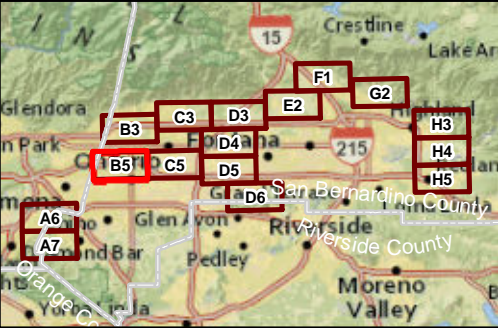
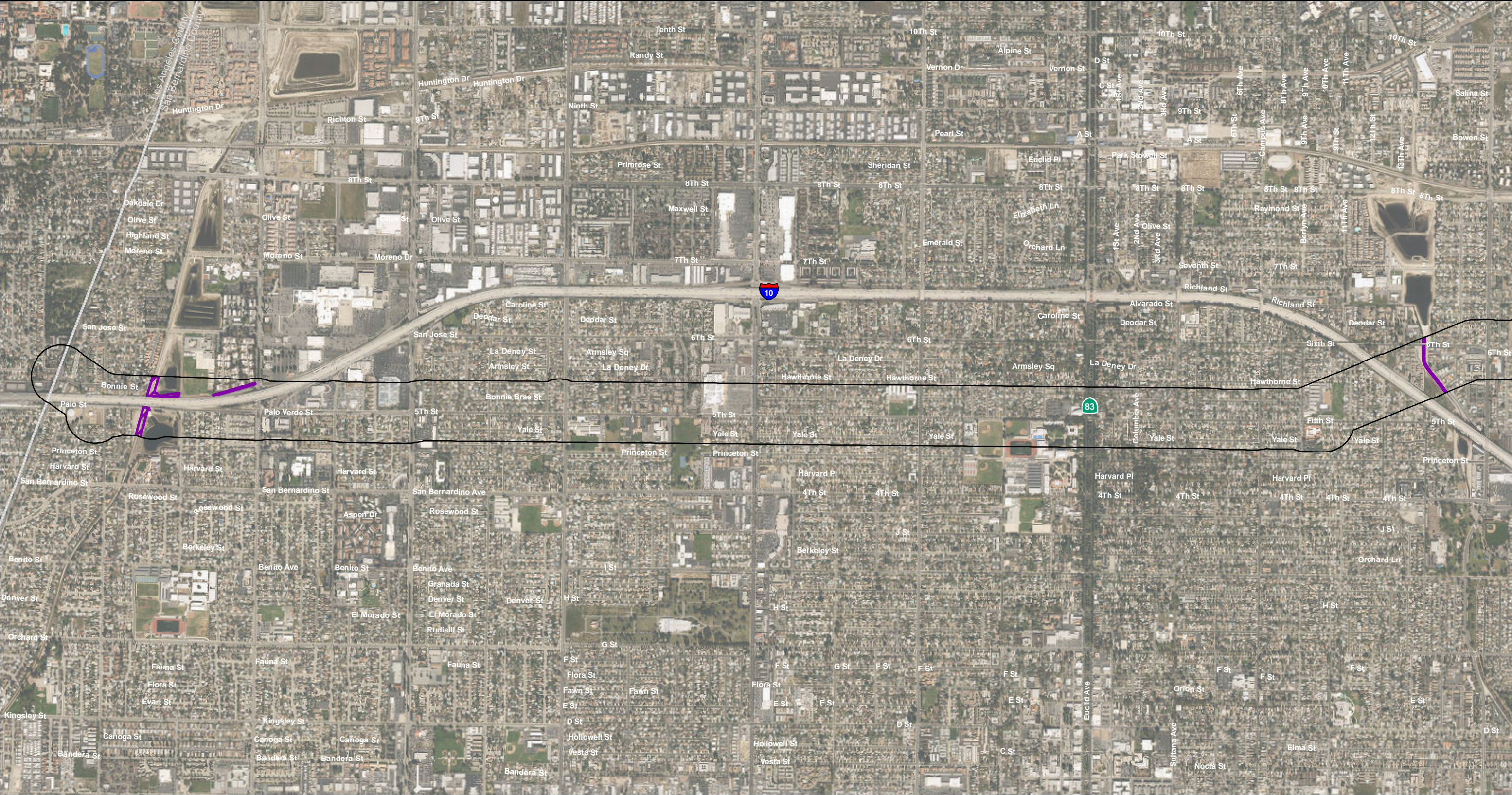
SOURCE: Eagle Aerial 2015



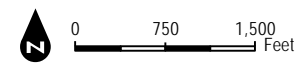
- | | | | | |
|--|-----------------------------|-------------------------------------|----------------------------|--------------------|
| Program Area | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |
| American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat | |



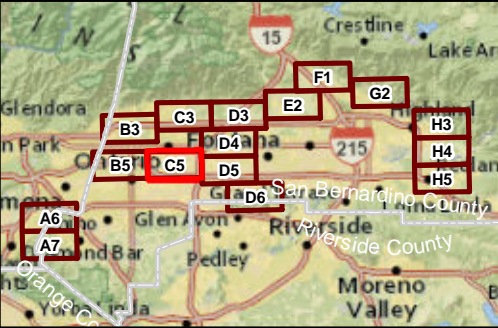
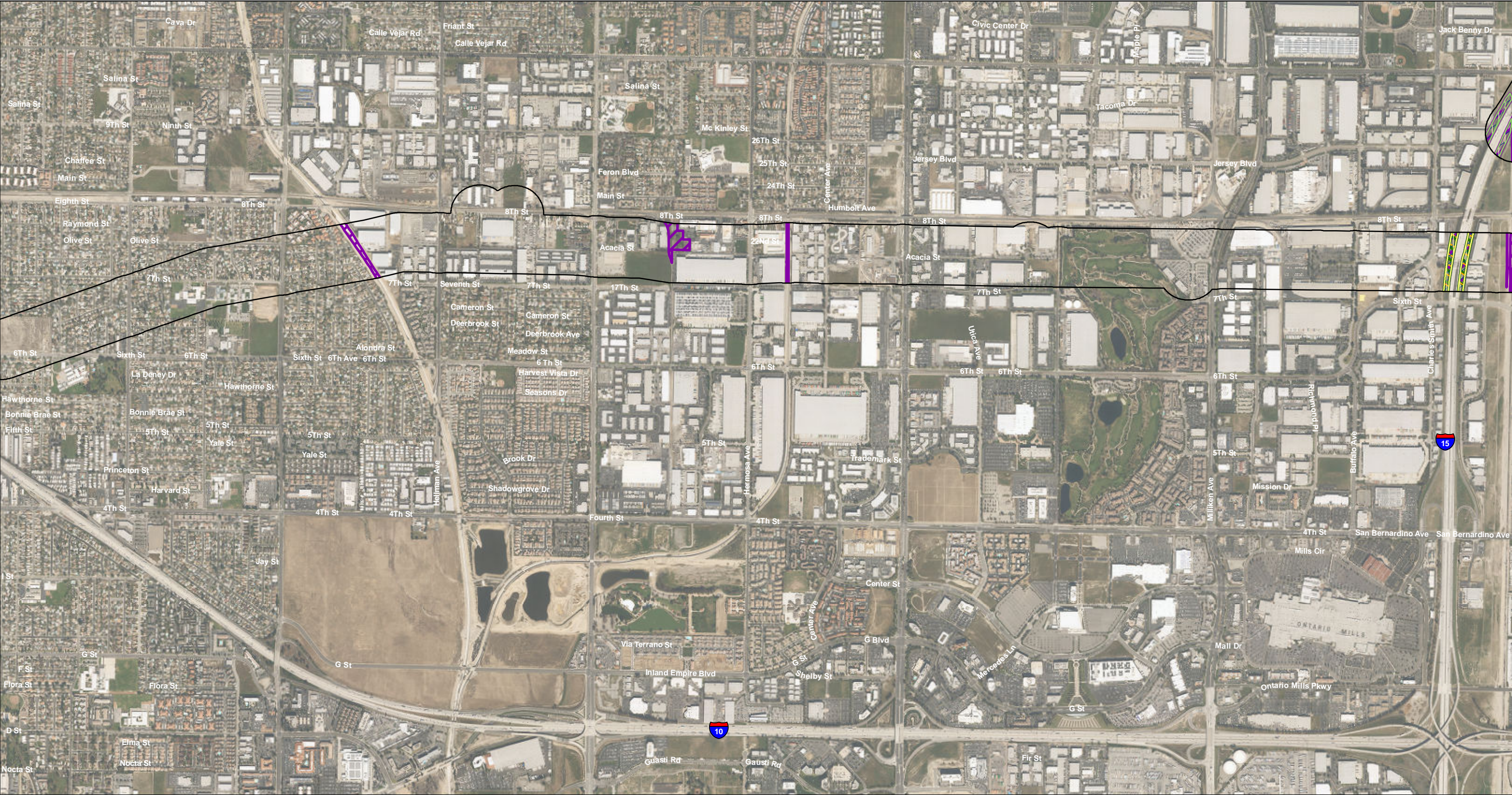
SOURCE: Eagle Aerial 2015



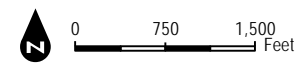
- | | | | | |
|--|-----------------------------|-------------------------------------|----------------------------|--------------------|
| Program Area | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |
| American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat | |



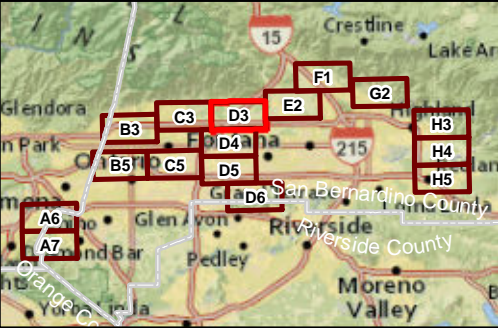
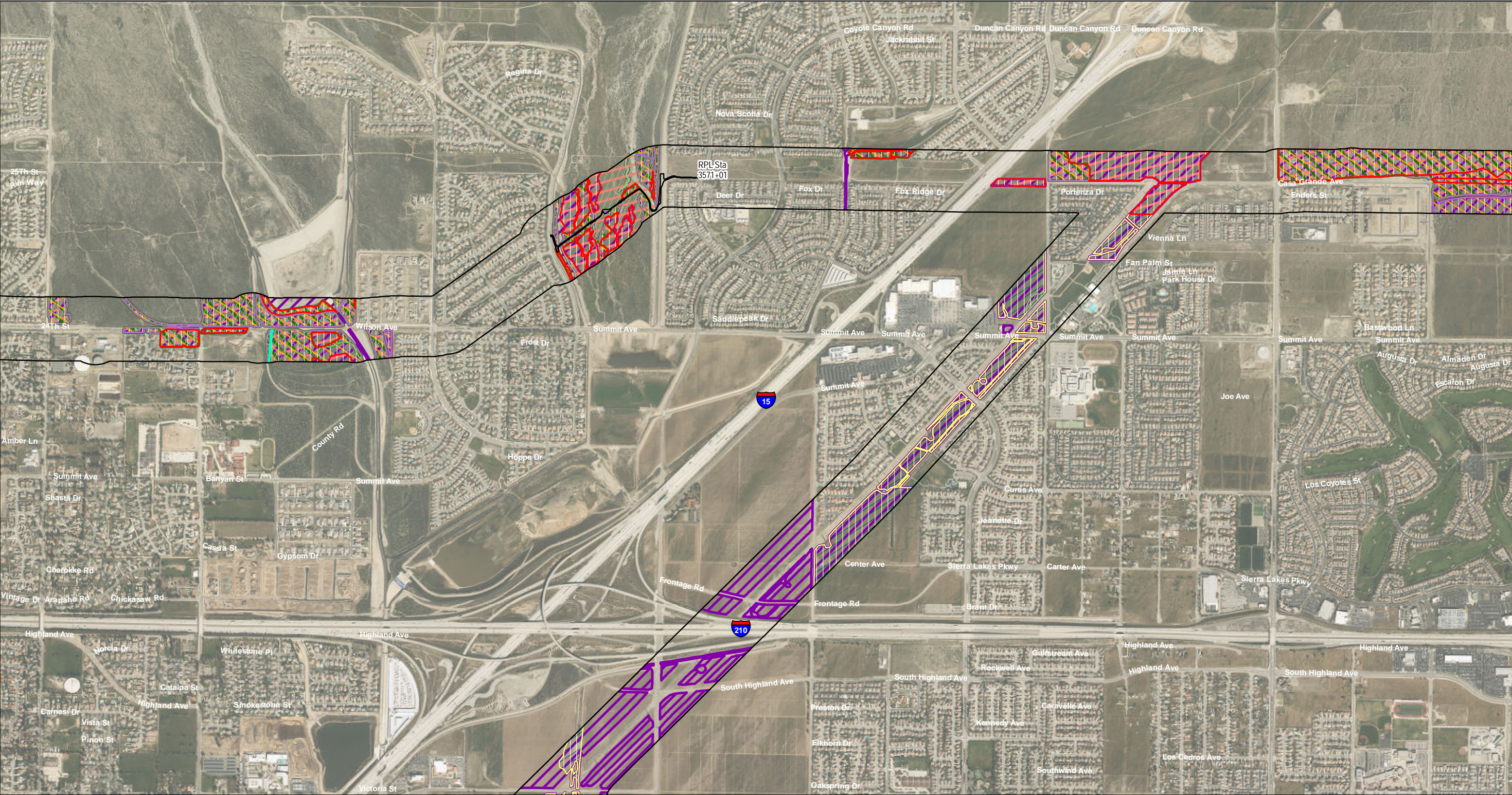
SOURCE: Eagle Aerial 2015



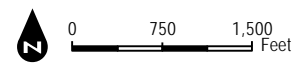
- | | | | | |
|--|-----------------------------|-------------------------------------|----------------------------|--------------------|
| Program Area | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |
| American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat | |



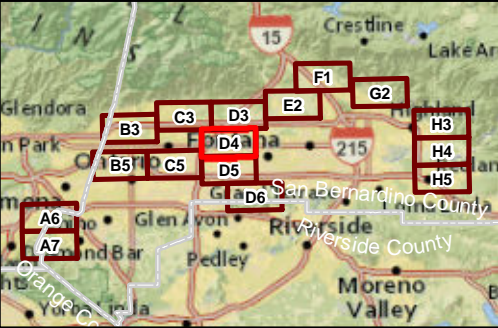
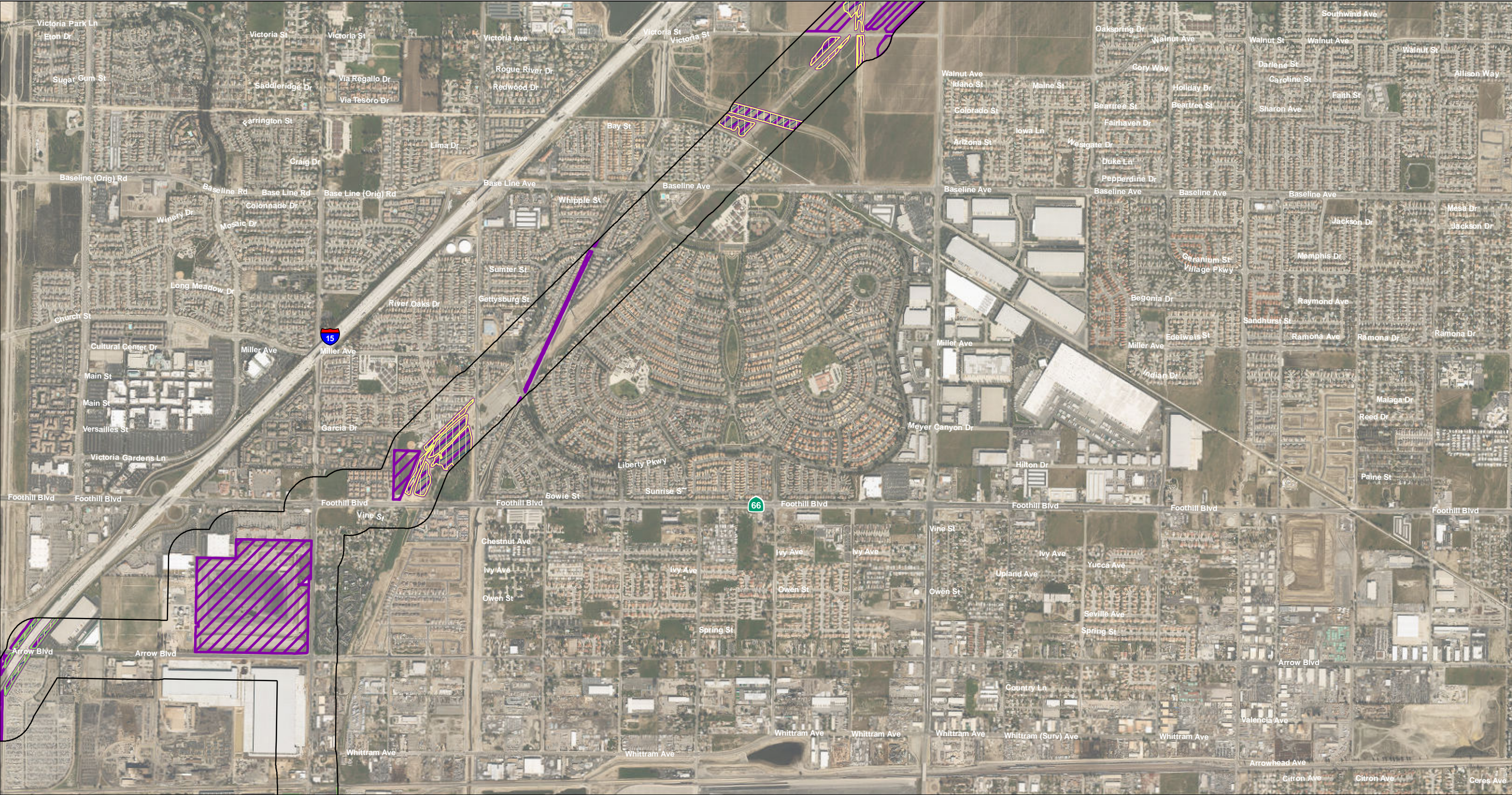
SOURCE: Eagle Aerial 2015



- | | | | | |
|--------------|--|-----------------------------------|-------------------------------------|----------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat |
| | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |



SOURCE: Eagle Aerial 2015



- Program Area

Special-Status Mammal Modeled Habitat

American badger
- Dulzura pocket mouse

Los Angeles pocket mouse

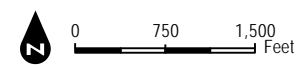
San Bernardino kangaroo rat
- San Diego black-tailed jackrabbit

San Diego desert woodrat

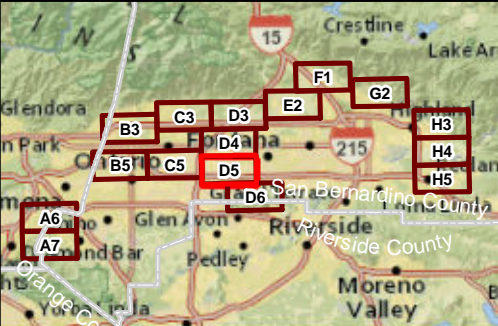
northwestern San Diego pocket mouse
- pallid bat

southern grasshopper mouse

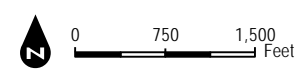
western mastiff bat
- western yellow bat



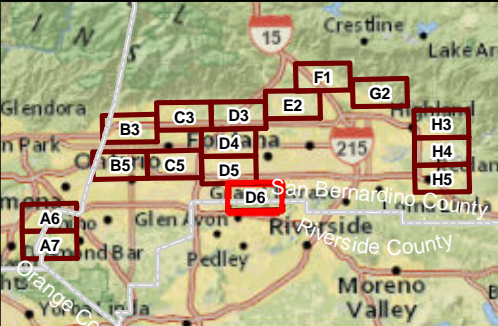
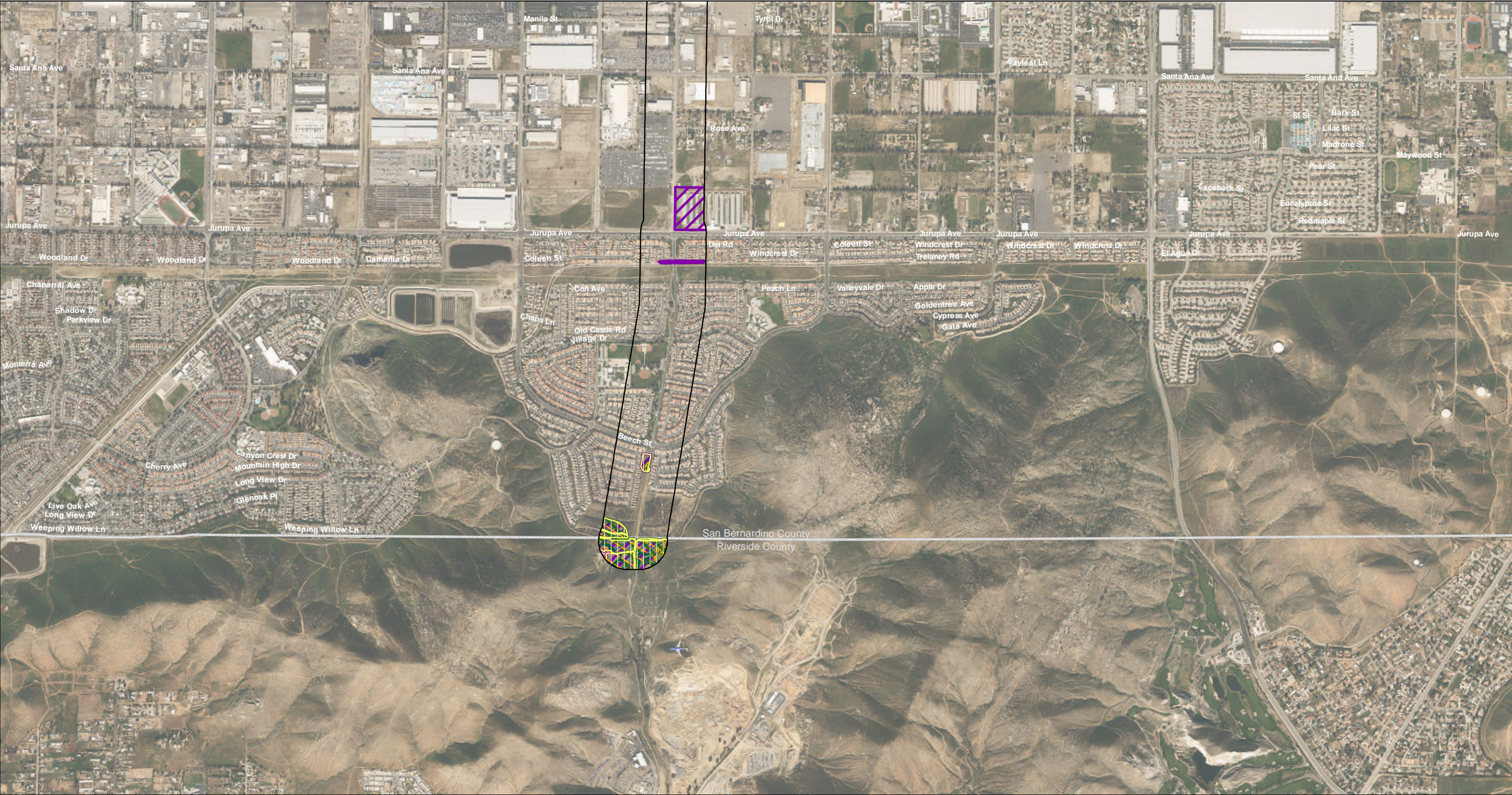
SOURCE: Eagle Aerial 2015



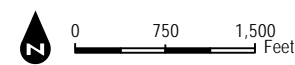
- | | | | | |
|--------------|--|-----------------------------------|-------------------------------------|----------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat |
| | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |



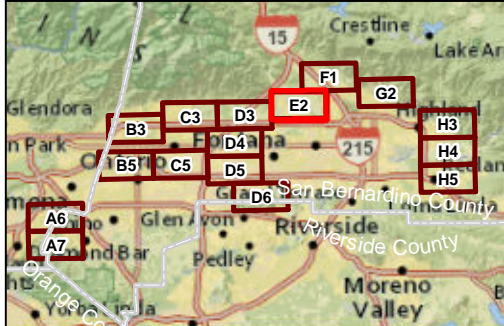
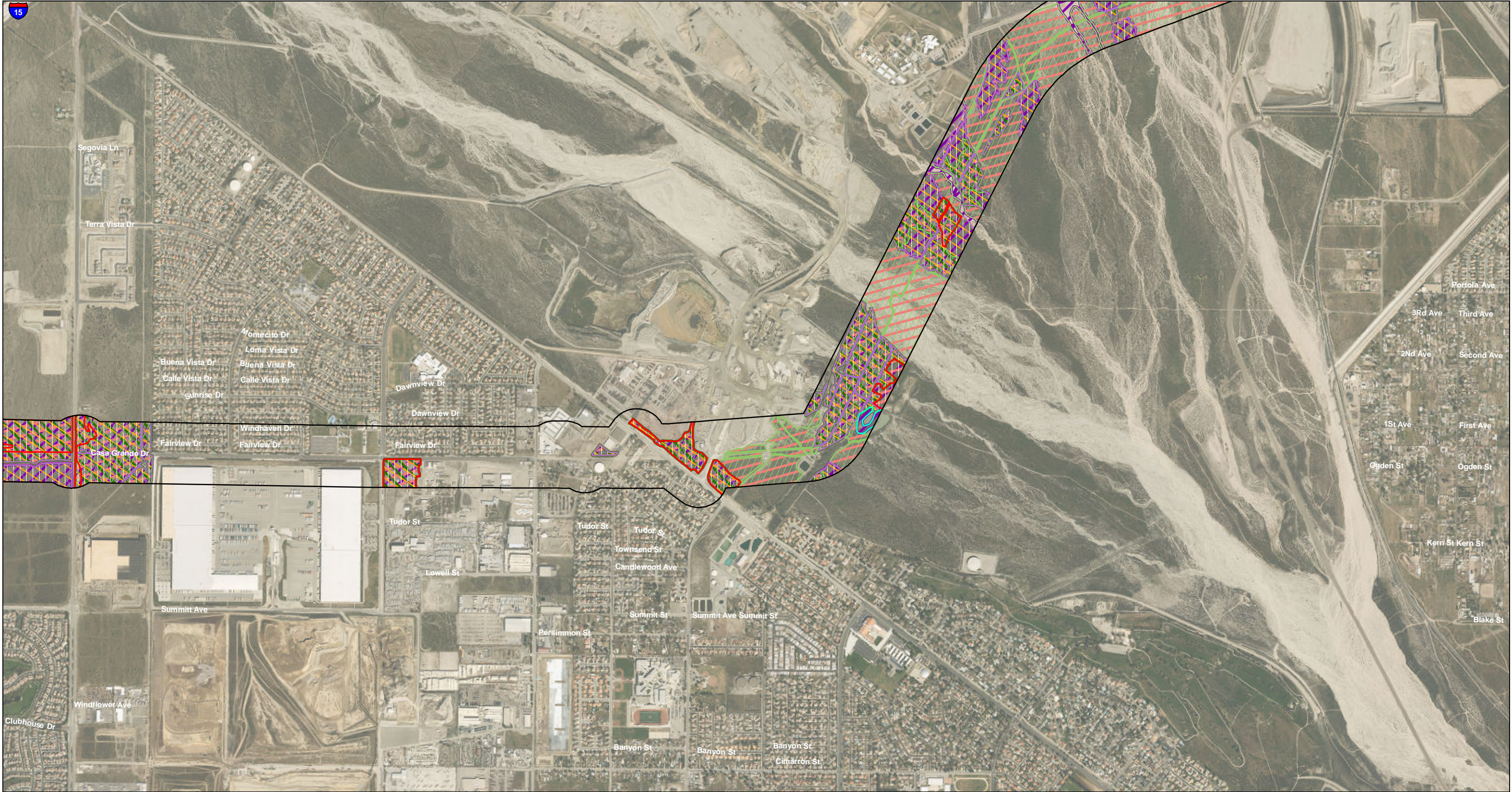
SOURCE: Eagle Aerial 2015



- | | | | |
|--|-------------------------------------|----------------------------|--------------------|
| Program Area | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Special-Status Mammal Modeled Habitat | San Diego desert woodrat | southern grasshopper mouse | |
| American badger | northwestern San Diego pocket mouse | western mastiff bat | |



SOURCE: Eagle Aerial 2015



Program Area

Special-Status Mammal Modeled Habitat

American badger

Dulzura pocket mouse

Los Angeles pocket mouse

San Bernardino kangaroo rat

San Diego black-tailed jackrabbit

San Diego desert woodrat

northwestern San Diego pocket mouse

pallid bat

southern grasshopper mouse

western mastiff bat

western yellow bat

0

750

1,500

Feet

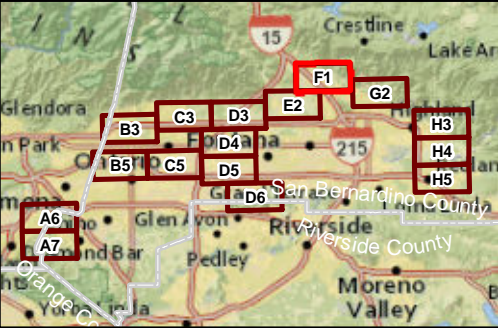
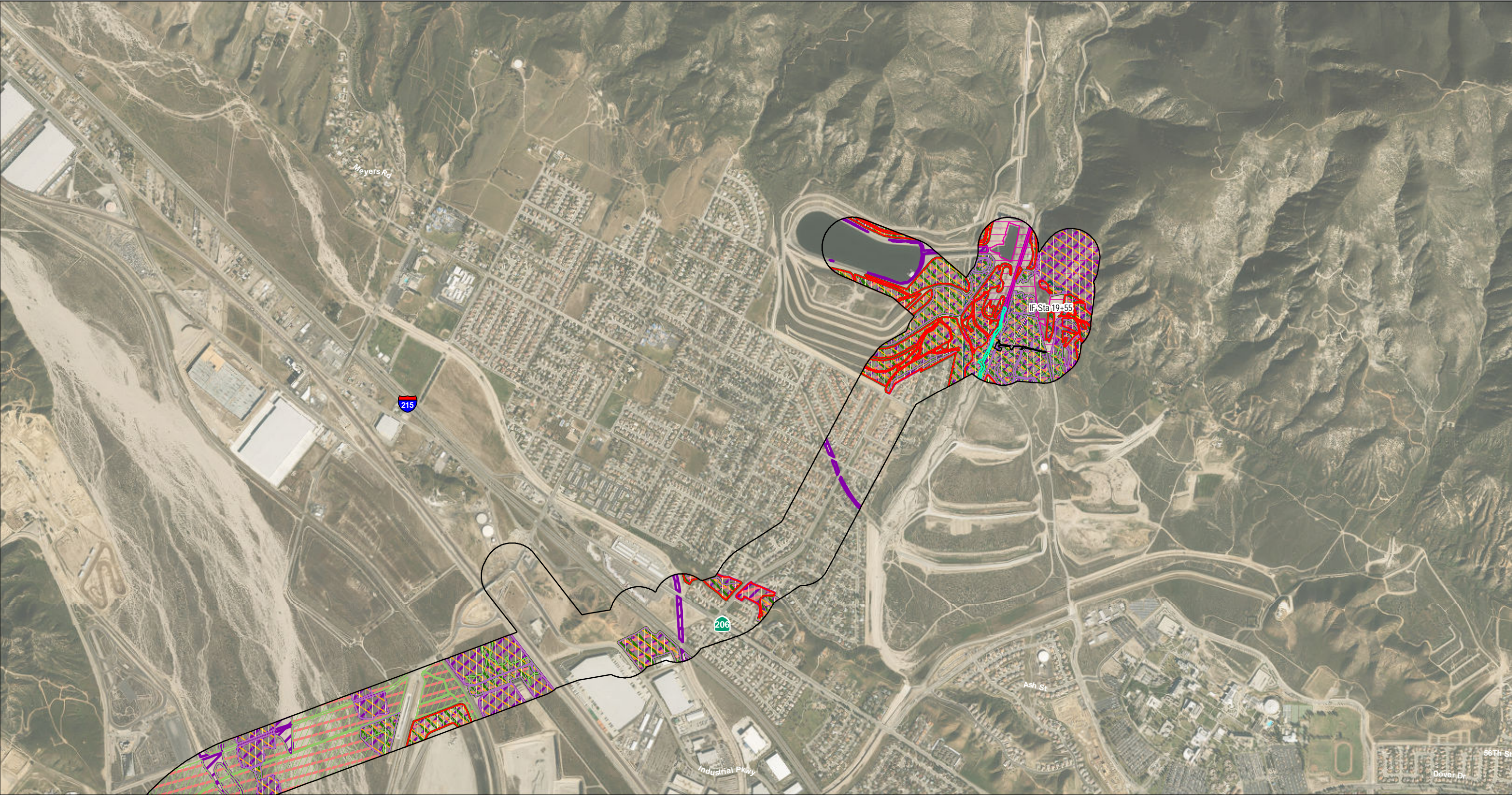
SOURCE: Eagle Aerial 2015

APPENDIX F-11B-11

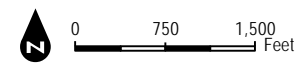
Special-Status Species Modeled Habitat: Mammals - Grid E2

The Metropolitan Water District of Southern California

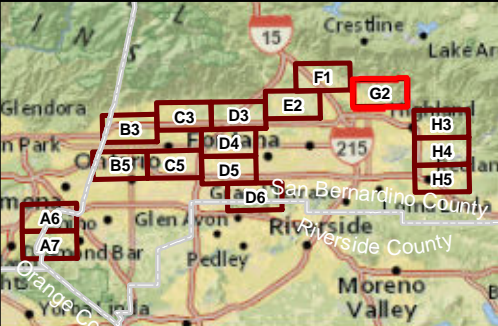
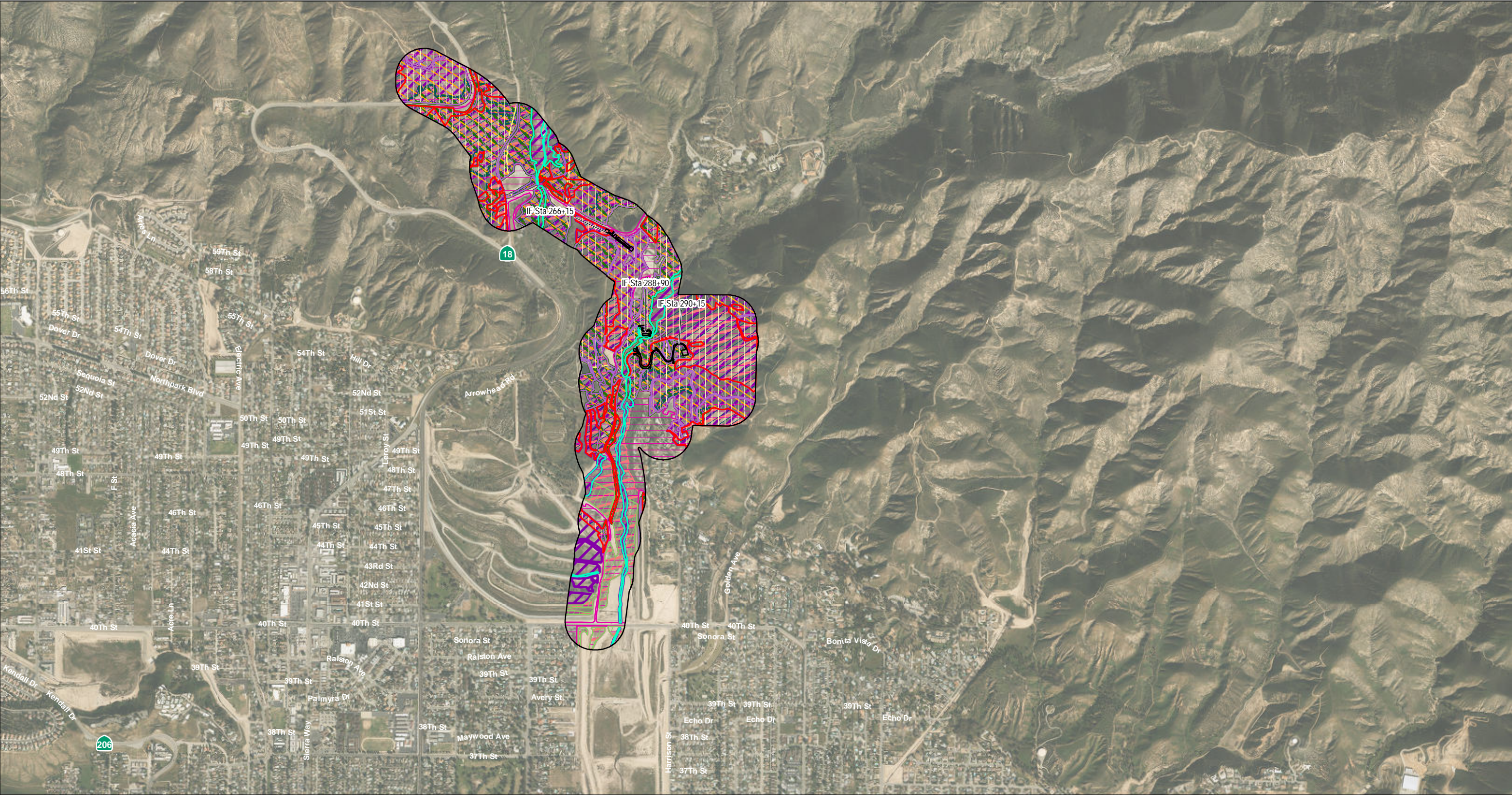
Western San Bernardino County Distribution System Infrastructure Protection Program



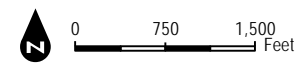
- | | | | | |
|--------------|--|-----------------------------------|-------------------------------------|----------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat |
| | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |



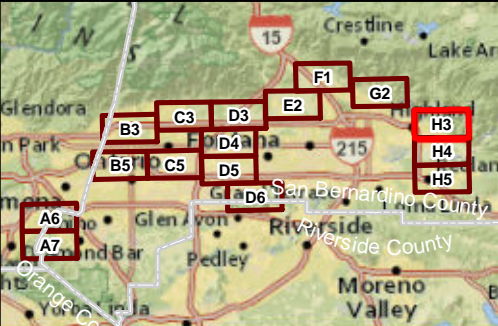
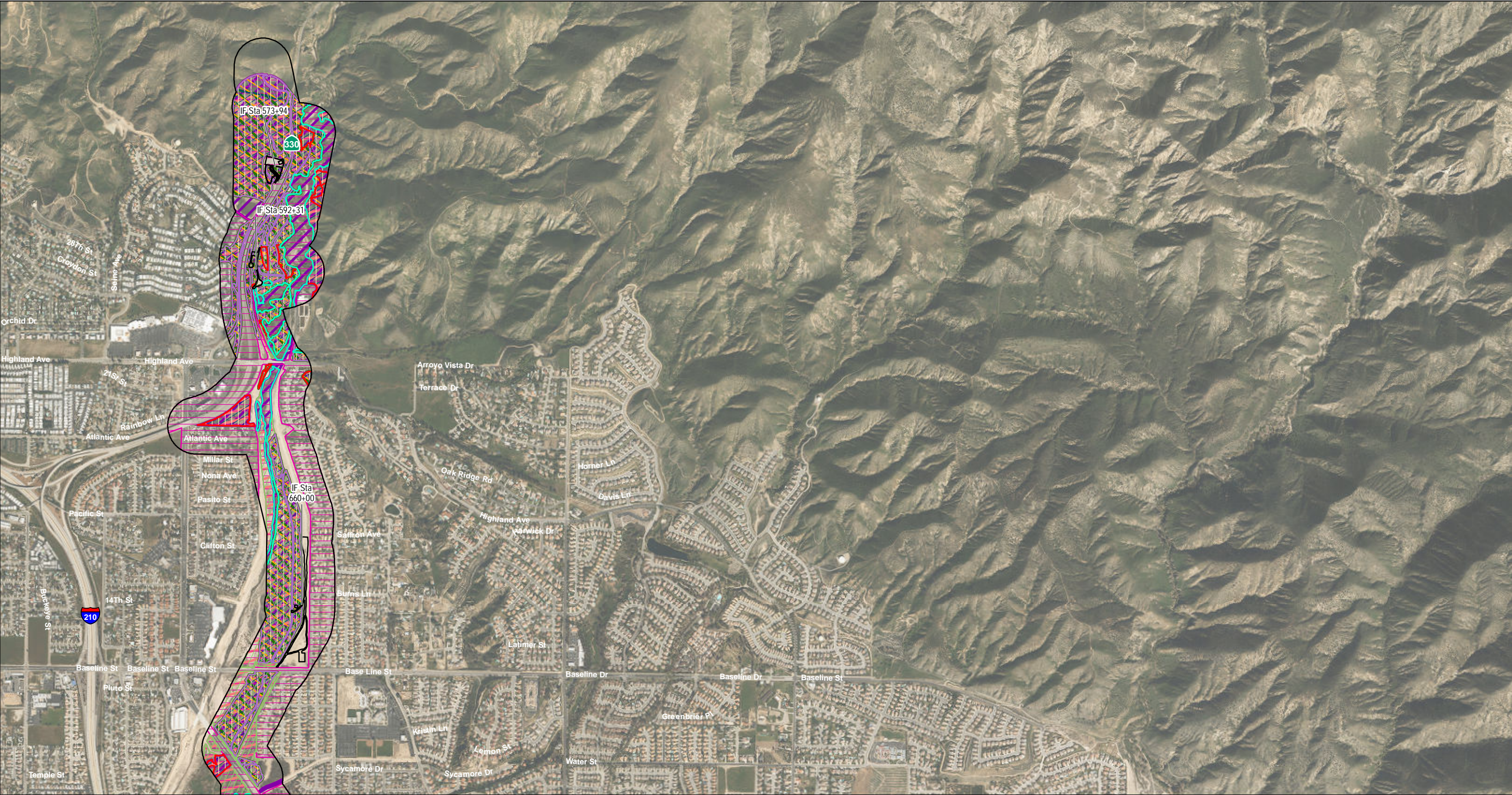
SOURCE: Eagle Aerial 2015



- | | | | | |
|--------------|--|--------------------------|-------------------------------------|----------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | | American badger | northwestern San Diego pocket mouse | western mastiff bat |
| | | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat |
| | | | | western yellow bat |



SOURCE: Eagle Aerial 2015



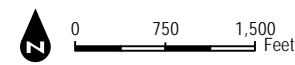
- Work Areas
- Program Area

- Special-Status Mammal Modeled Habitat**
- American badger
 - Dulzura pocket mouse

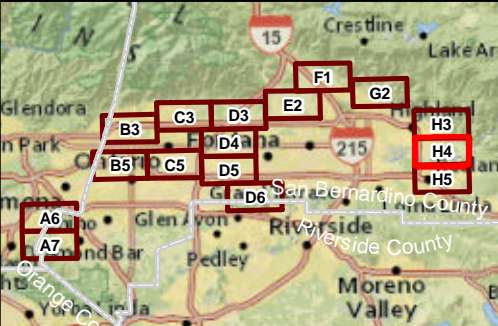
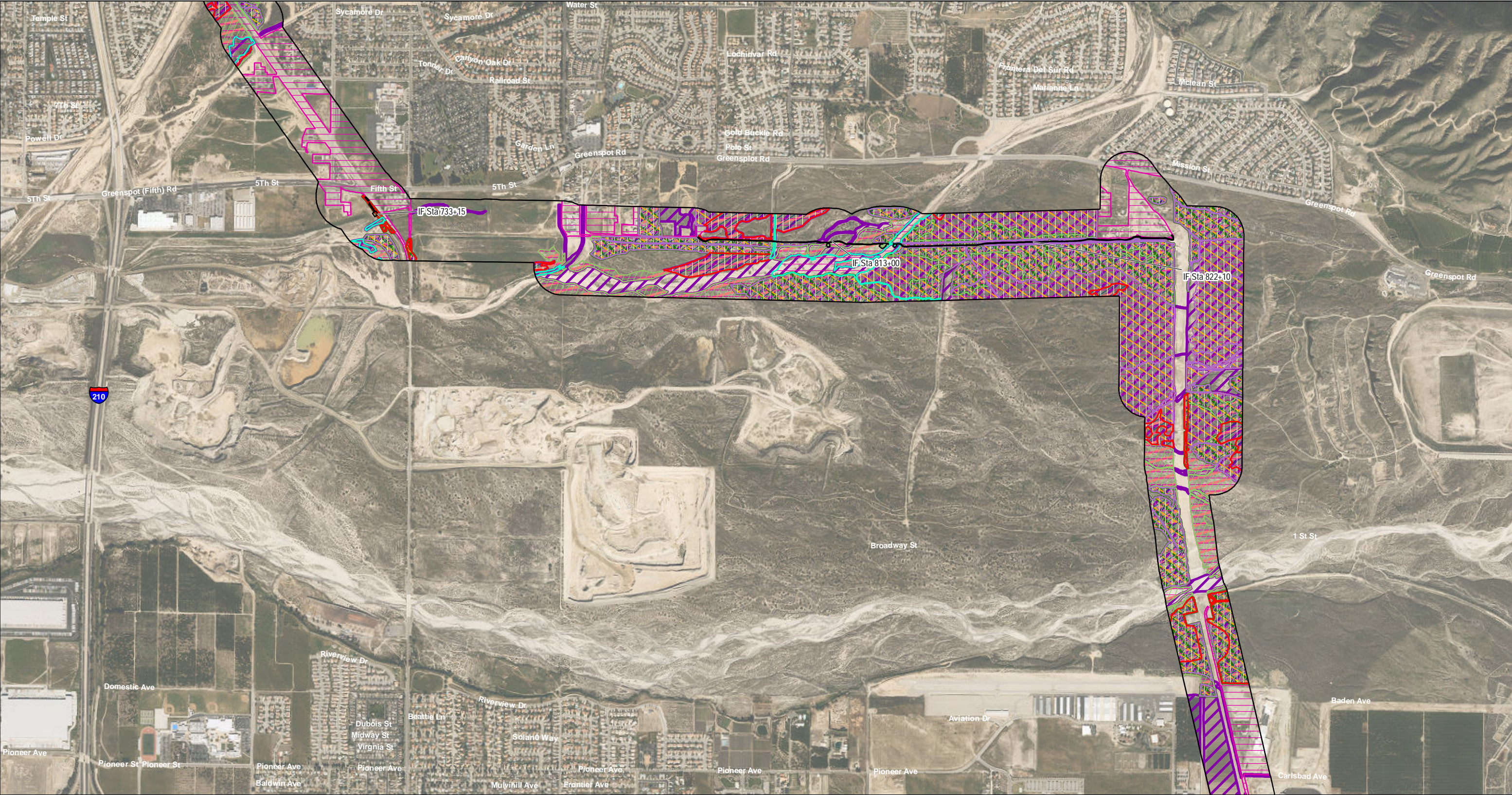
- Los Angeles pocket mouse
- San Bernardino kangaroo rat
- San Diego black-tailed jackrabbit

- San Diego desert woodrat
- northwestern San Diego pocket mouse
- pallid bat

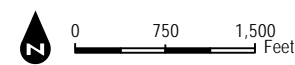
- southern grasshopper mouse
- western mastiff bat
- western yellow bat



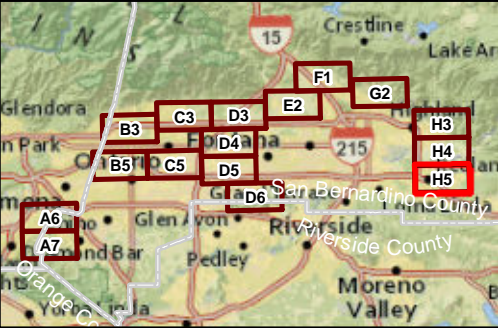
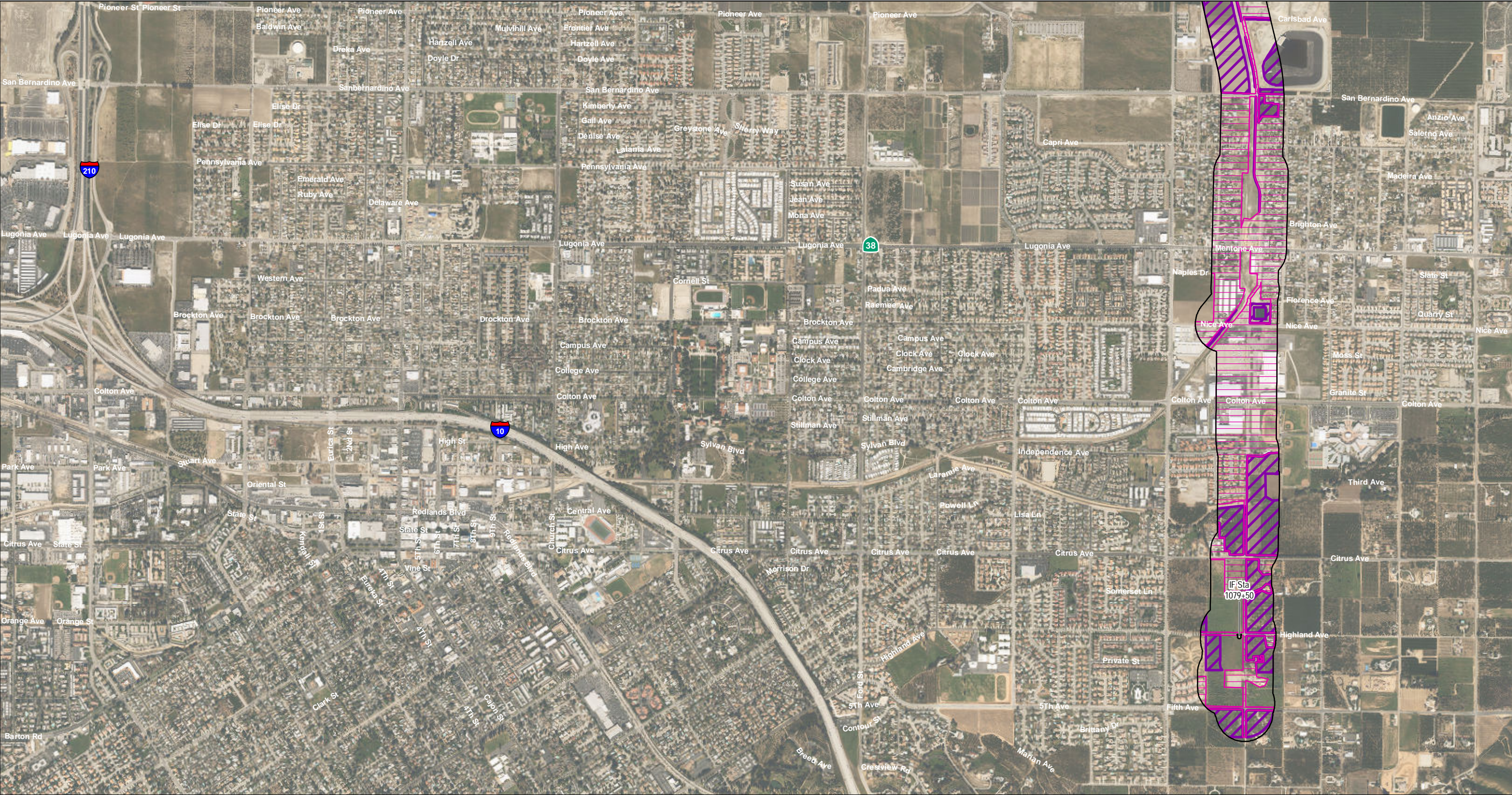
SOURCE: Eagle Aerial 2015



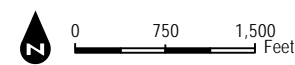
- | | | | | |
|--------------|--|-----------------------------------|-----------------------------|-------------------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse |
| | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |



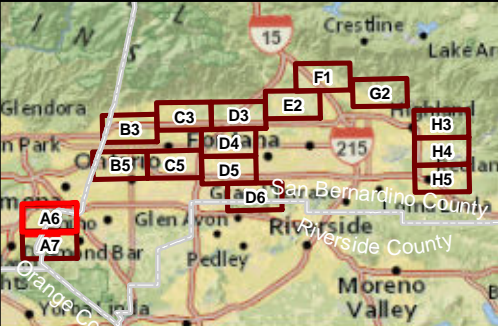
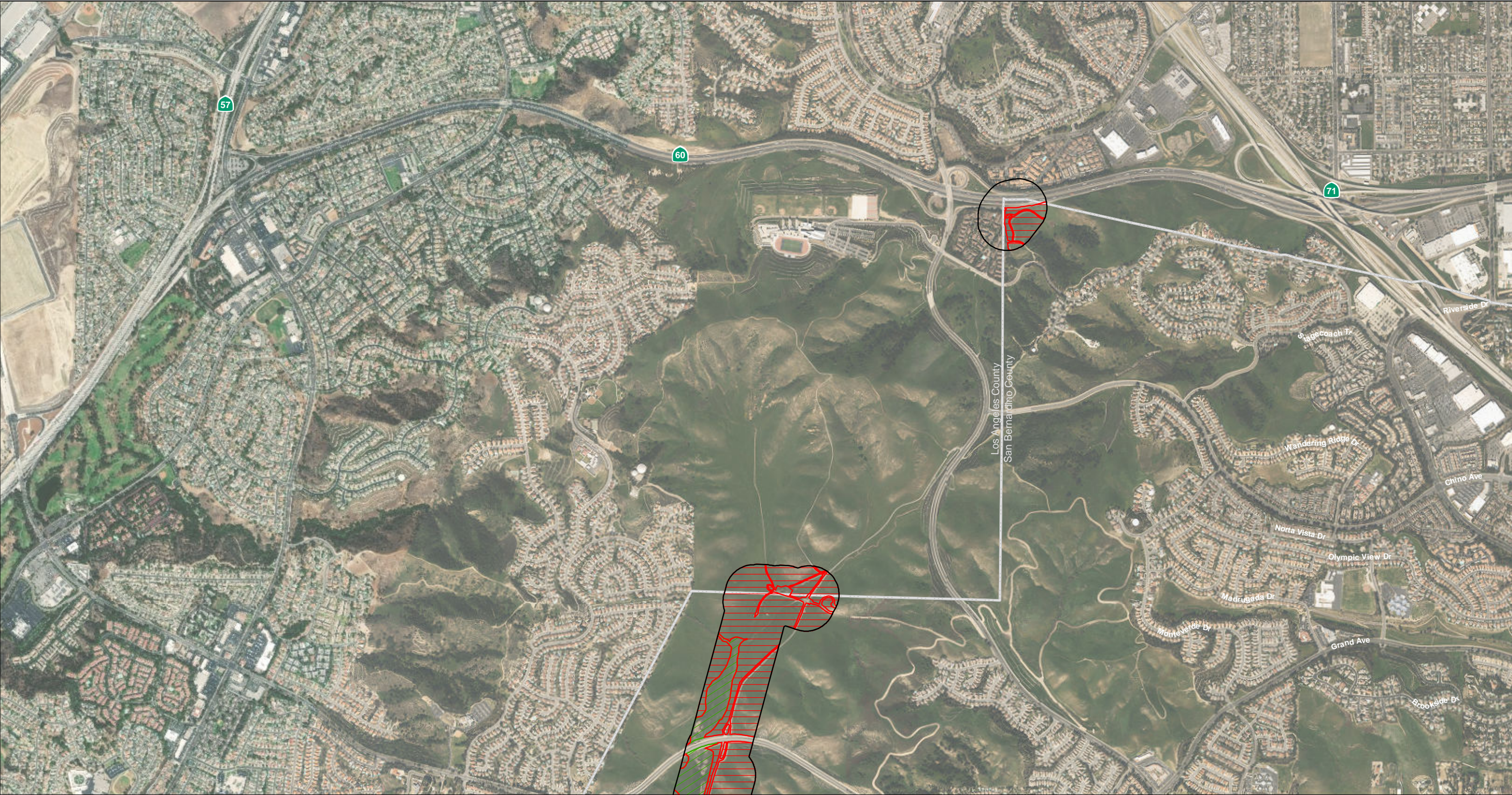
SOURCE: Eagle Aerial 2015



- | | | | |
|--------------|--|-------------------------------------|----------------------------|
| Work Areas | Special-Status Mammal Modeled Habitat | San Diego desert woodrat | southern grasshopper mouse |
| Program Area | American badger | northwestern San Diego pocket mouse | western mastiff bat |
| | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |



SOURCE: Eagle Aerial 2015



Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

Blainville's horned lizard

glossy snake

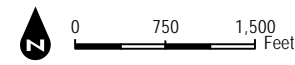
orangethroat whiptail

red diamondback rattlesnake

silvery legless lizard

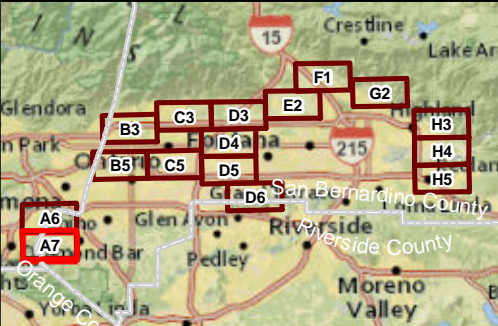
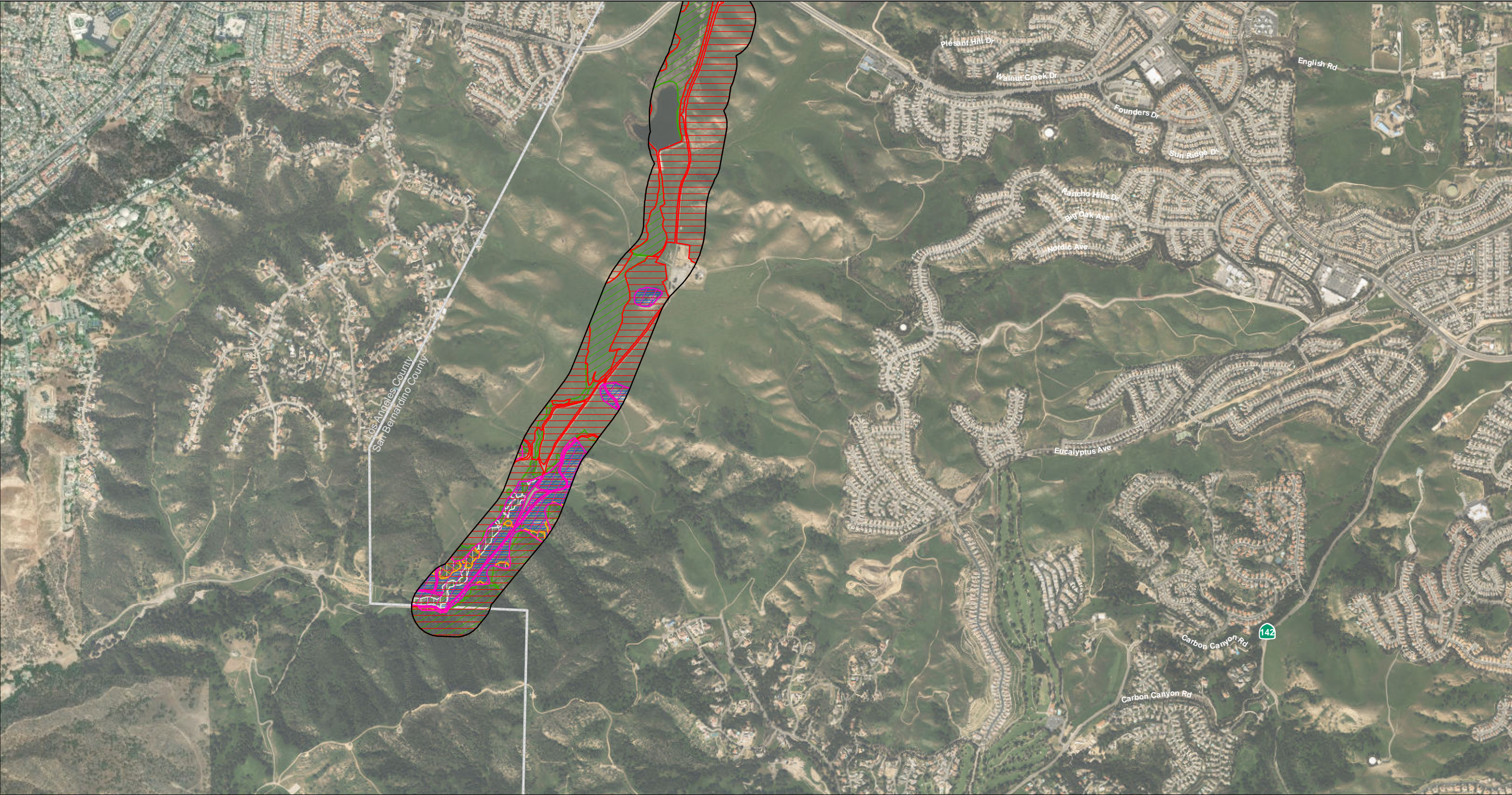
two-striped gartersnake

western spadefoot



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

Blainville's horned lizard

glossy snake

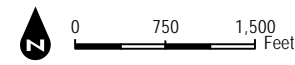
orangethroat whiptail

red diamondback rattlesnake

silvery legless lizard

two-striped gartersnake

western spadefoot

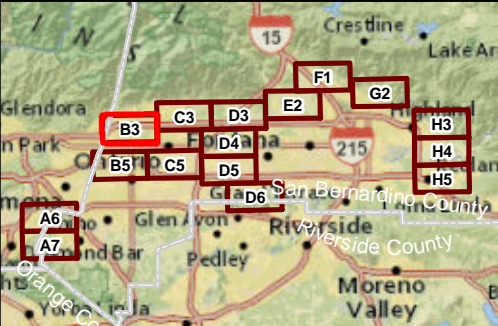
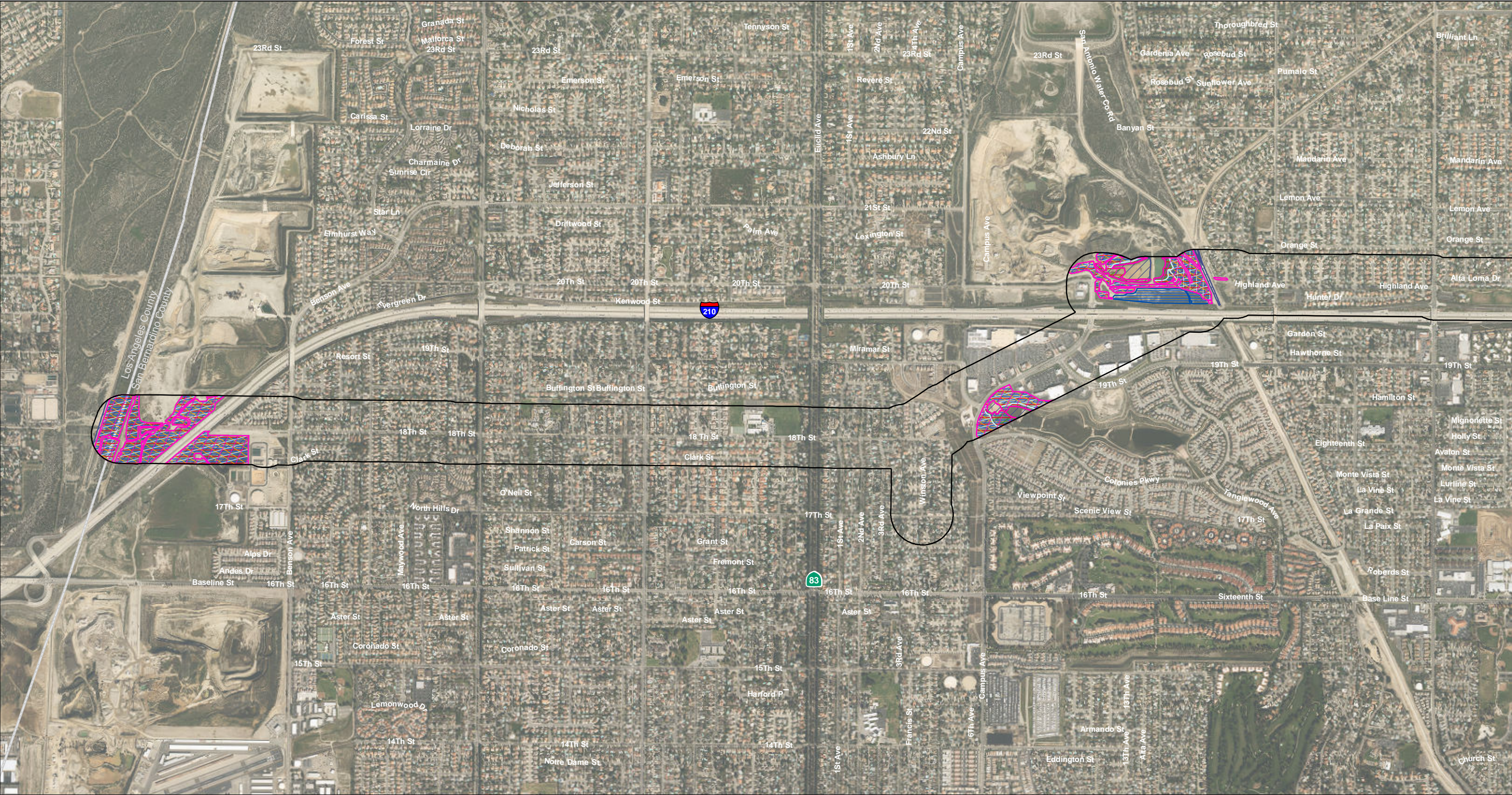


SOURCE: Eagle Aerial 2015

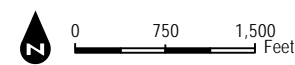
The Metropolitan Water District of Southern California

APPENDIX F-11C-2
Special-Status Species Modeled Habitat: Reptiles / Amphibians / Insects - Grid A7

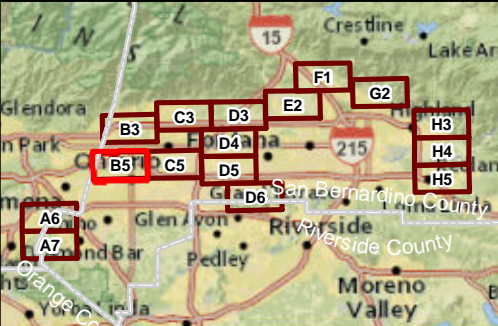
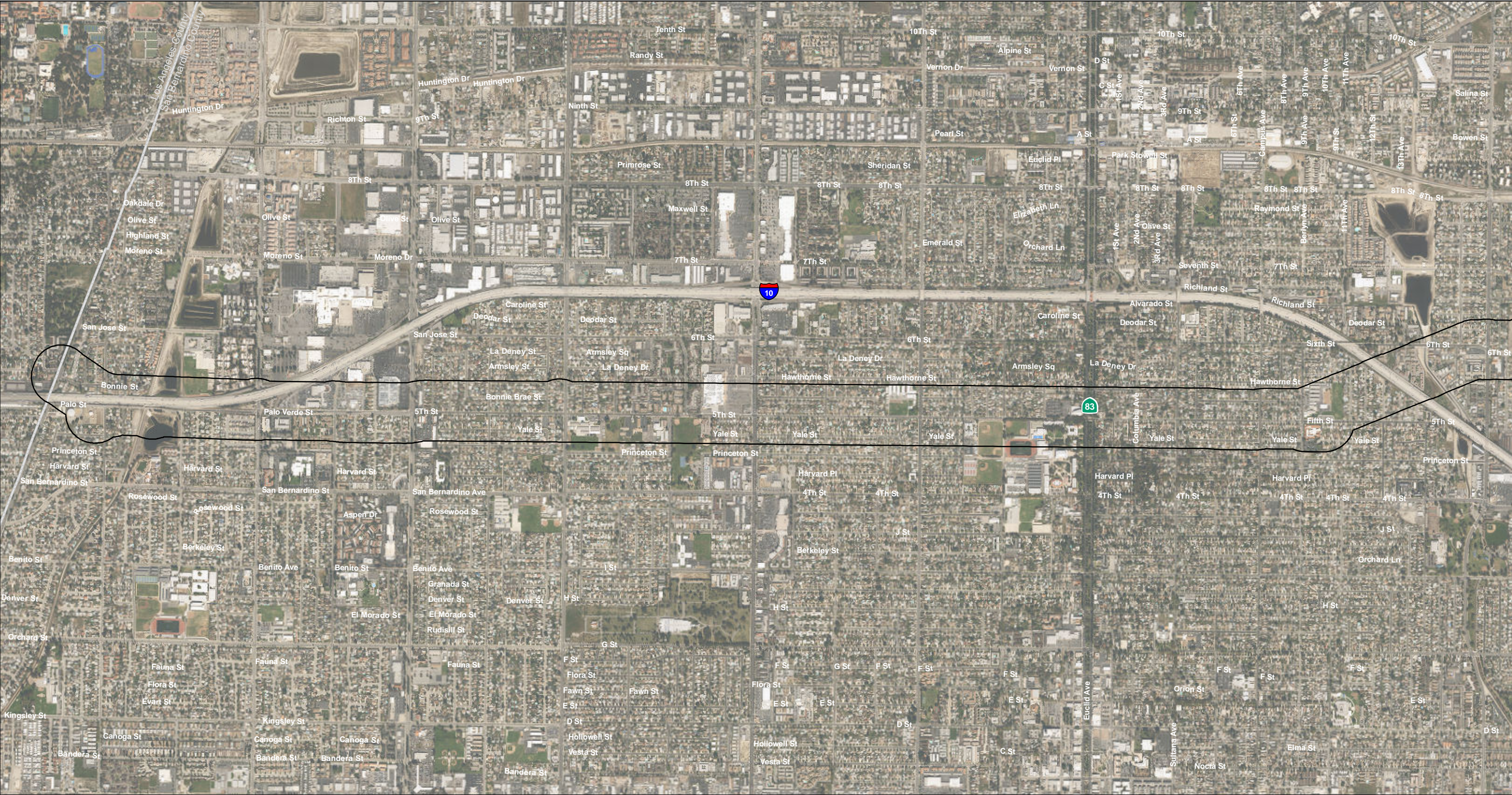
Western San Bernardino County Distribution System Infrastructure Protection Program



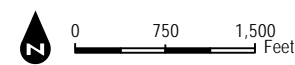
- Program Area
- Special-Status Reptile / Amphibian / Insect Modeled Habitat**
- Blainville's horned lizard
- coast patch-nosed snake
- glossy snake
- red diamondback rattlesnake
- silvery legless lizard
- western spadefoot
- orangethroat whiptail
- two-striped gartersnake



SOURCE: Eagle Aerial 2015

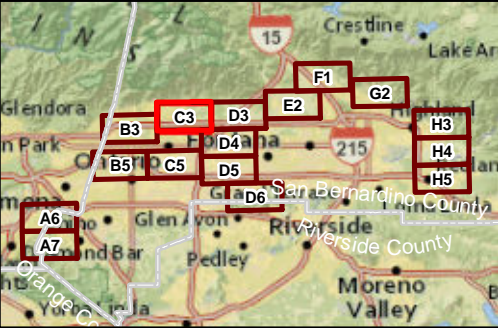
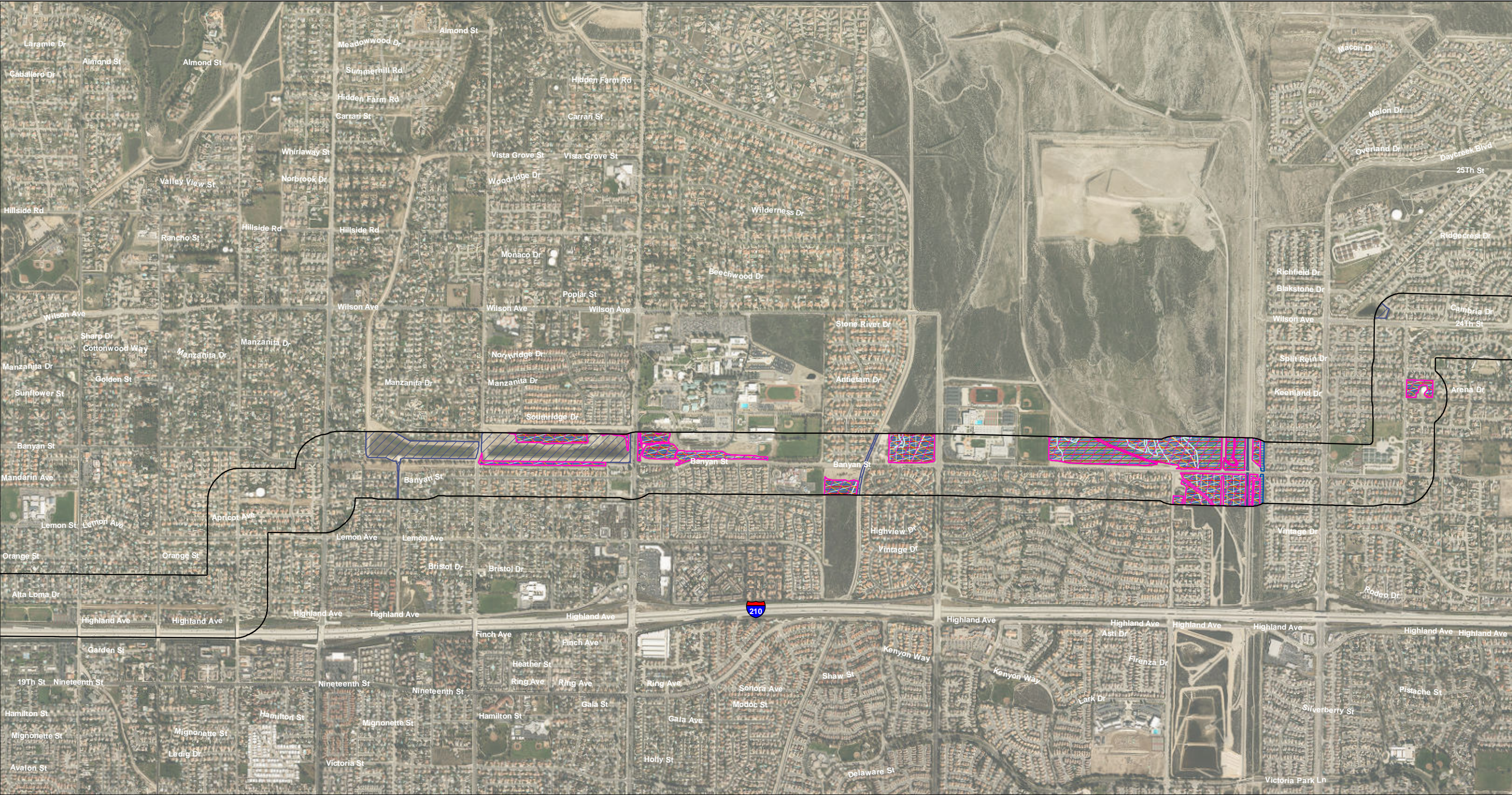


- Program Area
- Special-Status Reptile / Amphibian / Insect Modeled Habitat**
- | | | |
|----------------------------|-----------------------------|-------------------|
| coast patch-nosed snake | red diamondback rattlesnake | western spadefoot |
| glossy snake | silvery legless lizard | |
| orangethroat whiptail | two-striped gartersnake | |
| Blainville's horned lizard | | |



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



- Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

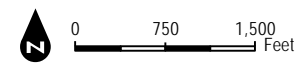
Blainville's horned lizard
- coast patch-nosed snake

glossy snake

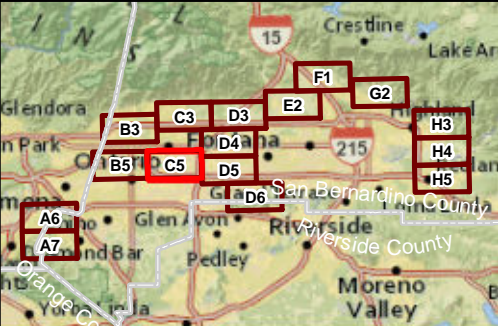
orangethroat whiptail
- red diamondback rattlesnake

silvery legless lizard

two-striped gartersnake
- western spadefoot



SOURCE: Eagle Aerial 2015

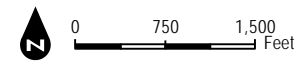


Program Area
Special-Status Reptile / Amphibian / Insect Modeled Habitat
 Blainville's horned lizard

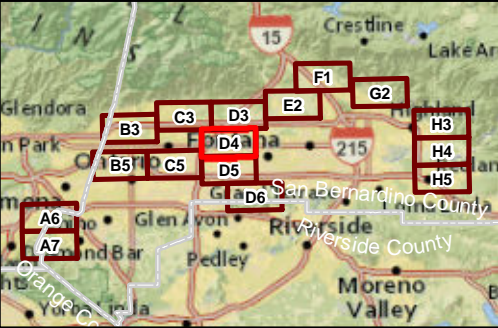
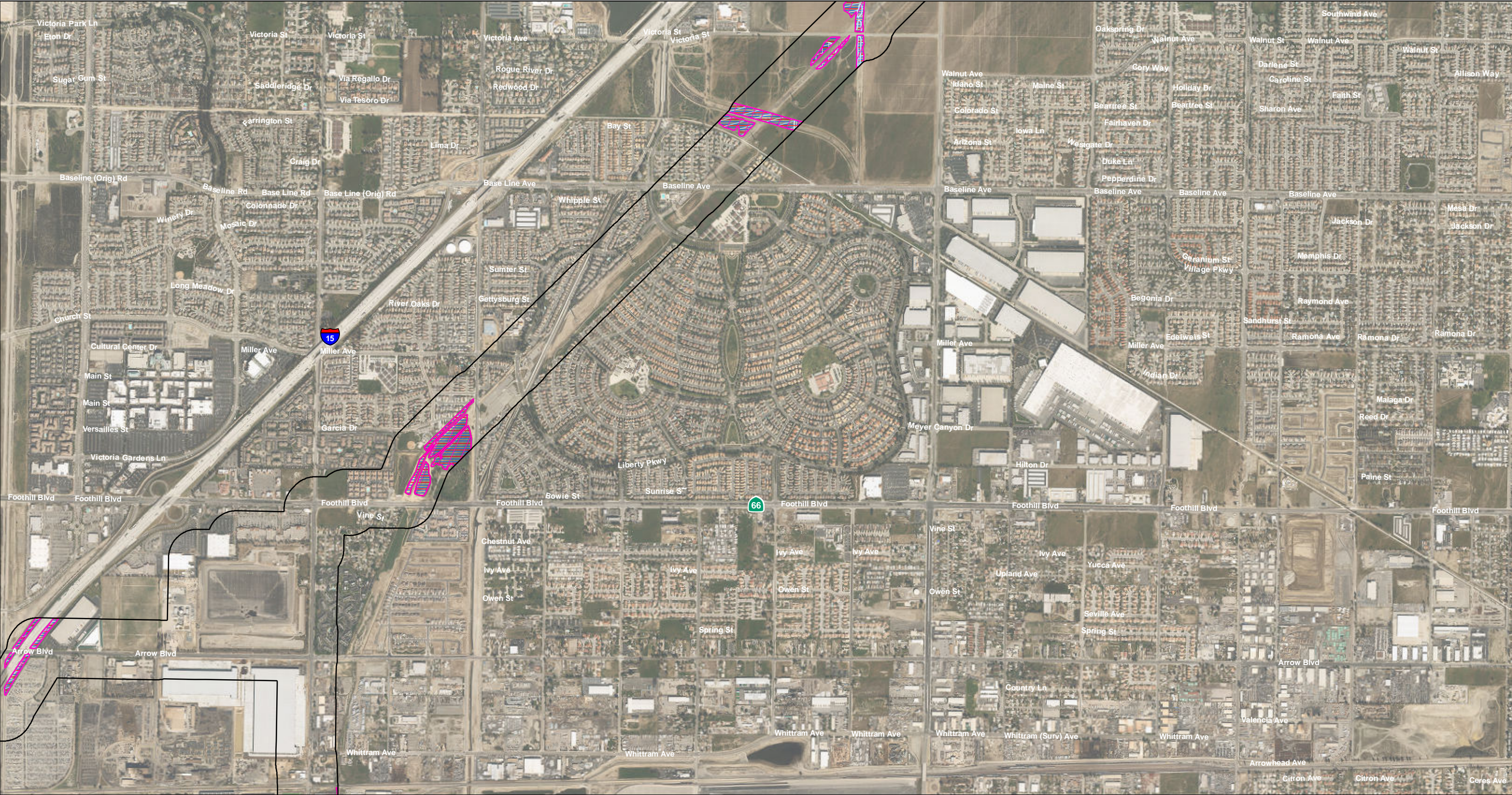
Delhi Sands flower-loving fly
 coast patch-nosed snake
 glossy snake

orangethroat whiptail
 red diamondback rattlesnake
 silvery legless lizard

two-striped gartersnake
 western spadefoot



SOURCE: Eagle Aerial 2015



Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

Blainville's horned lizard

coast patch-nosed snake

glossy snake

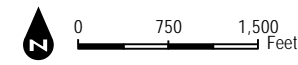
orangethroat whiptail

red diamondback rattlesnake

silvery legless lizard

two-striped gartersnake

western spadefoot

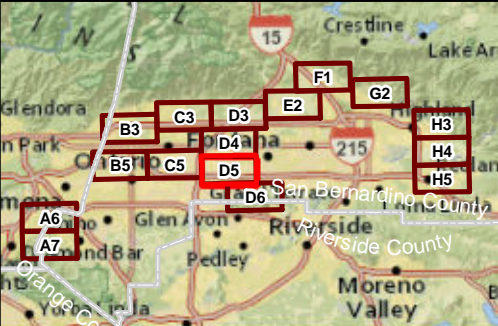
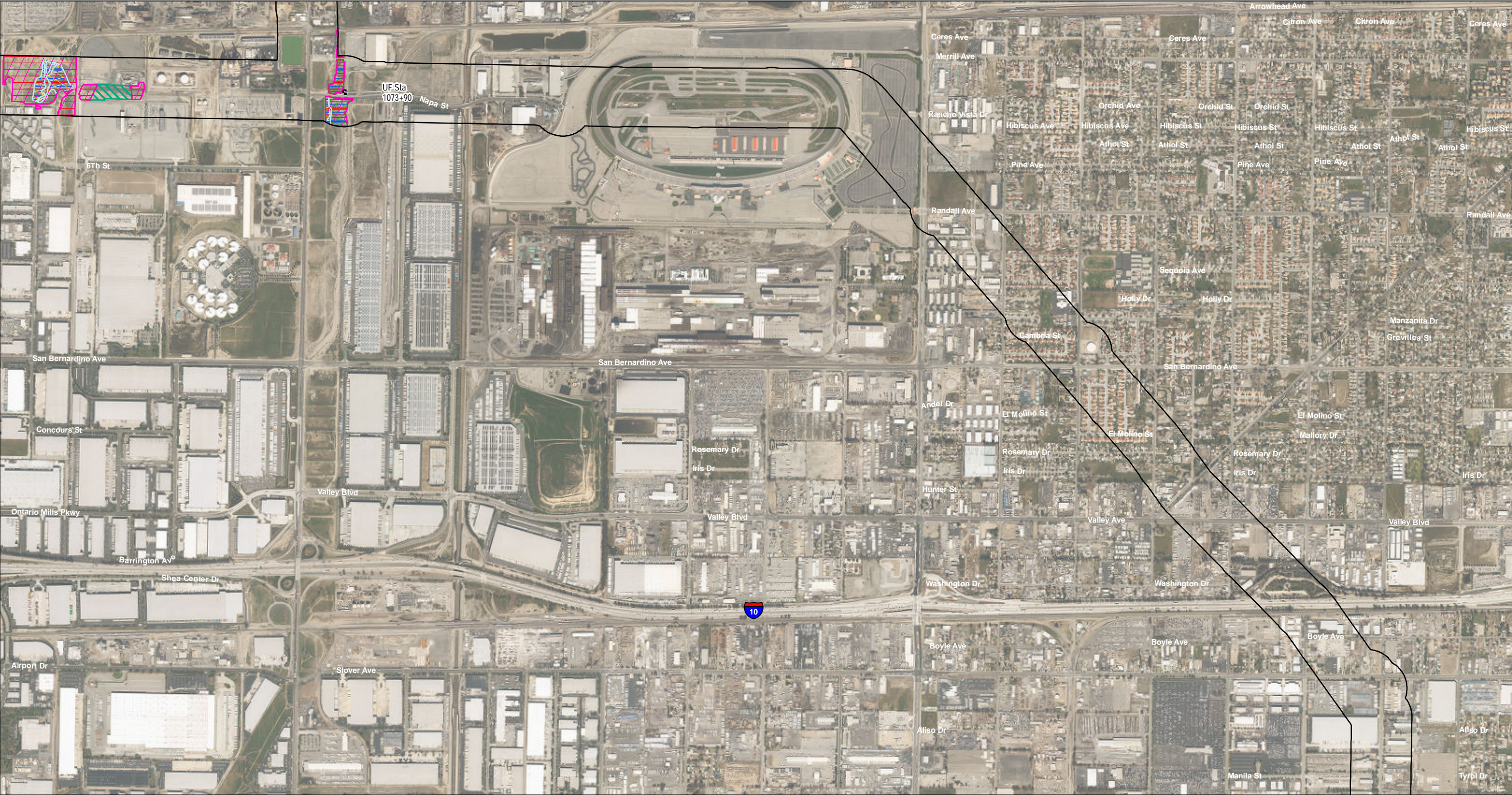


SOURCE: Eagle Aerial 2015

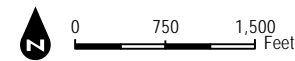
The Metropolitan Water District of Southern California

APPENDIX F-11C-8
Special-Status Species Modeled Habitat: Reptiles / Amphibians / Insects - Grid D4

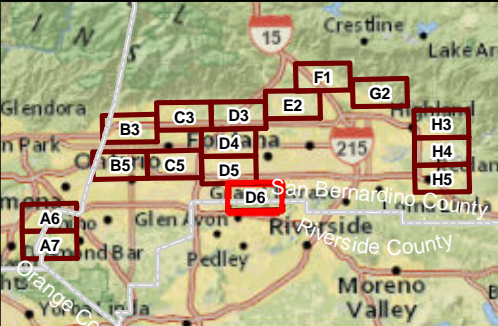
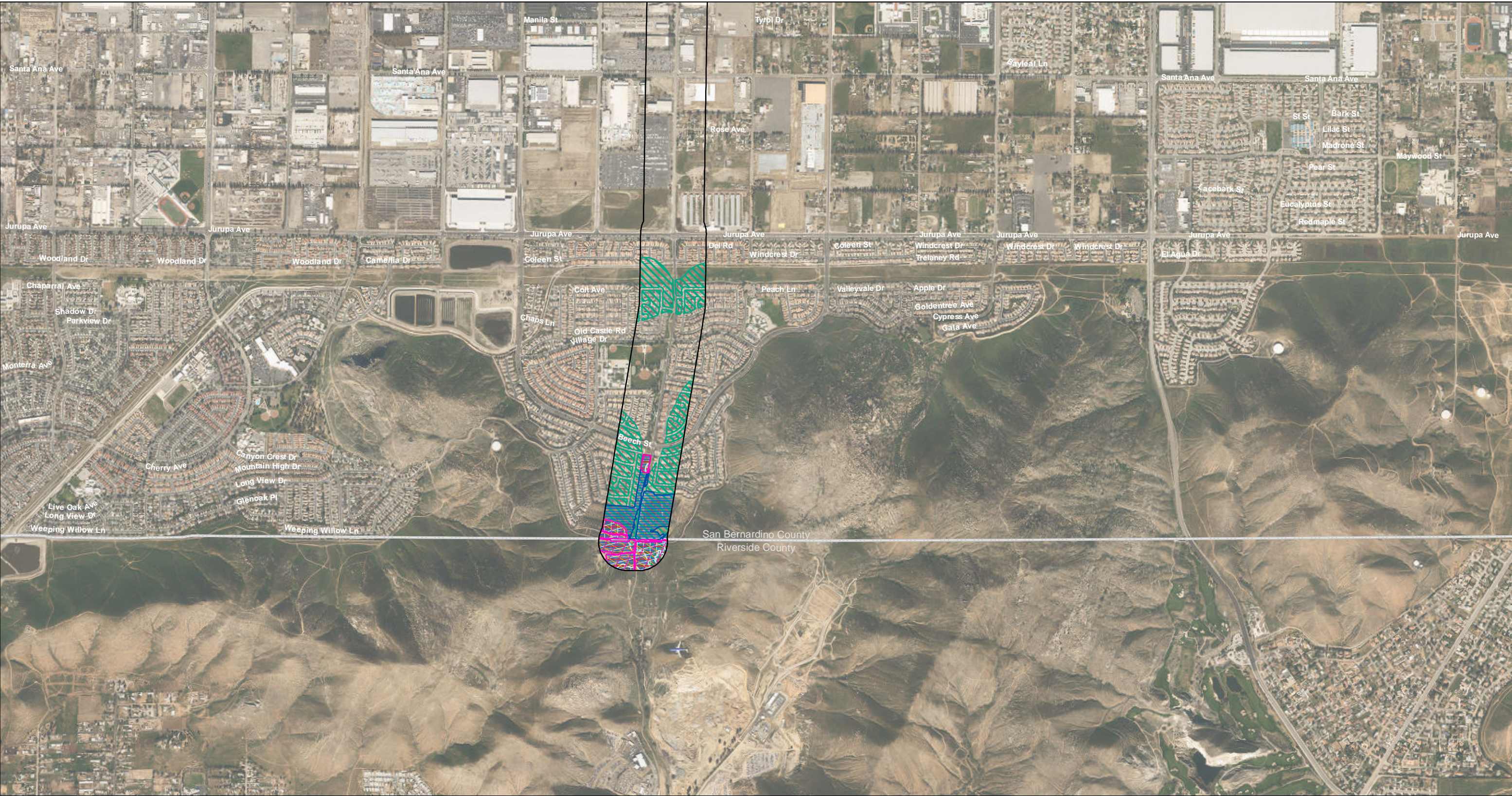
Western San Bernardino County Distribution System Infrastructure Protection Program



- | | | | | |
|--------------|--|-------------------------|-----------------------------|-------------------|
| Work Areas | Special-Status Reptile / Amphibian / Insect Modeled Habitat | coast patch-nosed snake | red diamondback rattlesnake | western spadefoot |
| Program Area | Blainville's horned lizard | glossy snake | silvery legless lizard | |
| | Delhi Sands flower-loving fly | orangethroat whiptail | two-striped gartersnake | |



SOURCE: Eagle Aerial 2015



Program Area

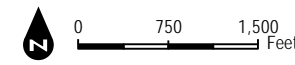
Special-Status Reptile / Amphibian / Insect Modeled Habitat

Blainville's horned lizard

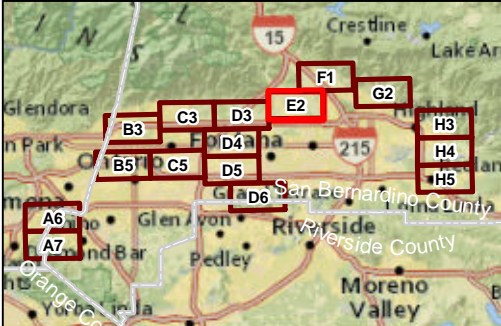
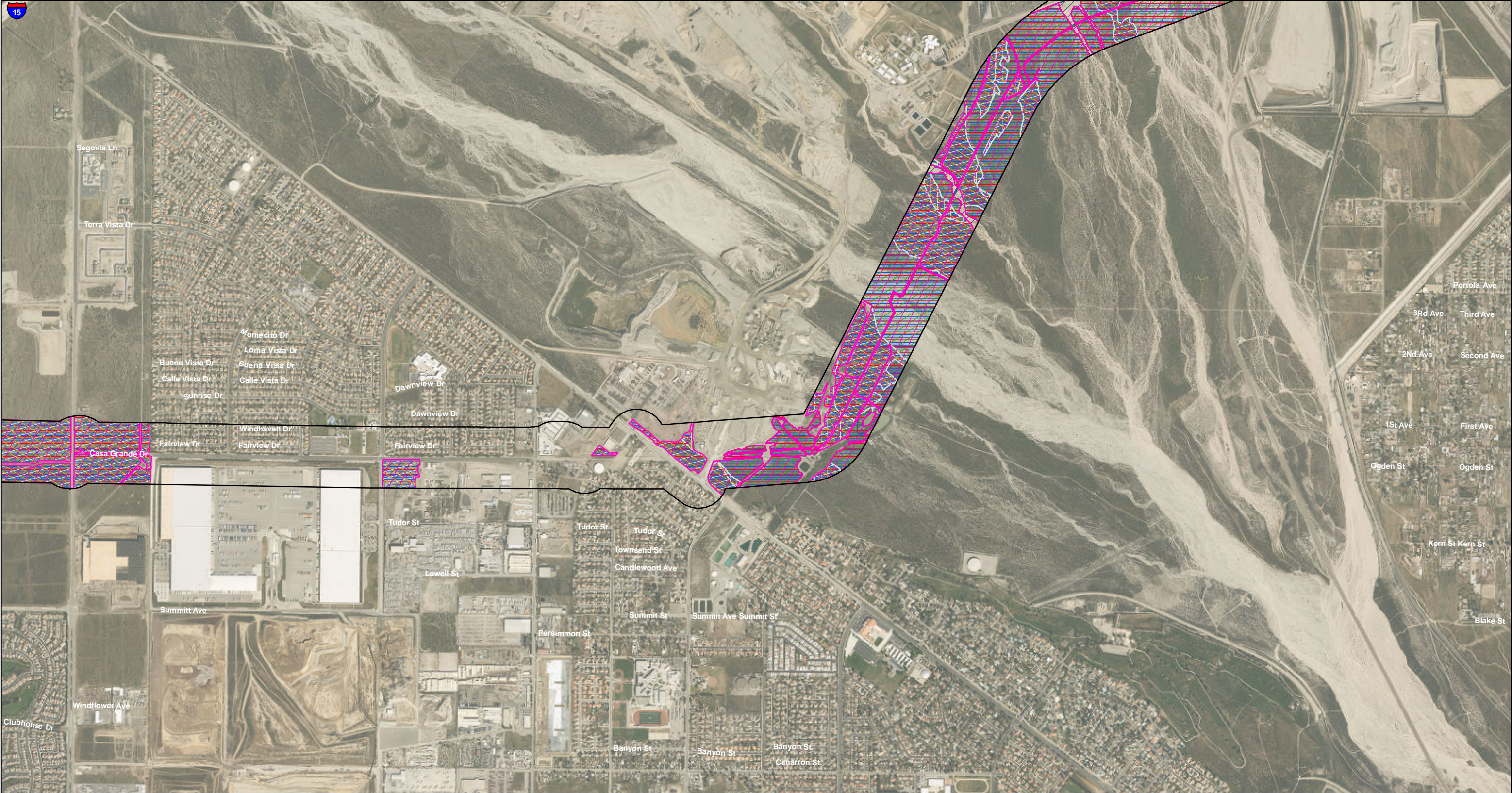
Delhi Sands flower-loving fly
coast patch-nosed snake
glossy snake

orangerthroat whiptail
red diamondback rattlesnake
silvery legless lizard

two-striped gartersnake
western spadefoot



SOURCE: Eagle Aerial 2015



Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

Blainville's horned lizard

coast patch-nosed snake

glossy snake

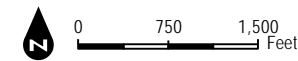
orangethroat whiptail

red diamondback rattlesnake

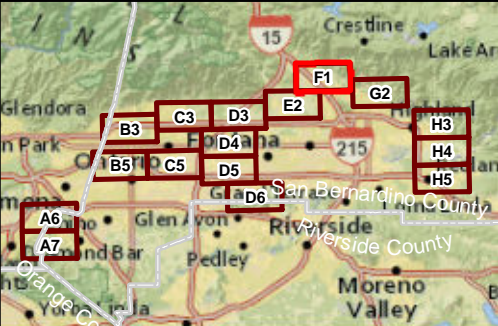
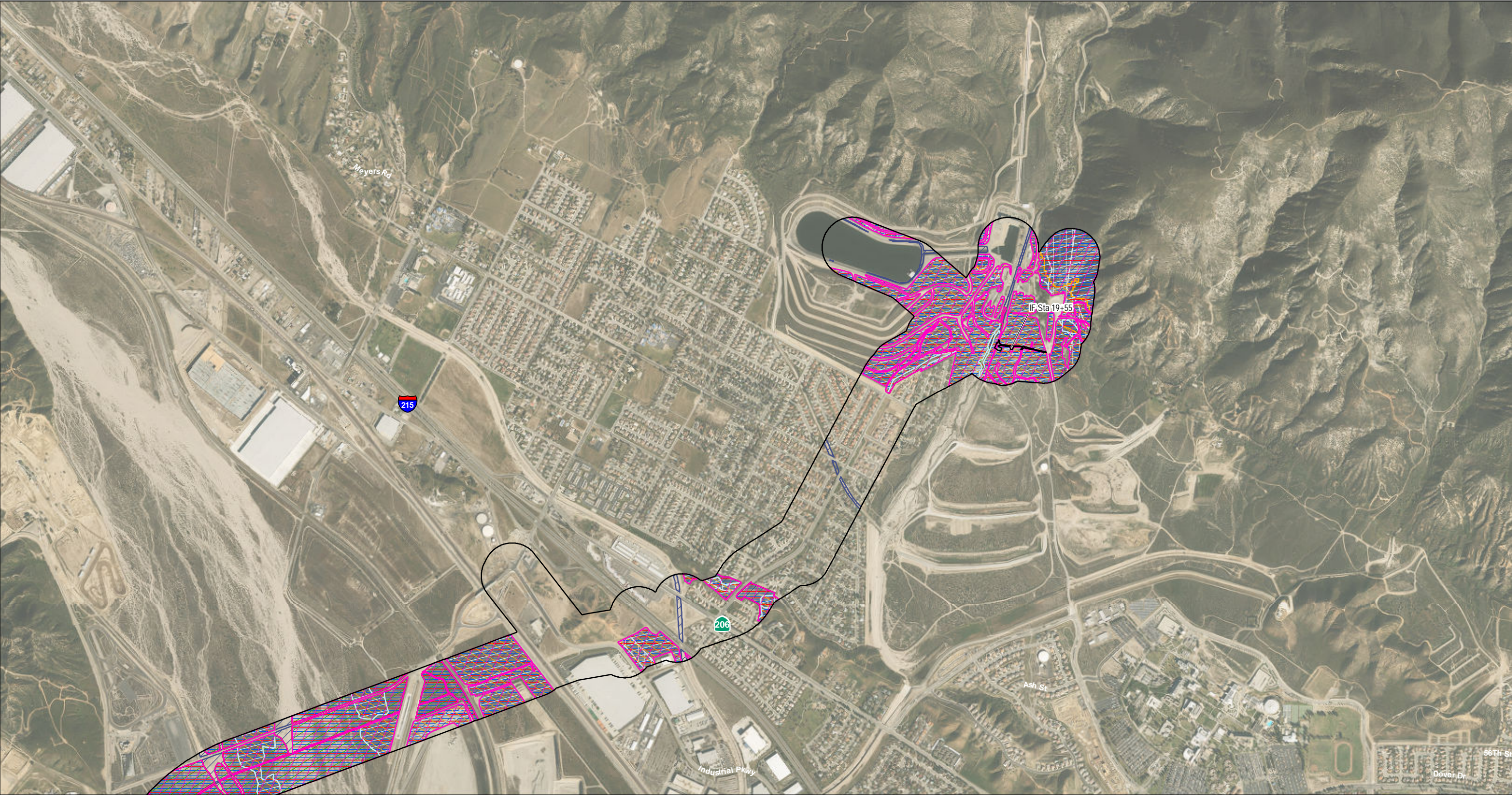
silvery legless lizard

two-striped gartersnake

western spadefoot



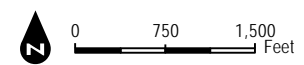
SOURCE: Eagle Aerial 2015



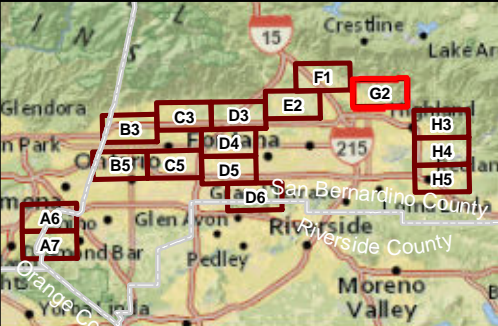
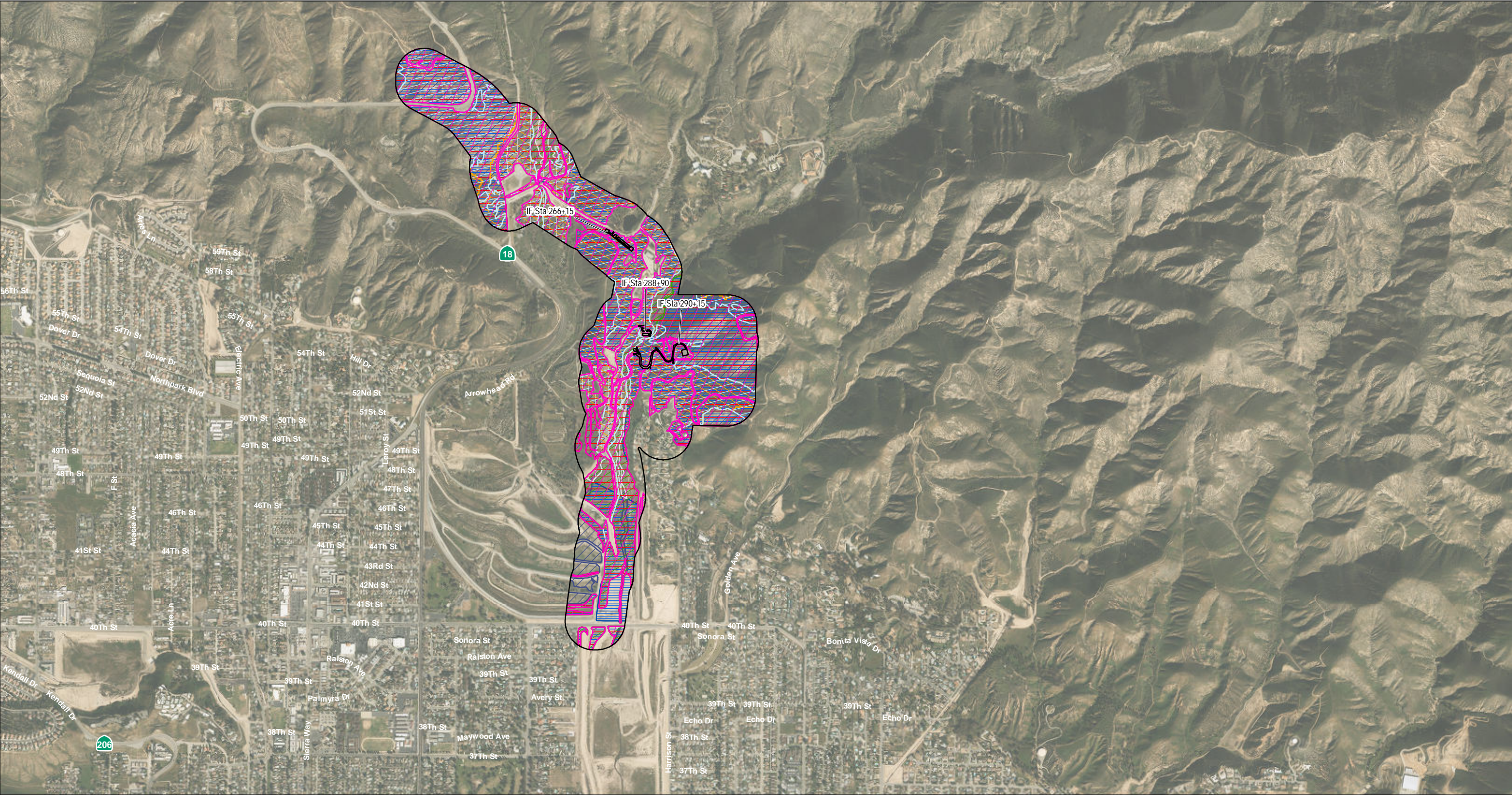
- Work Areas
- Program Area

- Special-Status Reptile / Amphibian / Insect Modeled Habitat**
- Blainville's horned lizard
 - coast patch-nosed snake

- glossy snake
- orangethroat whiptail
- red diamondback rattlesnake
- silvery legless lizard
- two-striped gartersnake
- western spadefoot



SOURCE: Eagle Aerial 2015



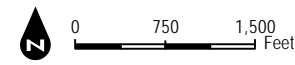
- Work Areas
- Program Area

Special-Status Reptile / Amphibian / Insect Modeled Habitat

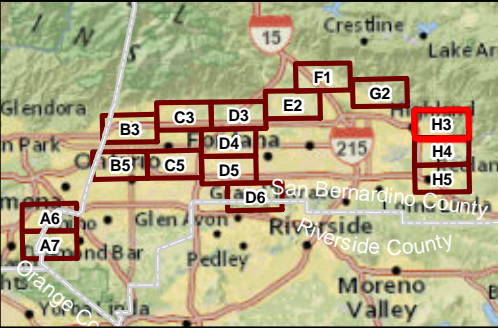
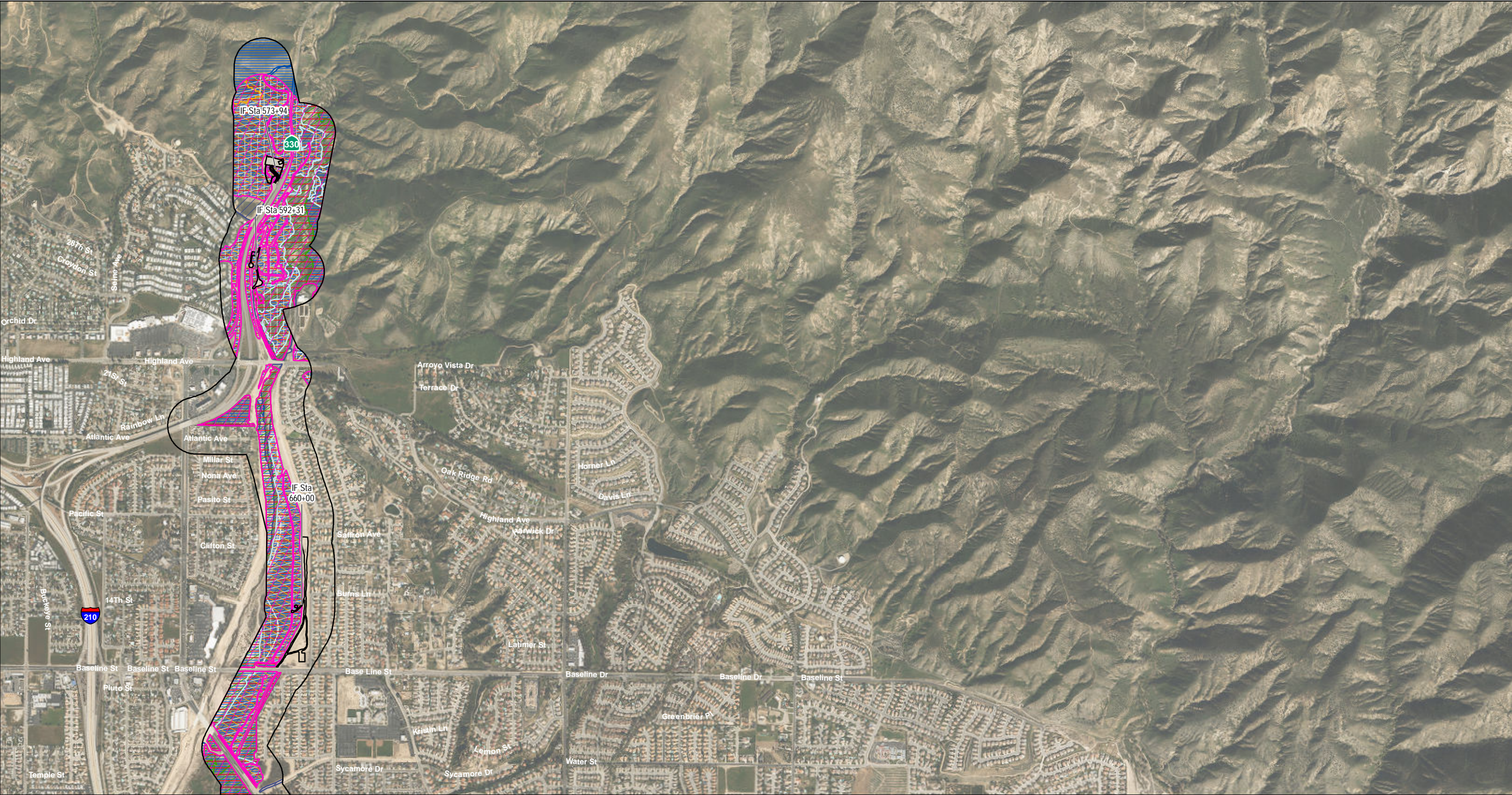
- Blainville's horned lizard
- coast patch-nosed snake

- glossy snake
- orangethroat whiptail
- red diamondback rattlesnake

- silvery legless lizard
- two-striped gartersnake
- western spadefoot



SOURCE: Eagle Aerial 2015

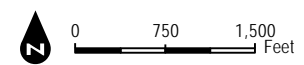


- Work Areas
- Program Area

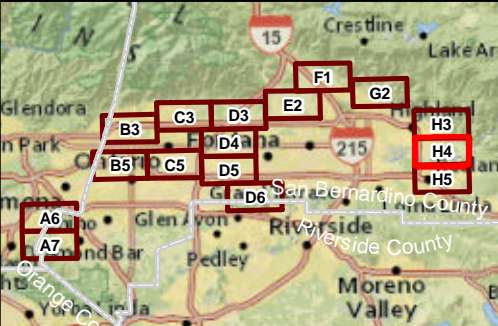
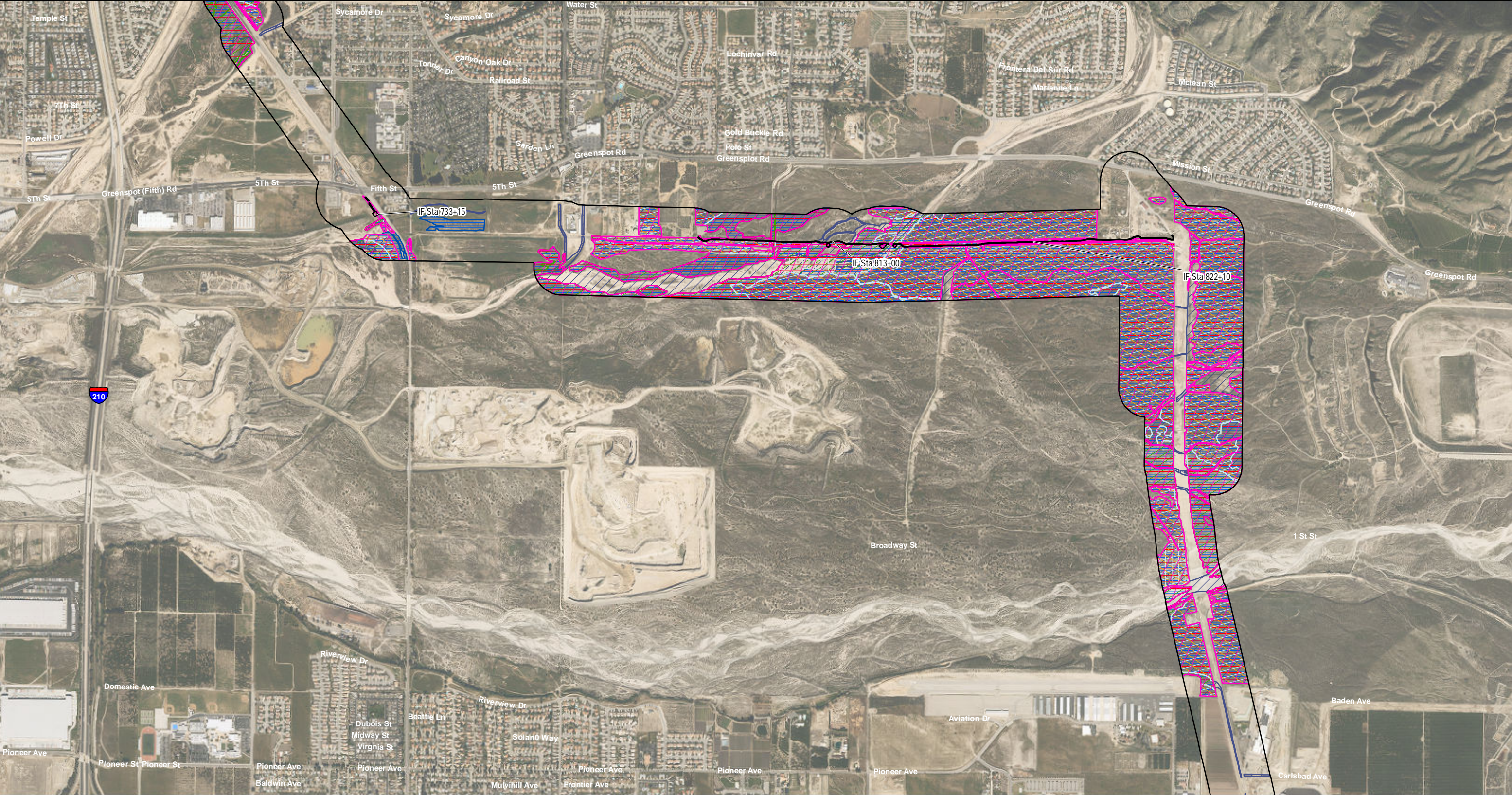
Special-Status Reptile / Amphibian / Insect Modeled Habitat

- Blainville's horned lizard
- coast patch-nosed snake

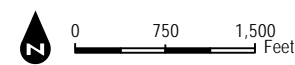
- glossy snake
- orangethroat whiptail
- red diamondback rattlesnake
- silvery legless lizard
- two-striped gartersnake
- western spadefoot



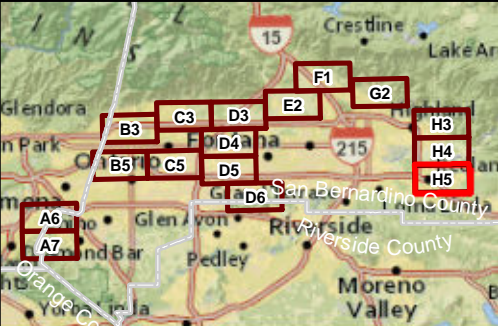
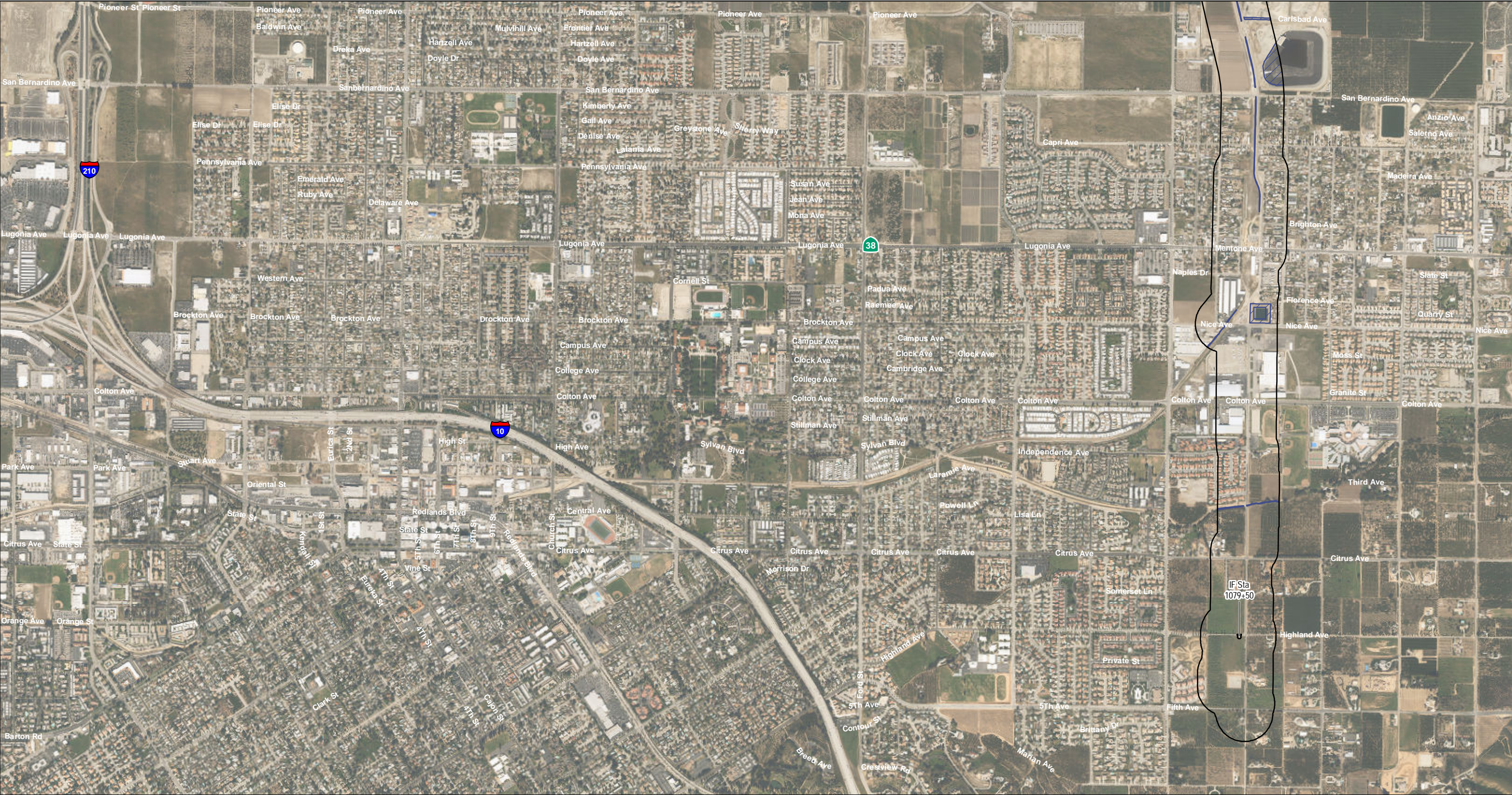
SOURCE: Eagle Aerial 2015

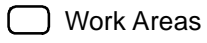
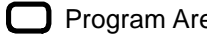
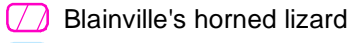
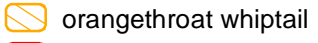
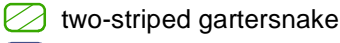

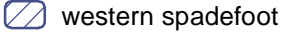


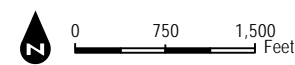
- | | | | |
|--------------|--|-----------------------------|-------------------------|
| Work Areas | Special-Status Reptile / Amphibian / Insect Modeled Habitat | glossy snake | silvery legless lizard |
| Program Area | | orangethroat whiptail | two-striped gartersnake |
| | | Blainville's horned lizard | western spadefoot |
| | | red diamondback rattlesnake | coast patch-nosed snake |



SOURCE: Eagle Aerial 2015



- | | | | |
|--|---|---|---|
|  Work Areas | Special-Status Reptile / Amphibian / Insect Modeled Habitat |  glossy snake |  silvery legless lizard |
|  Program Area |  Blainville's horned lizard |  orangethroat whiptail |  two-striped gartersnake |
| |  coast patch-nosed snake |  red diamondback rattlesnake |  western spadefoot |



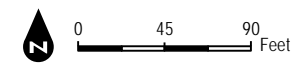
SOURCE: Eagle Aerial 2015

Appendix F-12

Special-Status Species Modeled Habitat Impacts



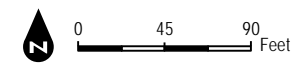
- | | | |
|----------------|--|---------------------|
| Right of Way | Temporary | coastal cactus wren |
| Impacts | Special-Status Bird Modeled Habitat | |
| Permanent | coastal California gnatcatcher | |



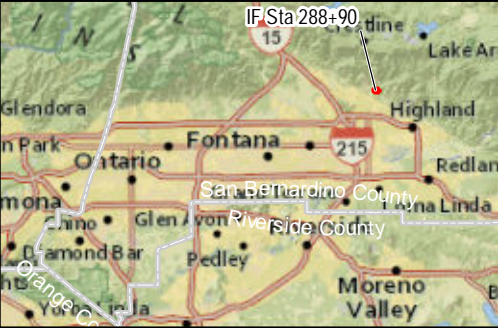
SOURCE: Eagle Aerial 2015



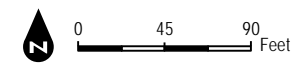
- | | | |
|----------------|--|---------------------|
| Right of Way | Temporary | grasshopper sparrow |
| Impacts | Special-Status Bird Modeled Habitat | loggerhead shrike |
| Permanent | burrowing owl | |



SOURCE: Eagle Aerial 2015



- | | | | |
|----------------|--|--|----------------|
| Right of Way | Temporary | coastal California gnatcatcher | long-eared owl |
| Impacts | Special-Status Bird Modeled Habitat | coastal cactus wren | |
| Permanent | burrowing owl | least Bell's vireo, yellow-breasted chat, yellow warbler | |



SOURCE: Eagle Aerial 2015



Right of Way	Temporary	coastal California gnatcatcher	long-eared owl
Impacts	Special-Status Bird Modeled Habitat	coastal cactus wren	
Permanent	burrowing owl	least Bell's vireo, yellow-breasted chat, yellow warbler	

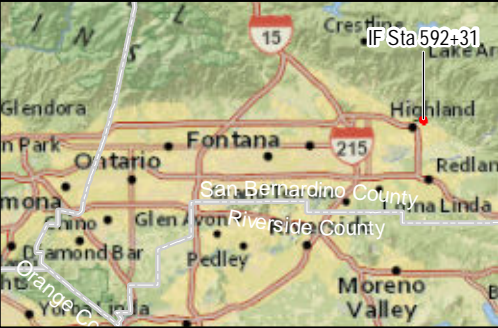
SOURCE: Eagle Aerial 2015

APPENDIX F-12A-4

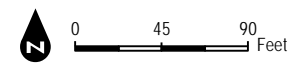
Special-Status Species Habitat Impacts: Birds - Work Area IF Sta 290+15

The Metropolitan Water District of Southern California

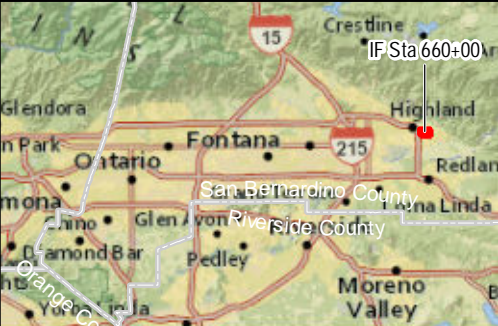
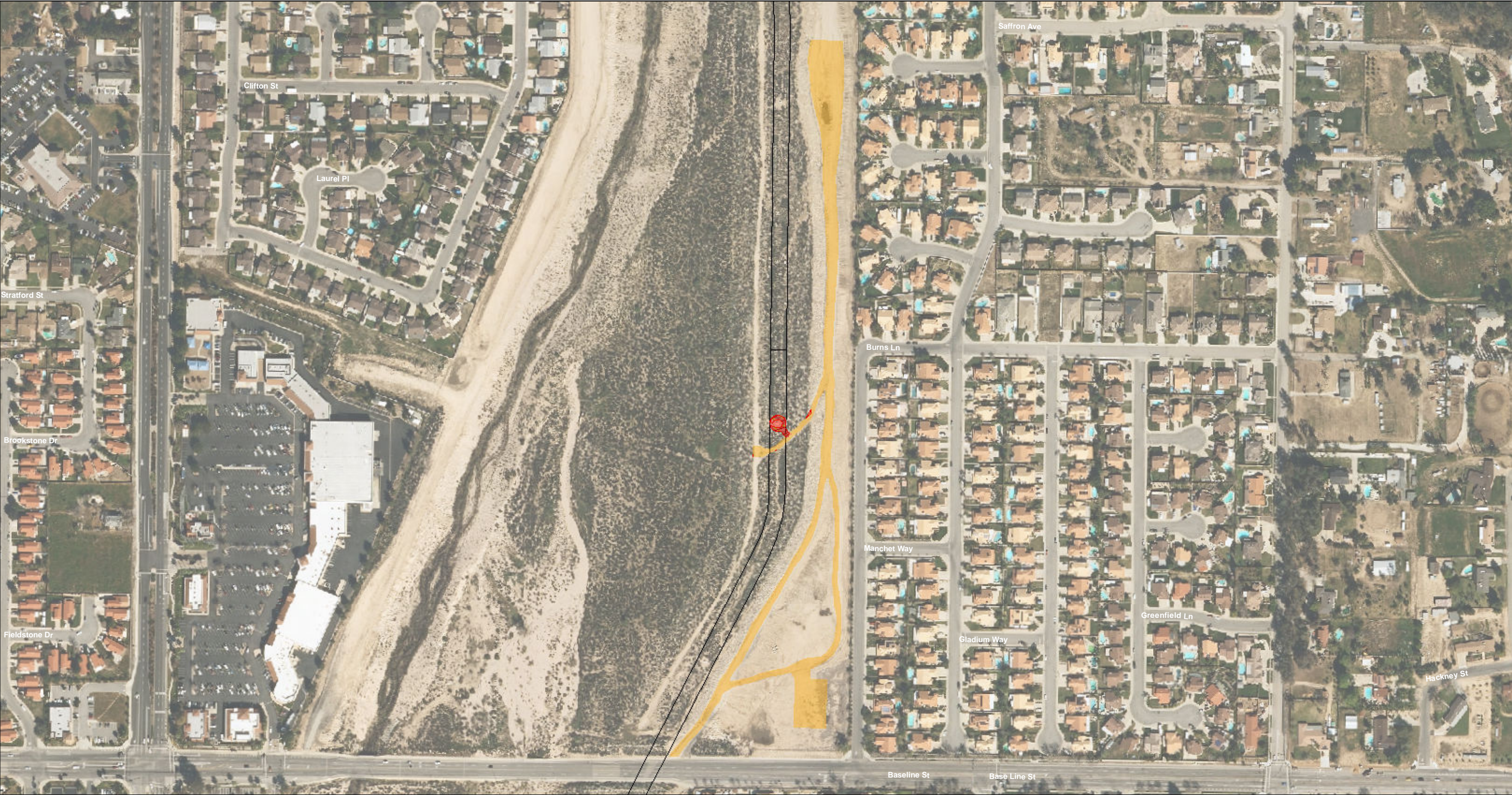
Western San Bernardino County Distribution System Infrastructure Protection Program



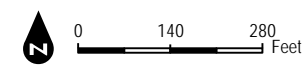
- | | | |
|----------------|--|--------------------------------|
| Right of Way | Temporary | coastal California gnatcatcher |
| Impacts | Special-Status Bird Modeled Habitat | coastal cactus wren |
| Permanent | burrowing owl | long-eared owl |



SOURCE: Eagle Aerial 2015



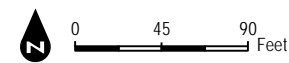
- Right of Way Temporary coastal cactus wren
- Impacts** **Special-Status Bird Modeled Habitat**
- Permanent coastal California gnatcatcher



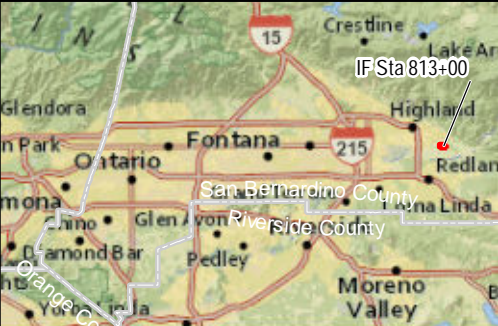
SOURCE: Eagle Aerial 2015



- | | | |
|----------------|--|---------------------|
| Right of Way | Temporary | coastal cactus wren |
| Impacts | Special-Status Bird Modeled Habitat | |
| Permanent | burrowing owl | |

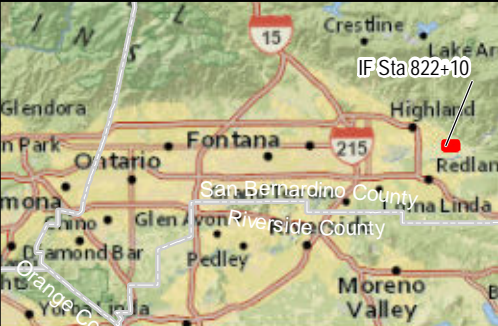


SOURCE: Eagle Aerial 2015

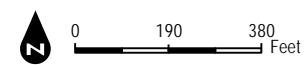


- | | | | |
|----------------|--|--------------------------------|-------------------|
| Right of Way | Temporary | coastal California gnatcatcher | loggerhead shrike |
| Impacts | Special-Status Bird Modeled Habitat | coastal cactus wren | long-eared owl |
| Permanent | burrowing owl | grasshopper sparrow | |





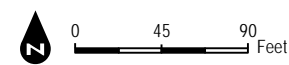
- | | | |
|----------------|--|---------------------|
| Right of Way | Temporary | coastal cactus wren |
| Impacts | Special-Status Bird Modeled Habitat | long-eared owl |
| Permanent | coastal California gnatcatcher | |



SOURCE: Eagle Aerial 2015

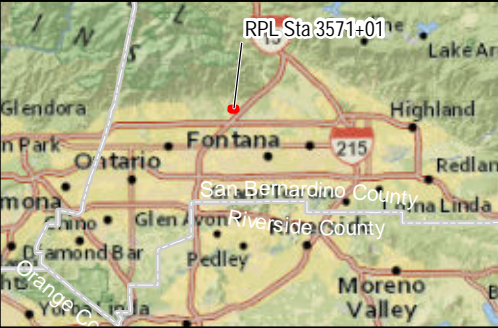
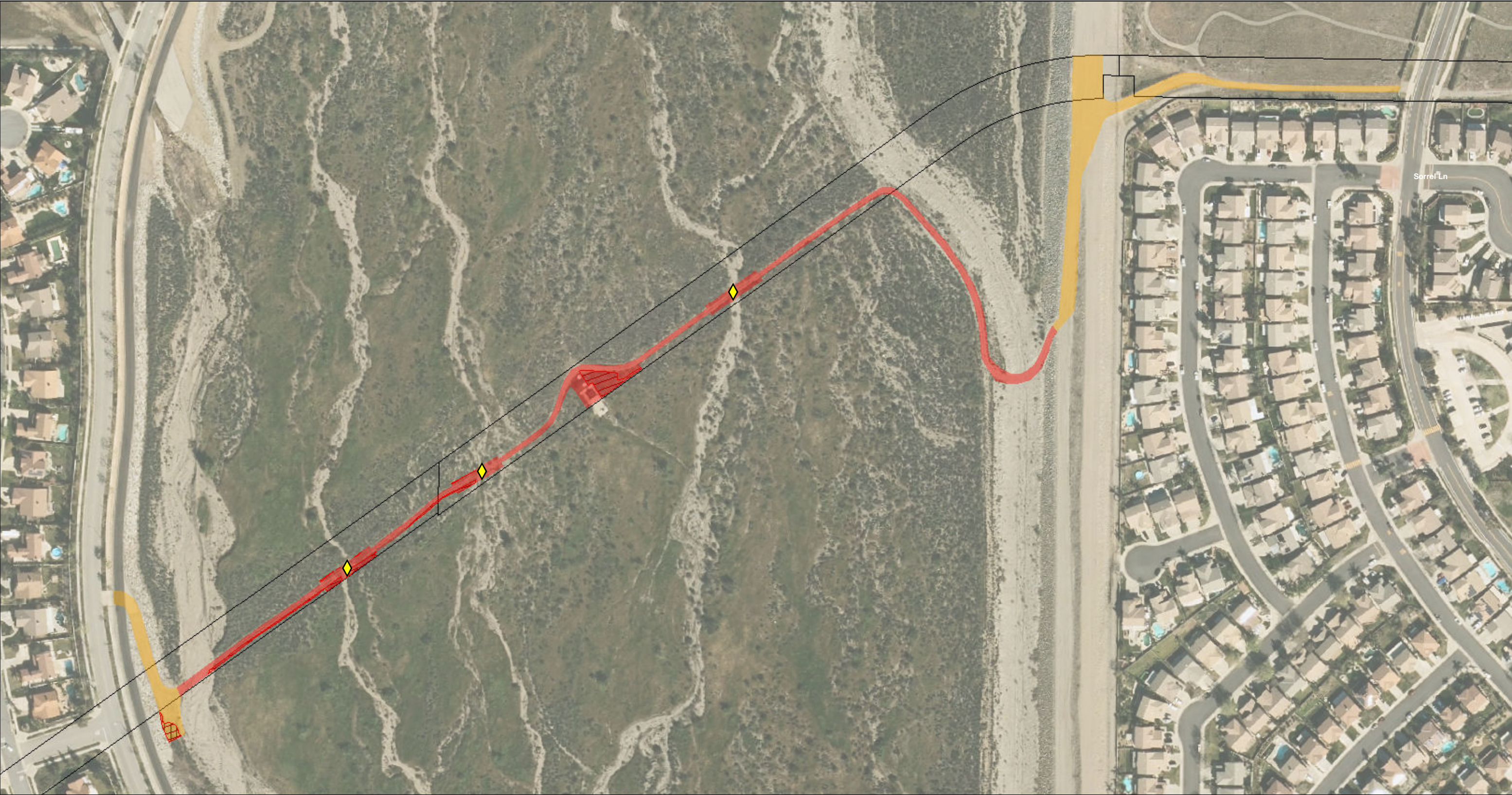


Right of Way Temporary
Impacts
Permanent

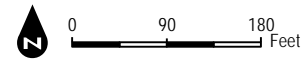


SOURCE: Eagle Aerial 2015

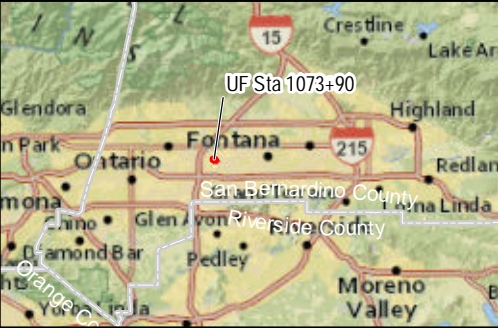
The Metropolitan Water District of Southern California



- | | | |
|---|----------------|--|
| Right of Way | Impacts | Special-Status Bird Modeled Habitat |
| Single-Occurrence O&M Activity Crossing | Permanent | burrowing owl |
| | Temporary | coastal California gnatcatcher |



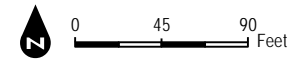
SOURCE: Eagle Aerial 2015



Right of Way Temporary

Impacts

Permanent



SOURCE: Eagle Aerial 2015



- | | | | | |
|----------------|--|-----------------------------------|-------------------------------------|----------------------------|
| Right of Way | Temporary | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Impacts | Special-Status Mammal Modeled Habitat | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat |
| Permanent | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | |





Right of Way	Temporary	Dulzura pocket mouse	San Diego desert woodrat	western mastiff bat
Impacts	Special-Status Mammal Modeled Habitat	Los Angeles pocket mouse	northwestern San Diego pocket mouse	
Permanent	American badger	San Diego black-tailed jackrabbit	pallid bat	

SOURCE: Eagle Aerial 2015

0 45 90 Feet

APPENDIX F-12B-2

Special-Status Species Habitat Impacts: Mammals - Work Area IF Sta 266+15

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



Right of Way

Temporary

Impacts

Permanent

Special-Status Mammal Modeled Habitat

American badger

Dulzura pocket mouse

Los Angeles pocket mouse

San Diego black-tailed jackrabbit

San Diego desert woodrat

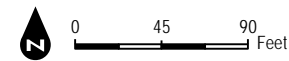
northwestern San Diego pocket mouse

pallid bat

southern grasshopper mouse

western mastiff bat

western yellow bat



SOURCE: Eagle Aerial 2015



Right of Way

Impacts

Permanent

Temporary

Special-Status Mammal Modeled Habitat

American badger

Dulzura pocket mouse

Los Angeles pocket mouse

San Diego black-tailed jackrabbit

San Diego desert woodrat

northwestern San Diego pocket mouse

pallid bat

southern grasshopper mouse

western mastiff bat

western yellow bat

0

45

90

Feet

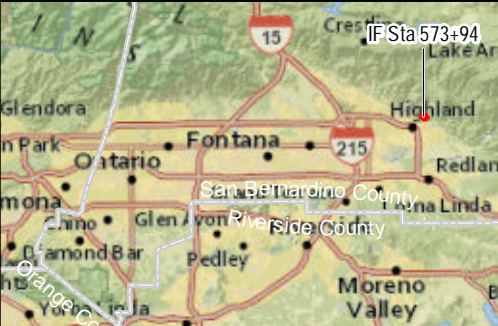
SOURCE: Eagle Aerial 2015

APPENDIX F-12B-4

Special-Status Species Habitat Impacts: Mammals - Work Area IF Sta 290+15

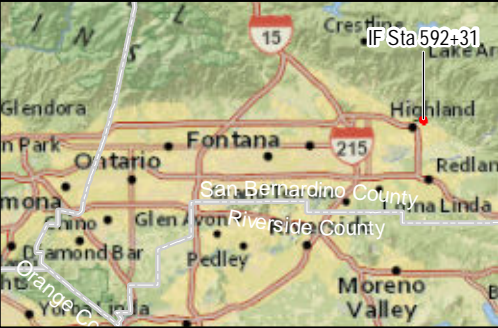
The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program

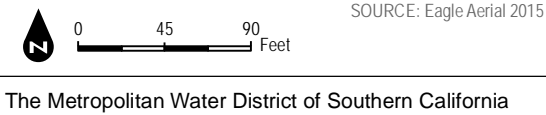


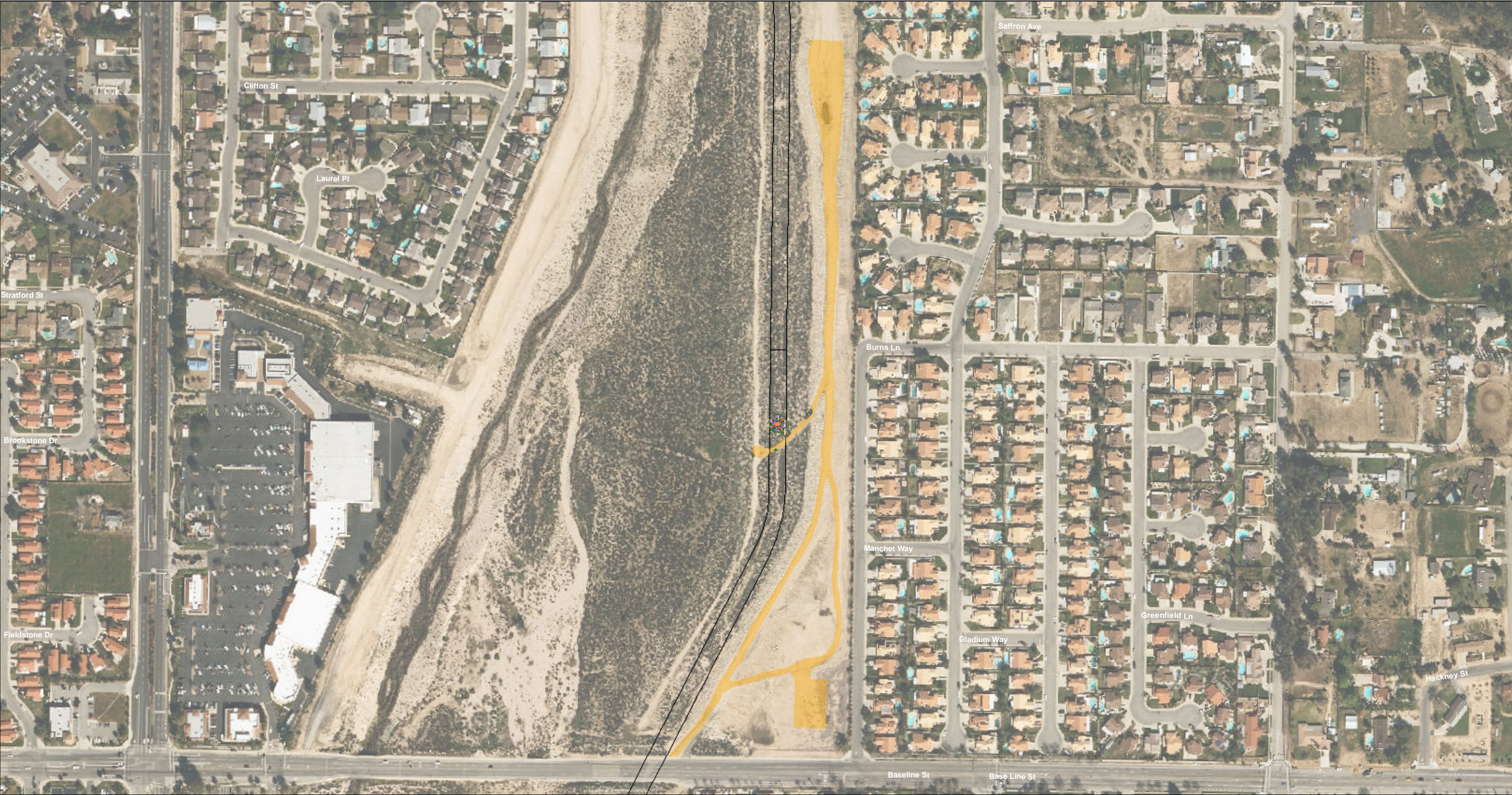
- | | | | | |
|----------------|--|-----------------------------------|-------------------------------------|---------------------|
| Right of Way | Temporary | Los Angeles pocket mouse | northwestern San Diego pocket mouse | western mastiff bat |
| Impacts | Special-Status Mammal Modeled Habitat | San Diego black-tailed jackrabbit | pallid bat | |
| Permanent | Dulzura pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |



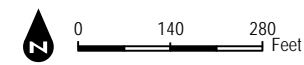


- | | | | | | |
|----------------|--|-----------------------------|-------------------------------------|----------------------------|--------------------|
| Right of Way | Temporary | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Impacts | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |
| Permanent | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat | |





- | | | | | |
|----------------|--|-----------------------------------|-------------------------------------|----------------------------|
| Right of Way | Temporary | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse |
| Impacts | Special-Status Mammal Modeled Habitat | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat |
| Permanent | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | |



SOURCE: Eagle Aerial 2015



Right of Way

Temporary

Impacts

Special-Status Mammal Modeled Habitat

Permanent

American badger

Dulzura pocket mouse

Los Angeles pocket mouse

San Bernardino kangaroo rat

San Diego black-tailed jackrabbit

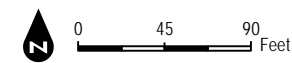
San Diego desert woodrat

northwestern San Diego pocket mouse

pallid bat

southern grasshopper mouse

western mastiff bat



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



- | | | | | | |
|----------------|--|-----------------------------|-------------------------------------|----------------------------|--------------------|
| Right of Way | Temporary | Dulzura pocket mouse | San Diego black-tailed jackrabbit | pallid bat | western yellow bat |
| Impacts | Special-Status Mammal Modeled Habitat | Los Angeles pocket mouse | San Diego desert woodrat | southern grasshopper mouse | |
| Permanent | American badger | San Bernardino kangaroo rat | northwestern San Diego pocket mouse | western mastiff bat | |





Right of Way

Temporary

Impacts

Permanent

Special-Status Mammal Modeled Habitat

Dulzura pocket mouse

Los Angeles pocket mouse

San Bernardino kangaroo rat

San Diego black-tailed jackrabbit

San Diego desert woodrat

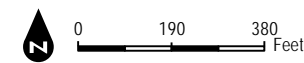
northwestern San Diego pocket mouse

pallid bat

southern grasshopper mouse




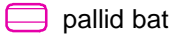
western mastiff bat

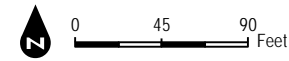
western yellow bat



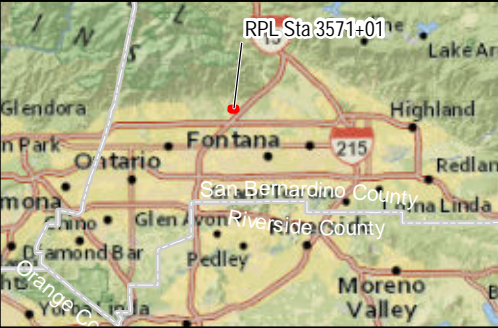
SOURCE: Eagle Aerial 2015



- | | |
|--|--|
|  Right of Way |  Temporary |
| Impacts | Special-Status Mammal Modeled Habitat |
|  Permanent |  pallid bat |



SOURCE: Eagle Aerial 2015



Right of Way

Single-Occurrence O&M Activity Crossing

Impacts

Permanent

Temporary

Special-Status Mammal Modeled Habitat

American badger

Dulzura pocket mouse

Los Angeles pocket mouse

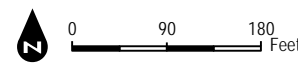
San Bernardino kangaroo rat

San Diego desert woodrat

northwestern San Diego pocket mouse

southern grasshopper mouse

western mastiff bat

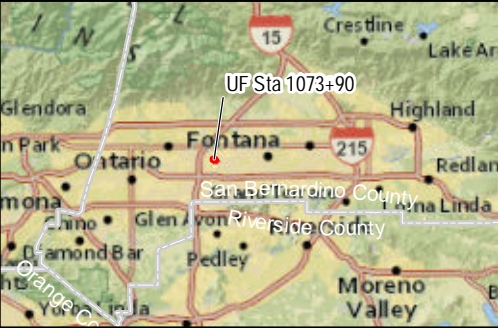


SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

APPENDIX F-12B-12
Special-Status Species Habitat Impacts: Mammals - Work Area RPL Sta 3571+01

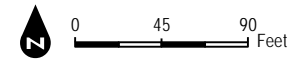
Western San Bernardino County Distribution System Infrastructure Protection Program



Right of Way Temporary

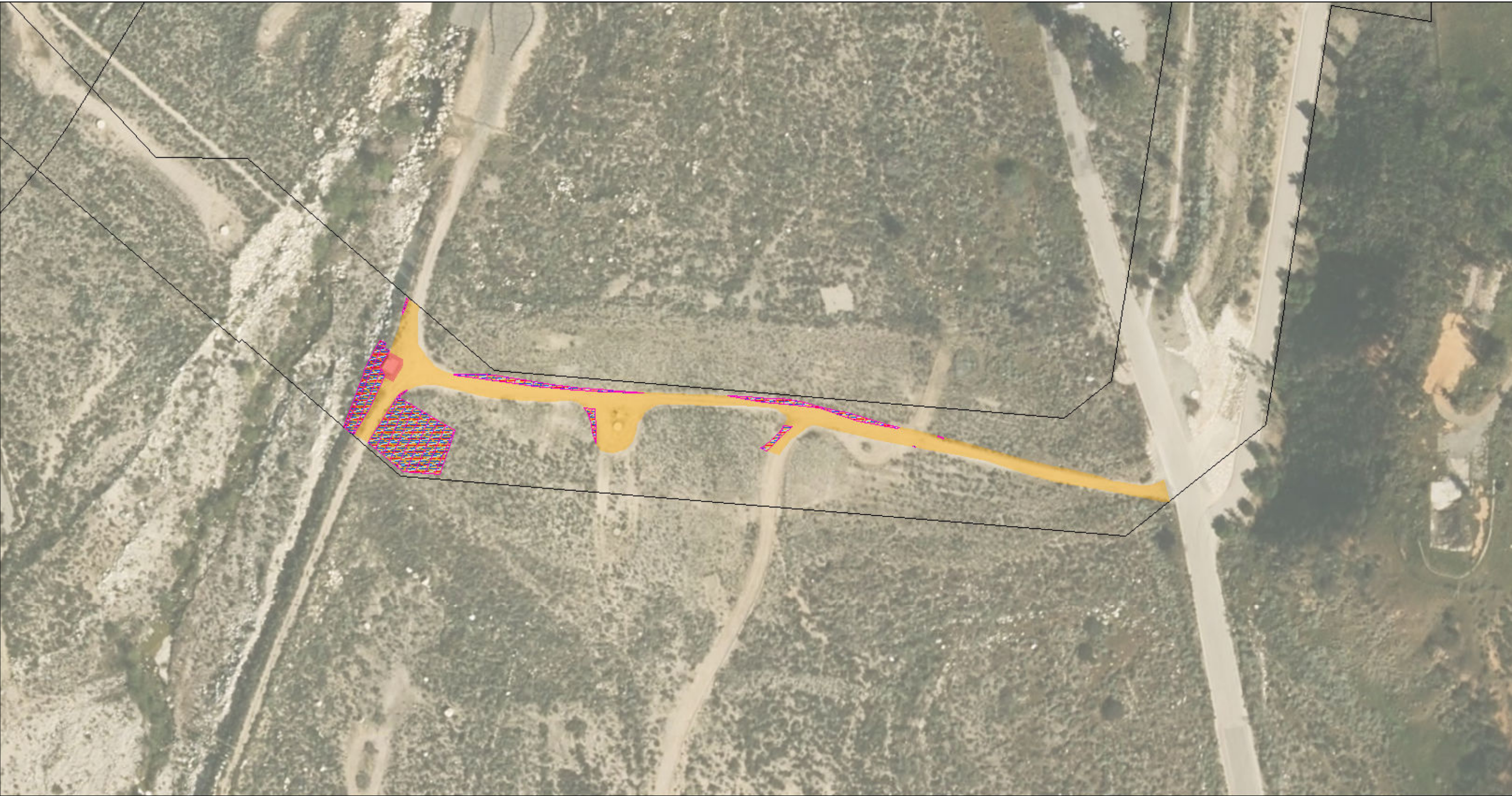
Impacts

Permanent



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



Right of Way

Temporary

Permanent

Blainville's horned lizard

coast patch-nosed snake

glossy snake

orangethroat whiptail

red diamondback rattlesnake

western spadefoot

0

45

90

Feet

SOURCE: Eagle Aerial 2015

APPENDIX F-12C-1

Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area IF Sta 19+55

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



Right of Way

Temporary

Permanent

Blainville's horned lizard

coast patch-nosed snake

glossy snake

orangethroat whiptail

red diamondback rattlesnake

western spadefoot

0

45

90

Feet

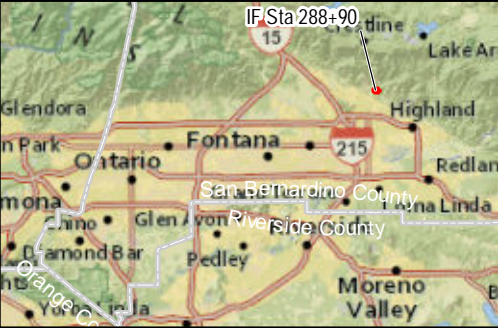
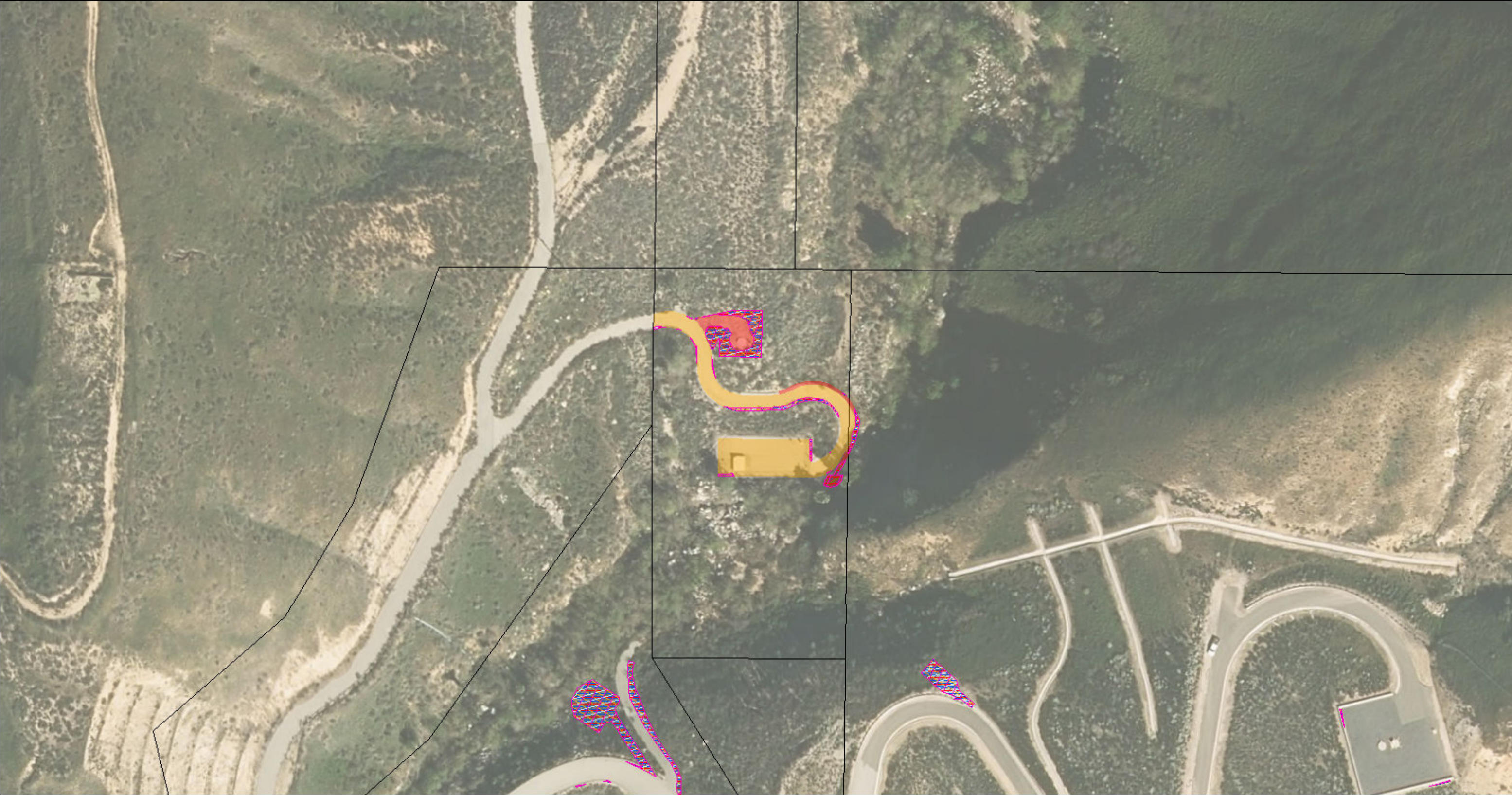
SOURCE: Eagle Aerial 2015

APPENDIX F-12C-2

Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area IF Sta 266+15

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



Right of Way

Temporary

Impacts

Permanent

Special-Status Reptile / Amphibian Modeled Habitat

Blainville's horned lizard

coast patch-nosed snake

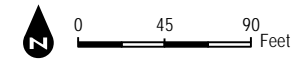
glossy snake

orangethroat whiptail

red diamondback rattlesnake

two-striped gartersnake

western spadefoot



SOURCE: Eagle Aerial 2015

Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area IF Sta 288+90



Right of Way

Temporary

Impacts

Permanent

Special-Status Reptile / Amphibian Modeled Habitat

Blainville's horned lizard

coast patch-nosed snake

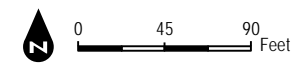
glossy snake

orangethroat whiptail

red diamondback rattlesnake

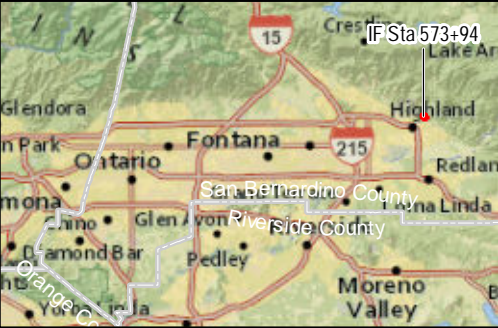
two-striped gartersnake

western spadefoot

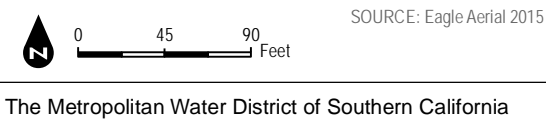


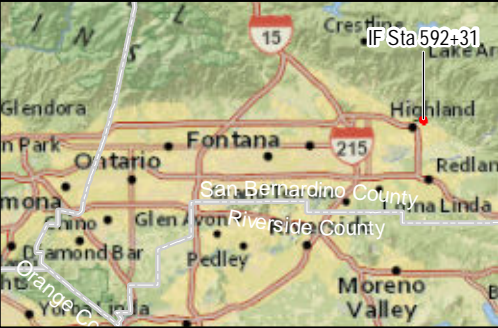
SOURCE: Eagle Aerial 2015

Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area IF Sta 290+15



- | | | | |
|--------------|--|-------------------------|-----------------------------|
| Right of Way | Temporary | coast patch-nosed snake | red diamondback rattlesnake |
| Impacts | Special-Status Reptile / Amphibian Modeled Habitat | glossy snake | silvery legless lizard |
| Permanent | Blainville's horned lizard | orangethroat whiptail | western spadefoot |





Right of Way	Temporary	coast patch-nosed snake	red diamondback rattlesnake	western spadefoot
Impacts	Special-Status Reptile / Amphibian Modeled Habitat	glossy snake	silvery legless lizard	
Permanent	Blainville's horned lizard	orangethroat whiptail	two-striped gartersnake	

SOURCE: Eagle Aerial 2015

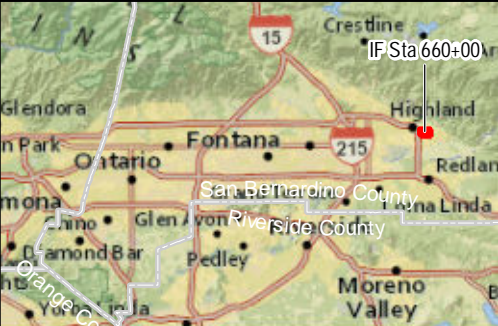
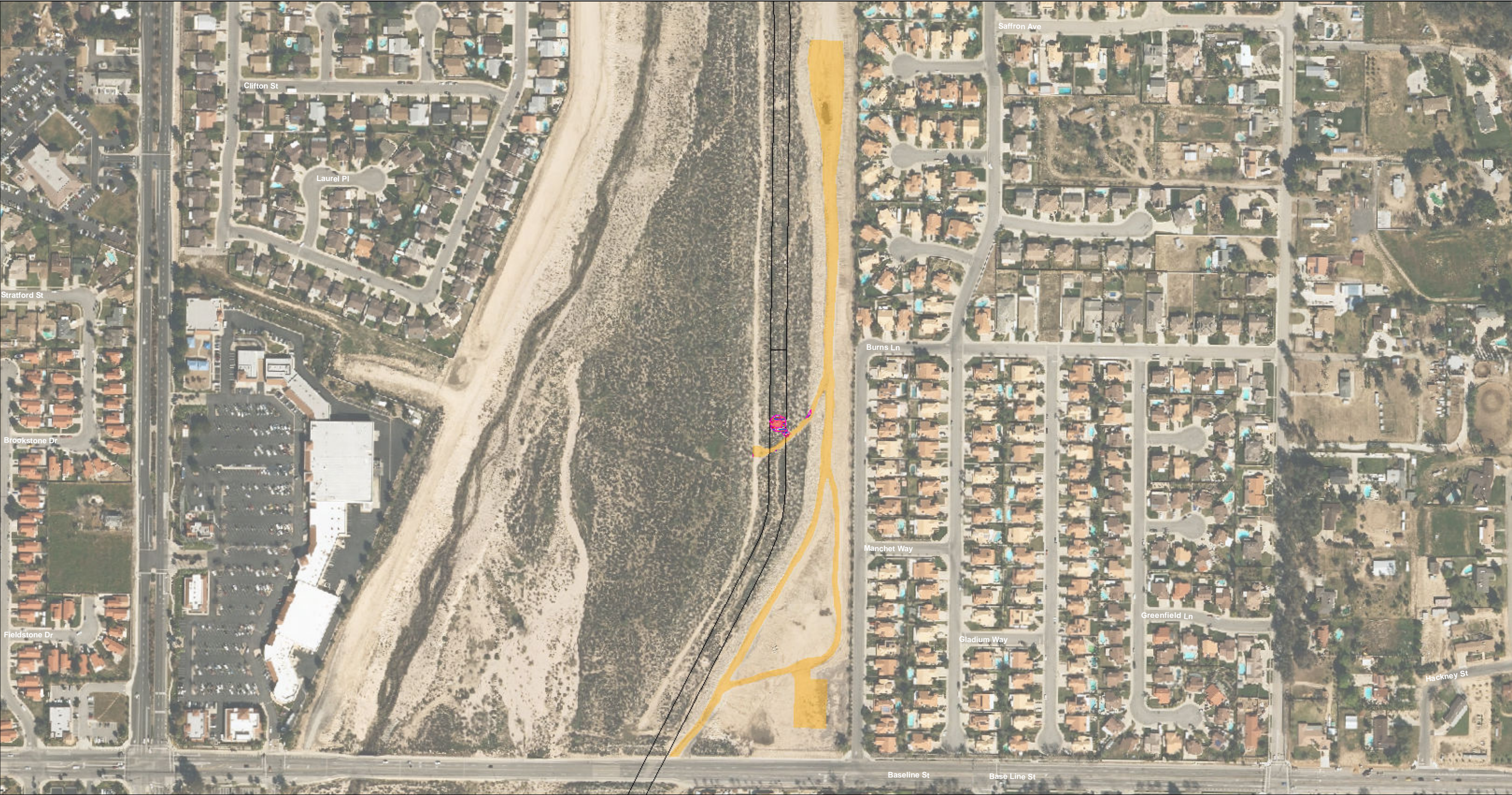
0 45 90 Feet

APPENDIX F-12C-6

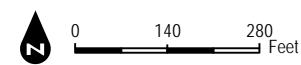
Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area IF Sta 592+31

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program



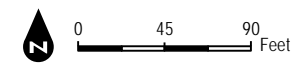
- | | | | |
|----------------|---|-------------------------|-----------------------------|
| Right of Way | Temporary | coast patch-nosed snake | red diamondback rattlesnake |
| Impacts | Special-Status Reptile / Amphibian Modeled Habitat | glossy snake | western spadefoot |
| Permanent | Blainville's horned lizard | orangethroat whiptail | |



SOURCE: Eagle Aerial 2015



- | | | | |
|----------------|---|-------------------------|-----------------------------|
| Right of Way | Temporary | coast patch-nosed snake | red diamondback rattlesnake |
| Impacts | Special-Status Reptile / Amphibian Modeled Habitat | glossy snake | western spadefoot |
| Permanent | Blainville's horned lizard | orangethroat whiptail | |



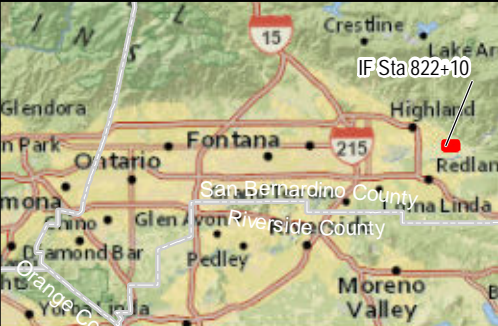
SOURCE: Eagle Aerial 2015



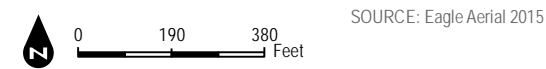
- | | | | |
|----------------|---|-------------------------|-----------------------------|
| Right of Way | Temporary | coast patch-nosed snake | red diamondback rattlesnake |
| Impacts | Special-Status Reptile / Amphibian Modeled Habitat | glossy snake | two-striped gartersnake |
| Permanent | Blainville's horned lizard | orangethroat whiptail | western spadefoot |



SOURCE: Eagle Aerial 2015



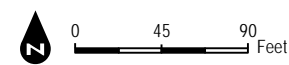
- | | | | |
|----------------|---|-------------------------|-----------------------------|
| Right of Way | Temporary | coast patch-nosed snake | red diamondback rattlesnake |
| Impacts | Special-Status Reptile / Amphibian Modeled Habitat | glossy snake | two-striped gartersnake |
| Permanent | Blainville's horned lizard | orangethroat whiptail | western spadefoot |



The Metropolitan Water District of Southern California

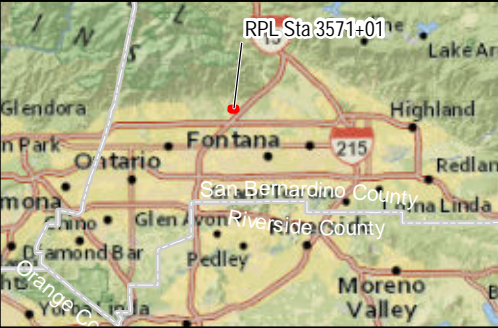
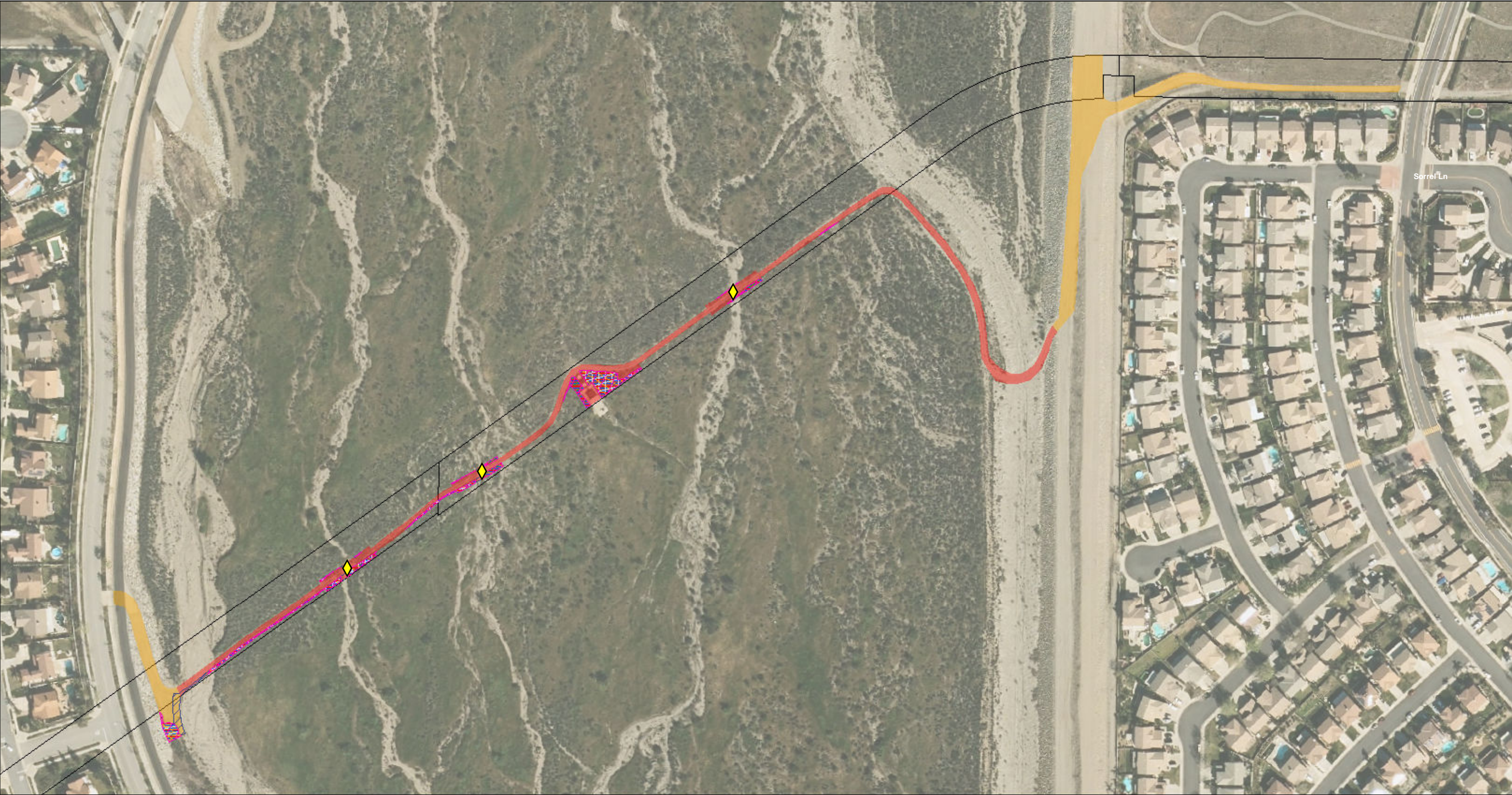


Right of Way Temporary
Impacts
Permanent



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California



Right of Way

Single-Occurrence O&M Activity Crossing

Impacts

Permanent

Temporary

Special-Status Reptile / Amphibian Modeled Habitat

Blainville's horned lizard

coast patch-nosed snake

glossy snake

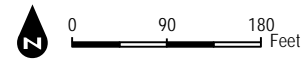
orangethroat whiptail

red diamondback rattlesnake

silvery legless lizard

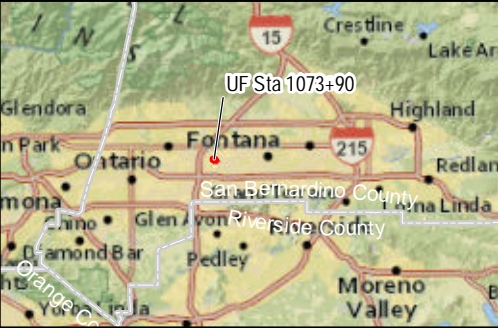
two-striped gartersnake

western spadefoot



SOURCE: Eagle Aerial 2015

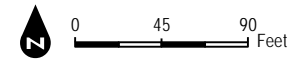
The Metropolitan Water District of Southern California



Right of Way Temporary

Impacts

Permanent



SOURCE: Eagle Aerial 2015

The Metropolitan Water District of Southern California

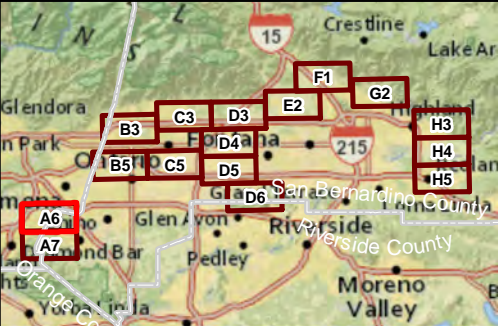
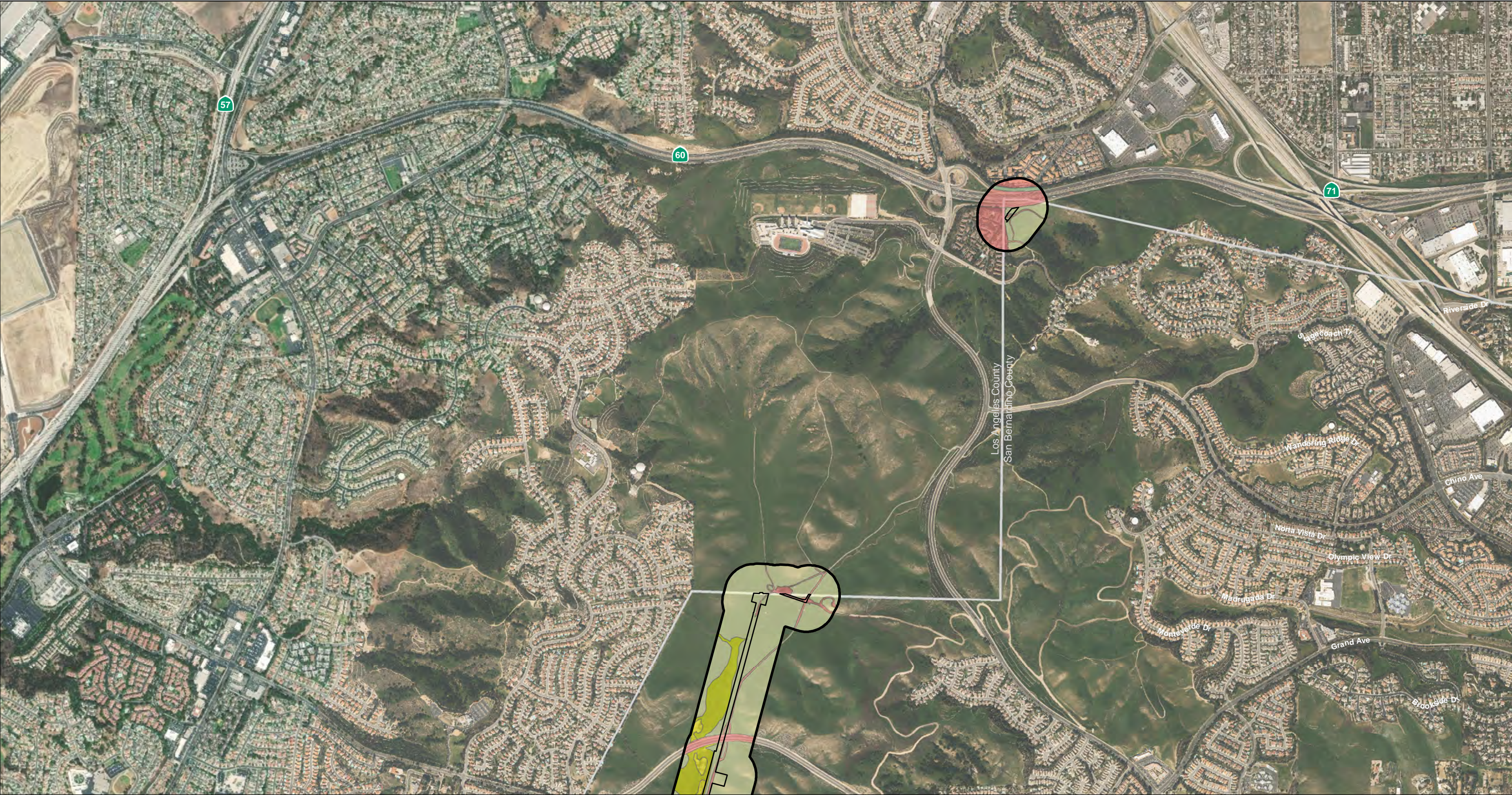
APPENDIX F-12C-13







Special-Status Species Habitat Impacts: Reptiles / Amphibians - Work Area UF Sta 1073+90

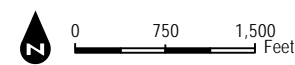
Western San Bernardino County Distribution System Infrastructure Protection Program

Appendix F-13

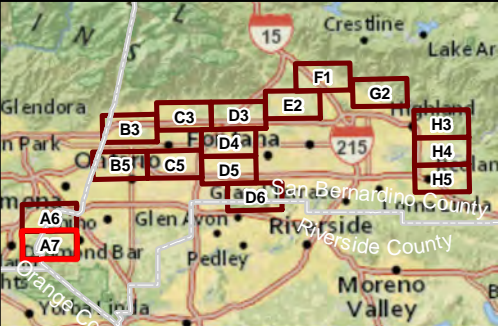
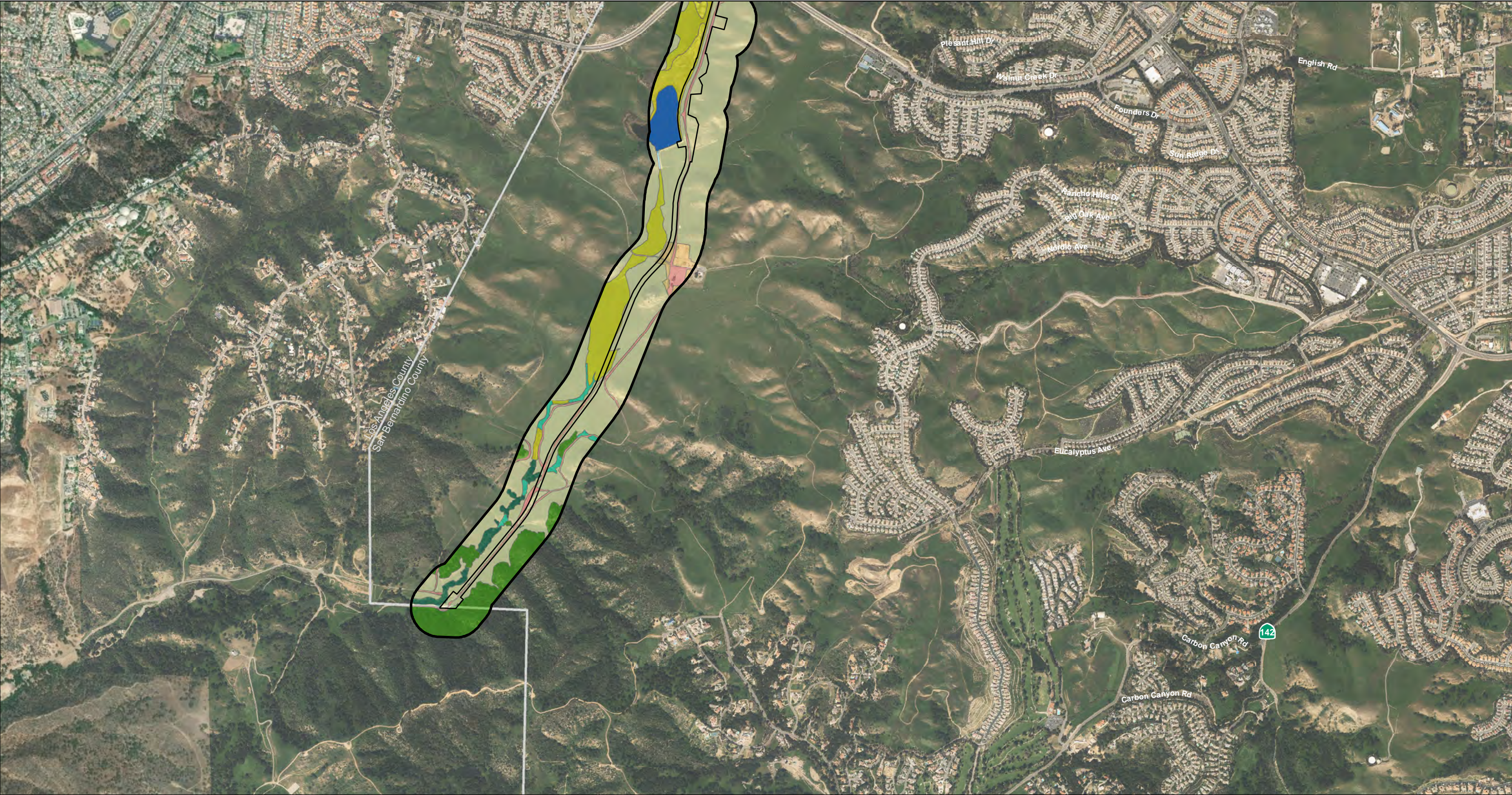
Vegetation Communities Impacts



- | | | | |
|--|---|---|---|
|  Project Footprint | Forest and Woodlands Alliances and Stands | Herbaceous Alliances and Stands | Non-natural Land Covers/Unvegetated Communities |
|  Programmatic Survey Area |  Cool Temperate Forest |  Annual Grassland |  Developed |
| | |  Freshwater Emergent Wetland | |



SOURCE: Eagle Aerial 2015



- Project Footprint
- Programmatic Survey Area

Forest and Woodlands Alliances and Stands

- Riparian Forest

- Warm Temperate Forest
- Herbaceous Alliances and Stands
- Annual Grassland
- Freshwater Emergent Wetland

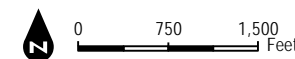
Non-natural Land Covers/Unvegetated Communities

- Agriculture
- Basins and Watercourses
- Developed

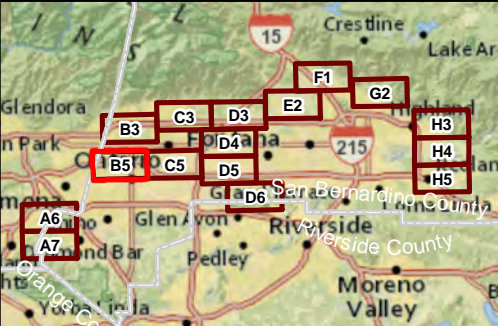
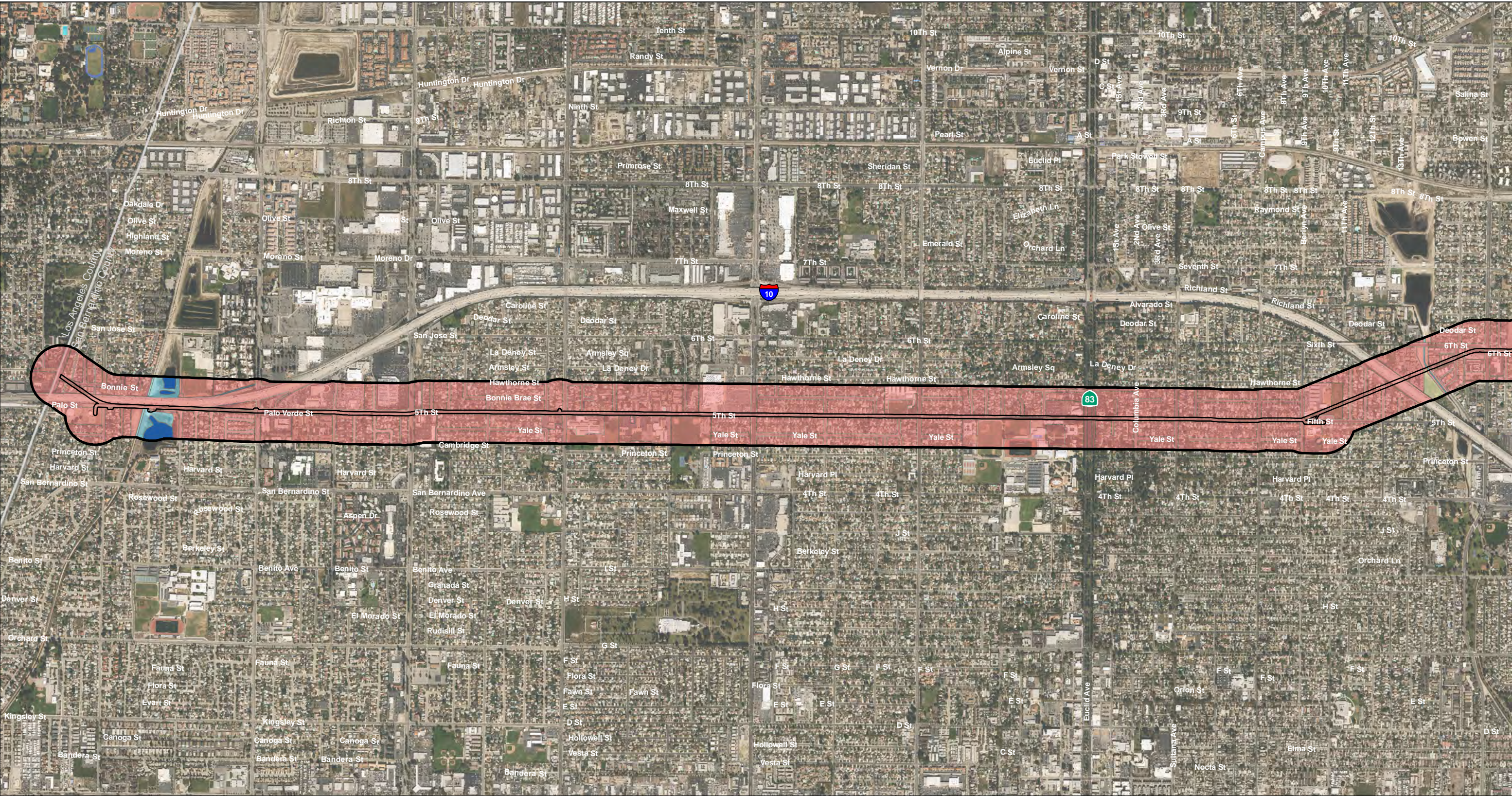
- Water

Shrubland Alliances and Stands

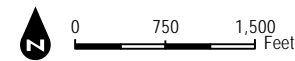
- Riparian Scrub



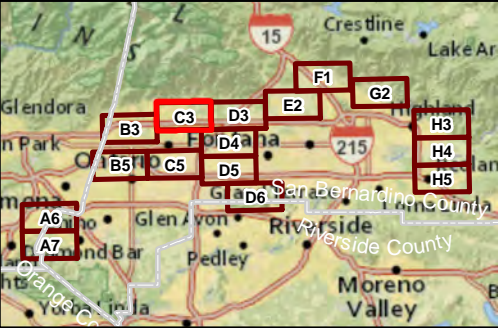
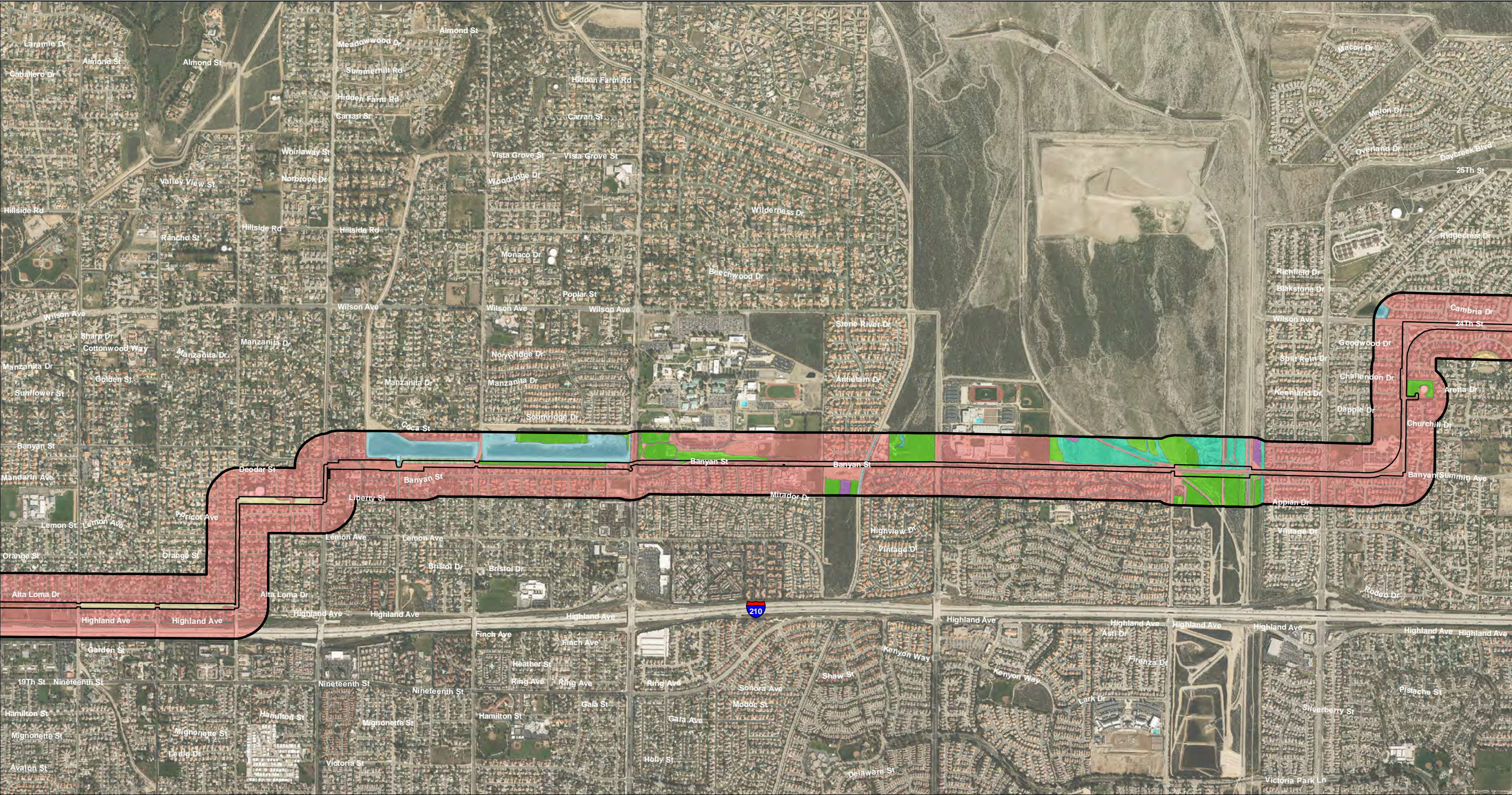
SOURCE: Eagle Aerial 2015



- | | | | |
|--------------------------|------------------|-------------------------|-------|
| Project Footprint | Annual Grassland | Basins and Watercourses | Water |
| Programmatic Survey Area | | Developed | |



SOURCE: Eagle Aerial 2015



- Project Footprint
- Programmatic Survey Area

Forest and Woodlands Alliances and Stands

- Cool Temperate Forest

Herbaceous Alliances and Stands

- Annual Grassland
- Agriculture

Non-natural Land Covers/Unvegetated Communities

- Agriculture

Shrubland Alliances and Stands

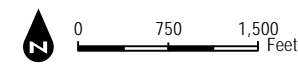
- Coastal Scrub

Basins and Watercourses

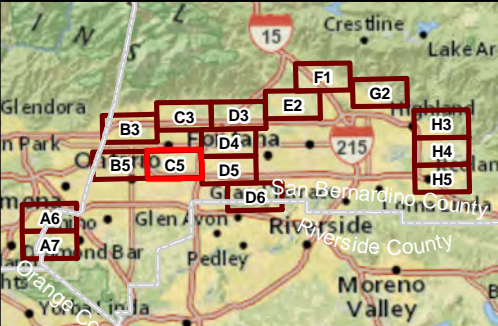
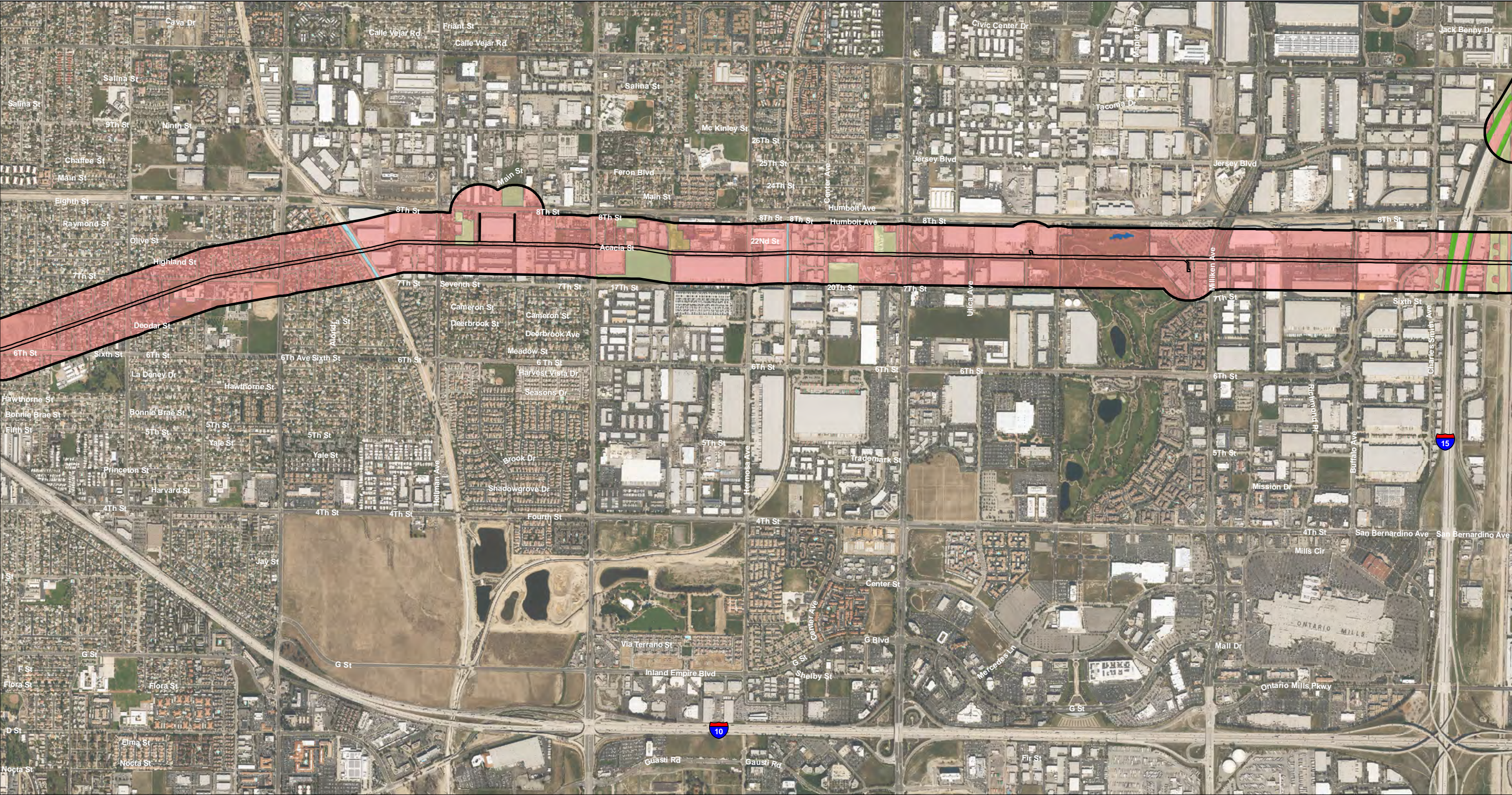
- Developed

Mixed Chaparral

- Riparian Scrub



SOURCE: Eagle Aerial 2015



- Project Footprint

Programmatic Survey Area
- Herbaceous Alliances and Stands

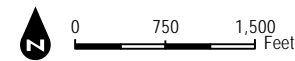
Annual Grassland
- Non-natural Land Covers/Unvegetated Communities

Agriculture

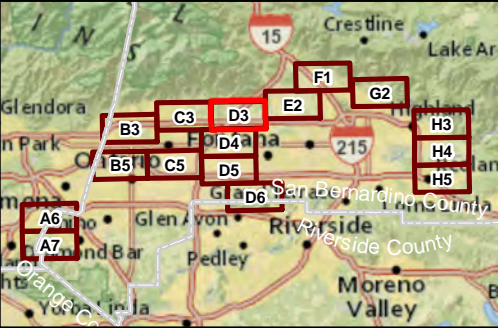
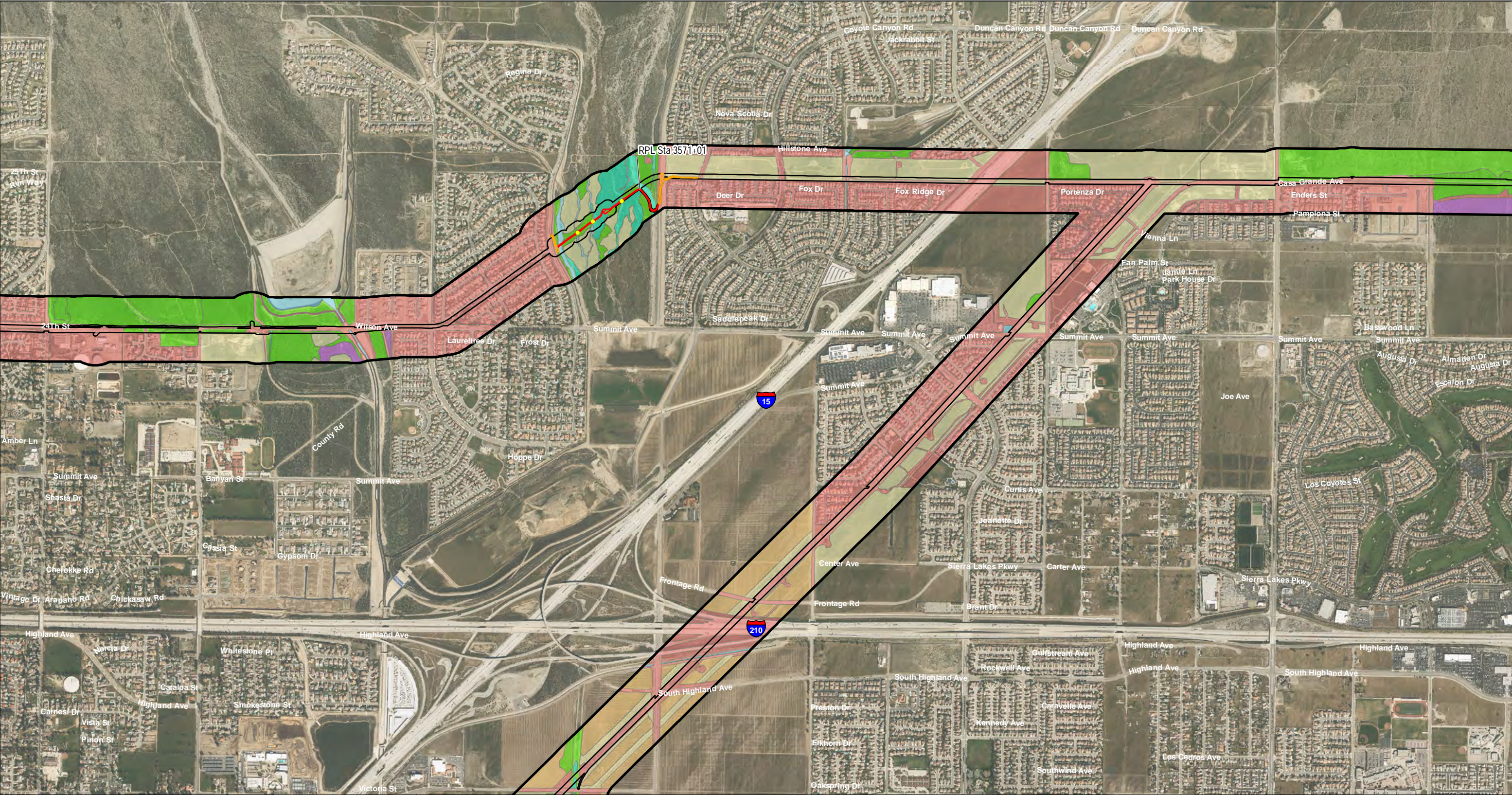
Basins and Watercourses
- Developed

Water
- Shrubland Alliances and Stands

Coastal Scrub



SOURCE: Eagle Aerial 2015



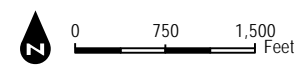
- Project Footprint
- Programmatic Survey Area
- O&M 15 Crossing

- Impacts**
- Permanent
 - Temporary

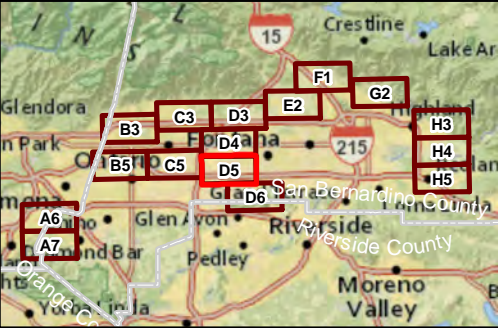
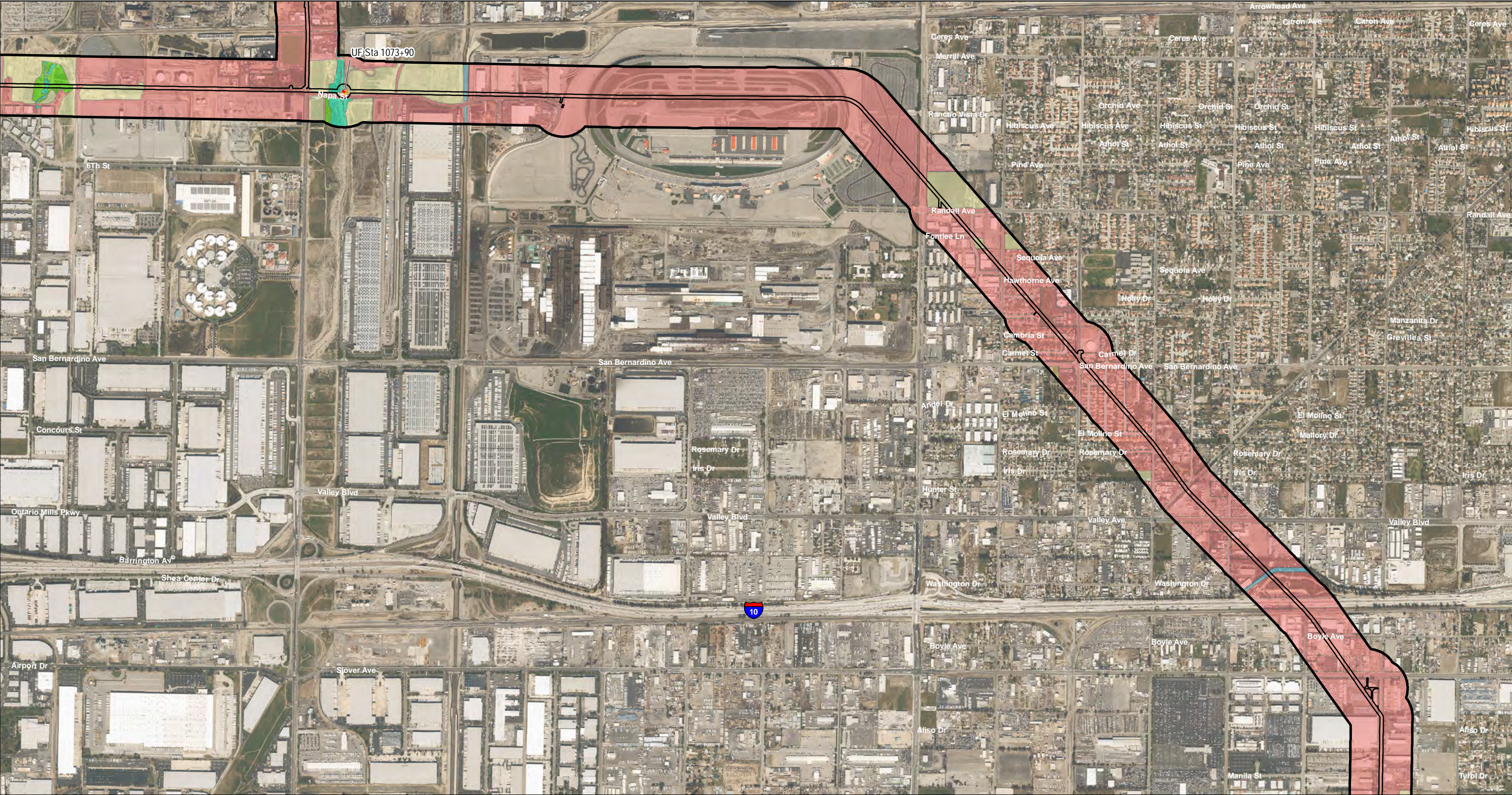
- Herbaceous Alliances and Stands**
- Annual Grassland

- Non-natural Land Covers/Unvegetated Communities**
- Agriculture
 - Basins and Watercourses

- Shrubland Alliances and Stands**
- Developed
 - Mixed Chaparral
 - Riparian Scrub
 - Coastal Scrub



SOURCE: Eagle Aerial 2015



- Project Footprint

Programmatic Survey Area
- Impacts**

Permanent

Temporary
- Herbaceous Alliances and Stands**

Annual Grassland
- Non-natural Land Covers/Unvegetated Communities**

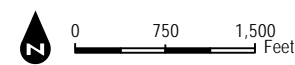
Agriculture

Basins and Watercourses
- Developed

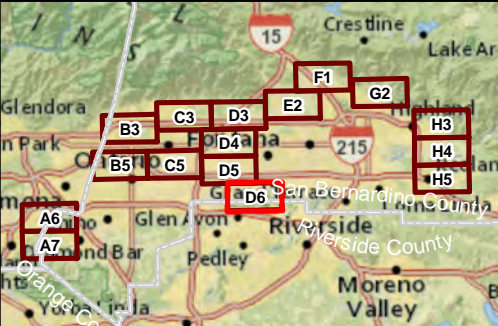
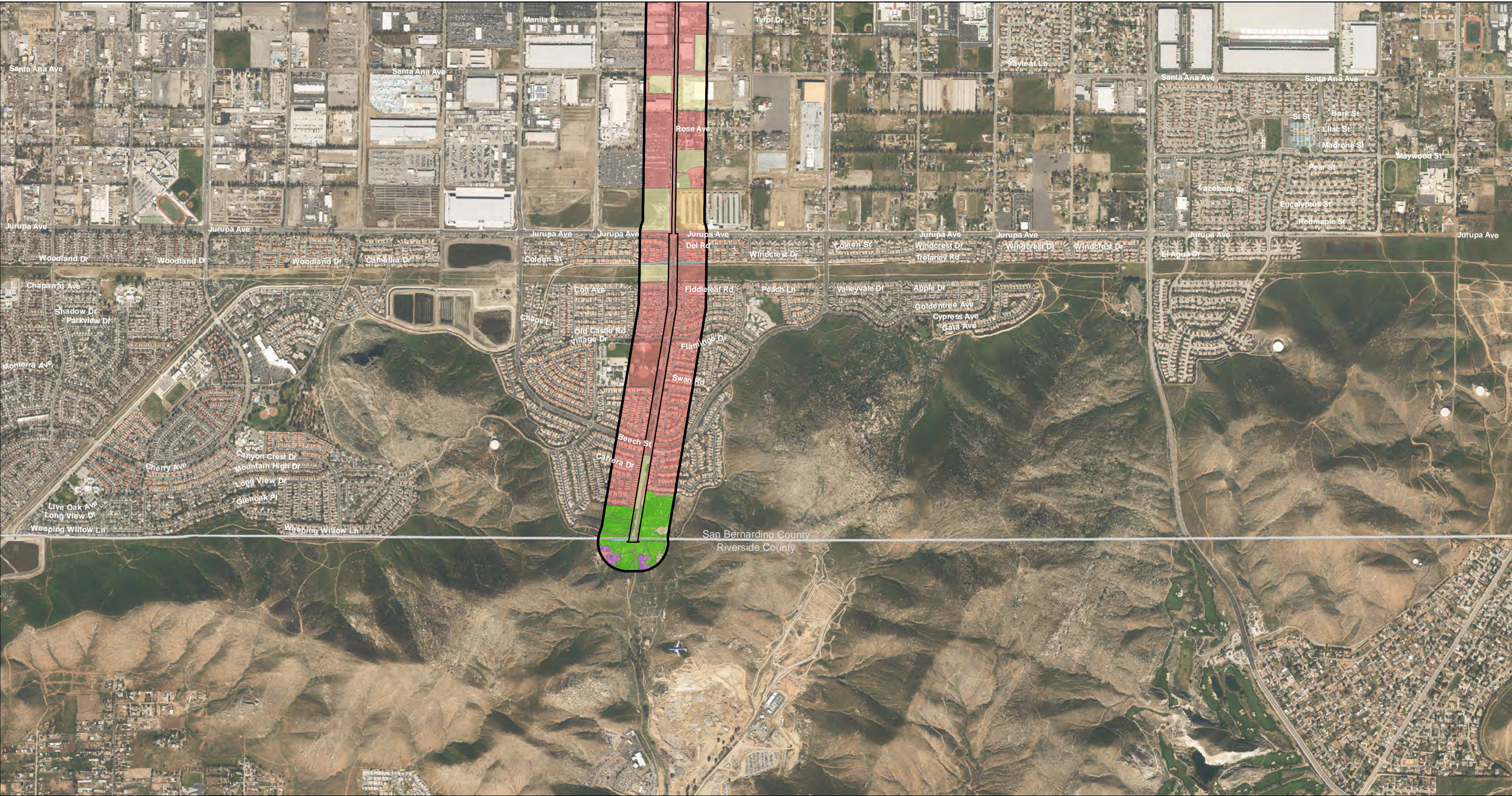
Shrubland Alliances and Stands

Coastal Scrub

Riparian Scrub



SOURCE: Eagle Aerial 2015



- Project Footprint
- Programmatic Survey Area

Herbaceous Alliances and Stands

Annual Grassland

Non-natural Land Covers/Unvegetated Communities

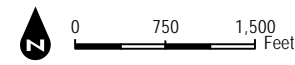
- Agriculture
- Basins and Watercourses

Developed

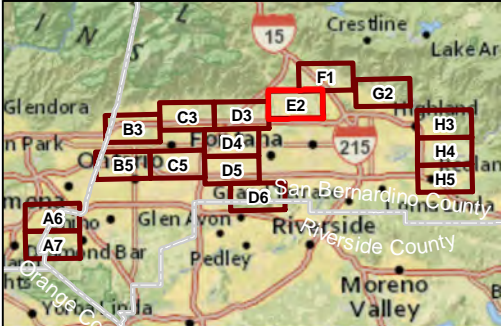
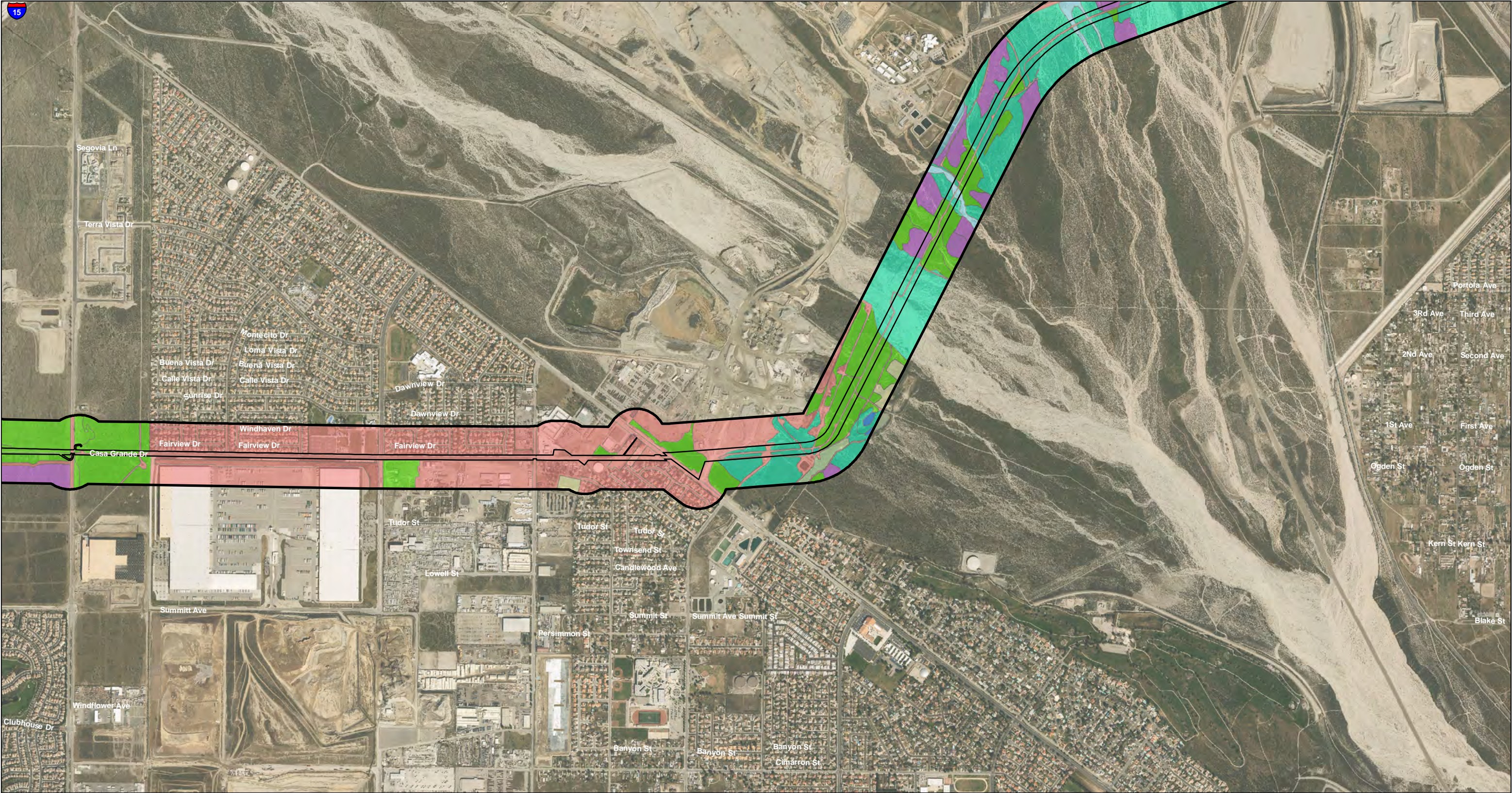
Shrubland Alliances and Stands

Coastal Scrub

Mixed Chaparral



SOURCE: Eagle Aerial 2015



- Project Footprint
- Programmatic Survey Area

Herbaceous Alliances and Stands

Annual Grassland

Forest and Woodlands Alliances and Stands

Cool Temperate Forest

Non-natural Land Covers/Unvegetated Communities

Basins and Watercourses

Developed

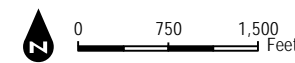
Water

Mixed Chaparral

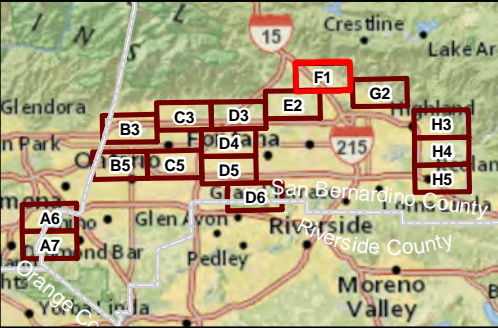
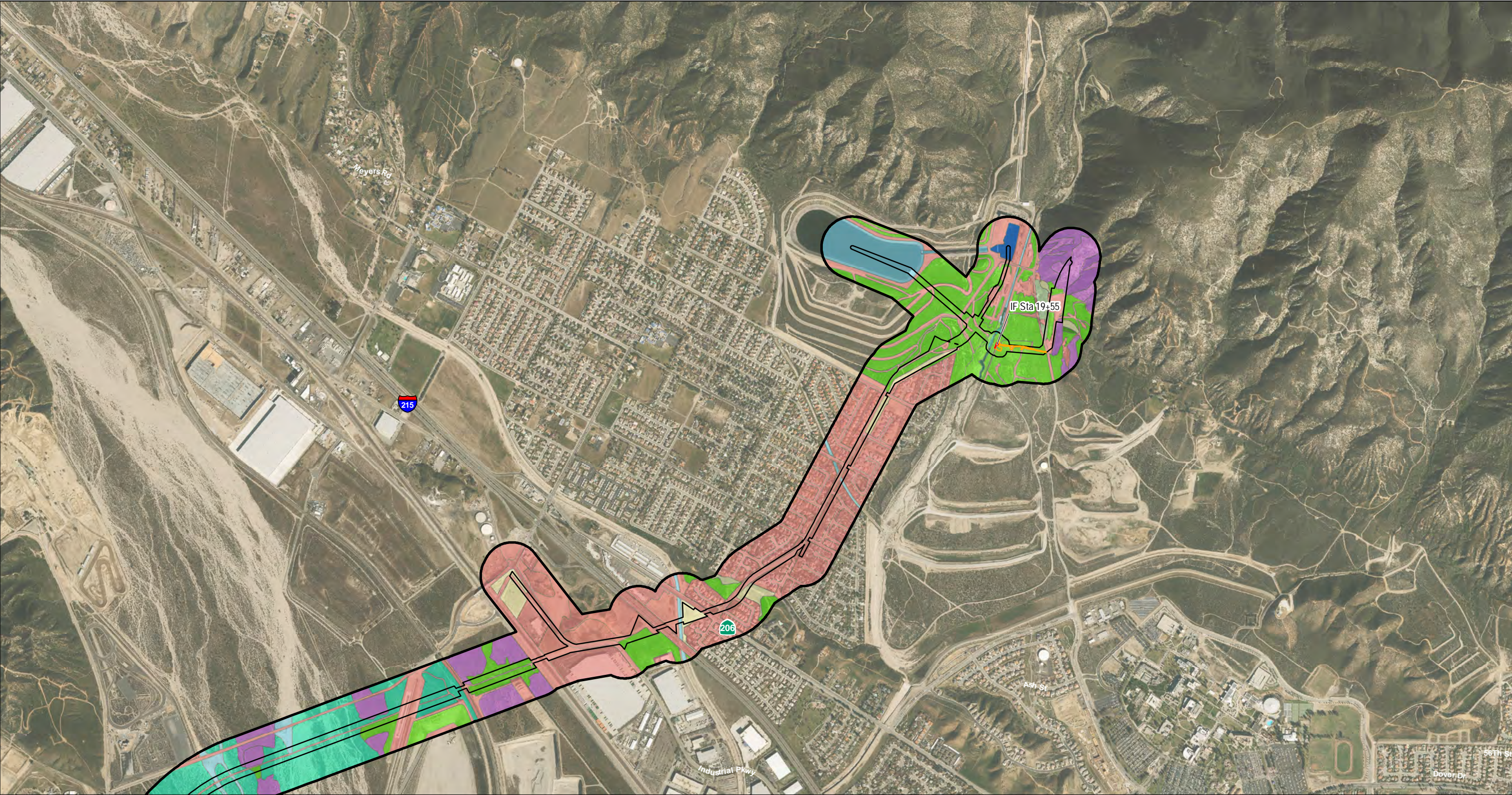
Riparian Scrub















Shrubland Alliances and Stands

Coastal Scrub



SOURCE: Eagle Aerial 2015



 Project Footprint	 Temporary	 Warm Temperate Forest	Non-natural Land Covers/Unvegetated Communities	Shrubland Alliances and Stands
 Programmatic Survey Area	Forest and Woodlands Alliances and Stands	 Cool Temperate Forest	 Basins and Watercourses	 Coastal Scrub
Impacts	 Riparian Forest	 Annual Grassland	 Developed	 Mixed Chaparral
 Permanent			 Water	 Riparian Scrub

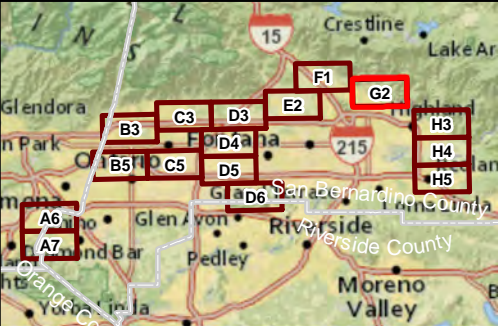
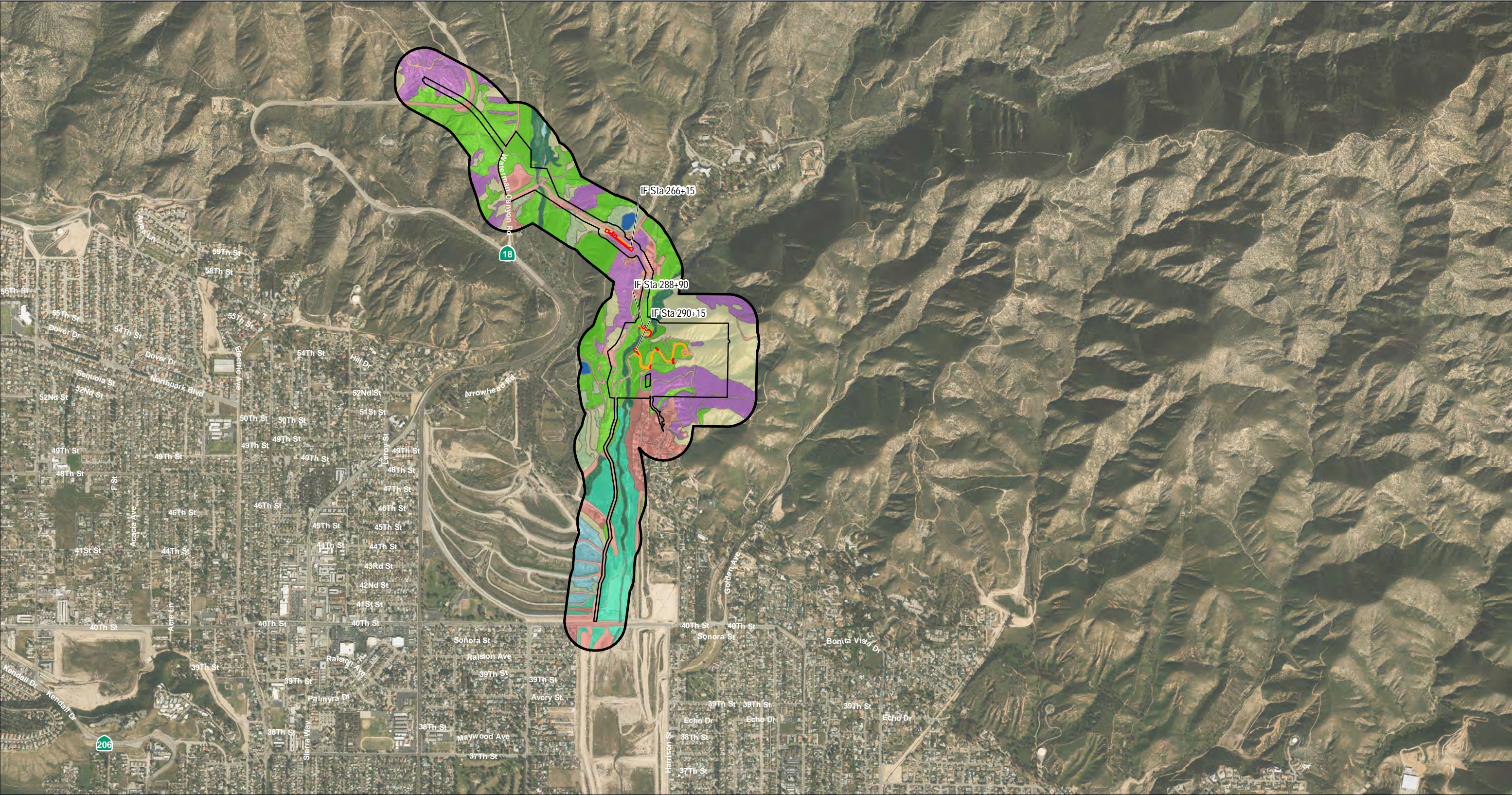
SOURCE: Eagle Aerial 2015

0 750 1,500 Feet

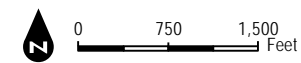
APPENDIX F-13
Vegetation Communities Impacts - Grid F1

The Metropolitan Water District of Southern California

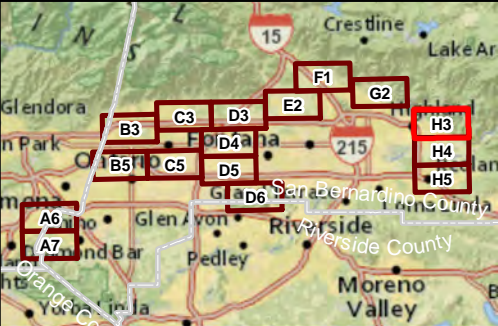
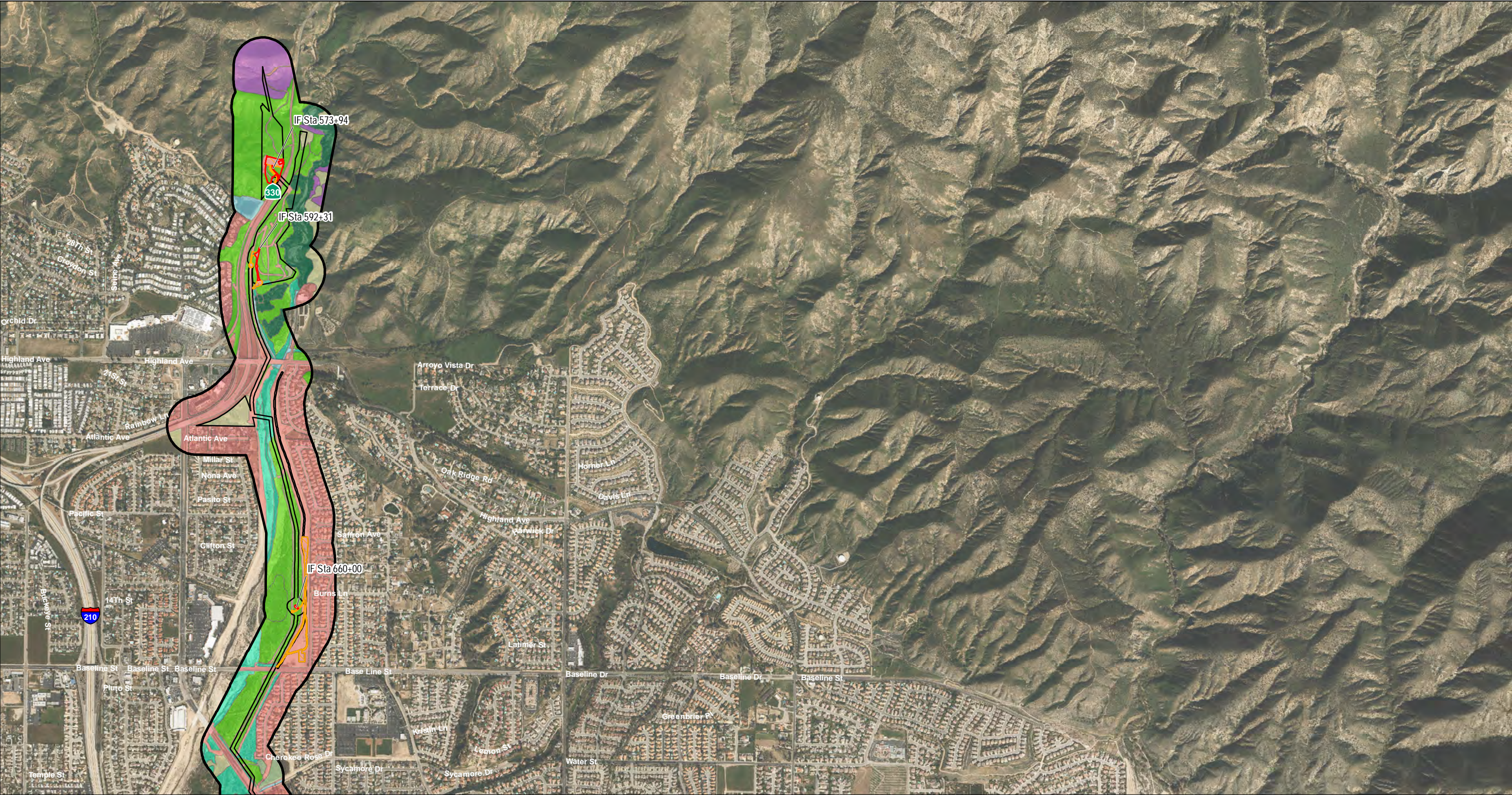
Western San Bernardino County Distribution System Infrastructure Protection Program



- | | | | |
|--|--|--|--|
| <ul style="list-style-type: none">Project FootprintProgrammatic Survey Area | Forest and Woodlands Alliances and Stands <ul style="list-style-type: none">Cool Temperate ForestRiparian Forest | Non-natural Land Covers/Unvegetated Communities <ul style="list-style-type: none">Basins and WatercoursesDevelopedWater | Shrubland Alliances and Stands <ul style="list-style-type: none">Coastal ScrubMixed ChaparralRiparian Scrub |
| Impacts <ul style="list-style-type: none">PermanentTemporary | Herbaceous Alliances and Stands <ul style="list-style-type: none">Annual Grassland | | |



SOURCE: Eagle Aerial 2015



Project Footprint

Programmatic Survey Area

Impacts

Permanent

Temporary

Cool Temperate Forest

Riparian Forest

Annual Grassland

Forest and Woodlands Alliances and Stands

Herbaceous Alliances and Stands

Basins and Watercourses

Developed

Coastal Scrub

Non-natural Land Covers/Unvegetated Communities

Shrubland Alliances and Stands

Mixed Chaparral

Riparian Scrub

0

750

1,500

Feet

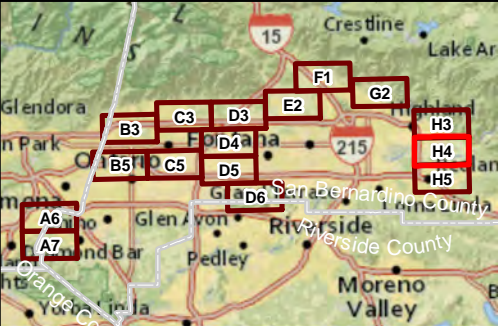
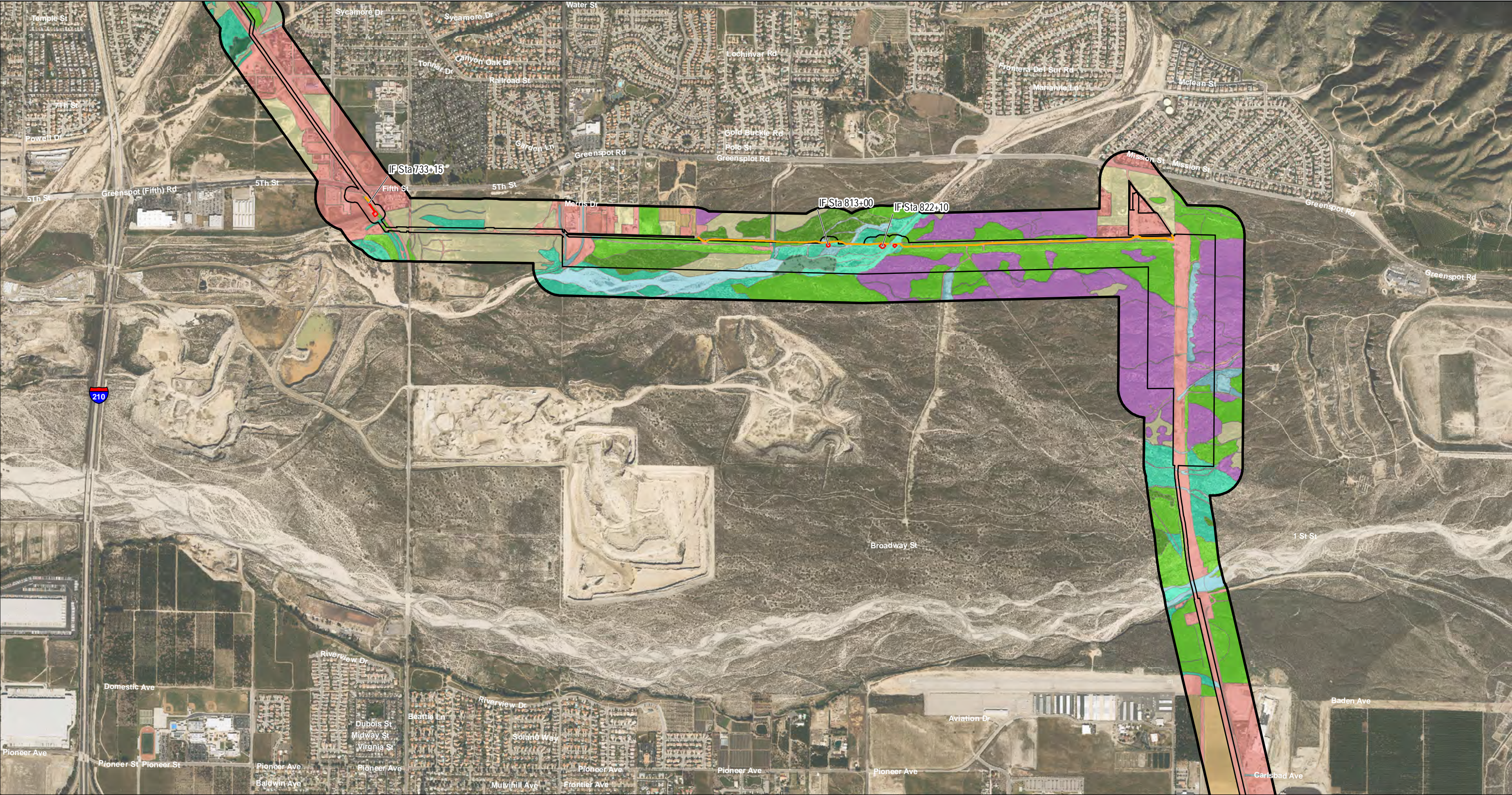
SOURCE: Eagle Aerial 2015

APPENDIX F-13

Vegetation Communities Impacts - Grid H3

The Metropolitan Water District of Southern California

Western San Bernardino County Distribution System Infrastructure Protection Program

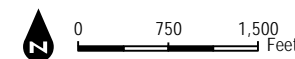


- Project Footprint
- Programmatic Survey Area
- Impacts
- Permanent

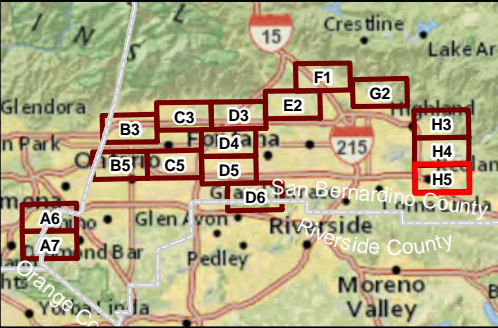
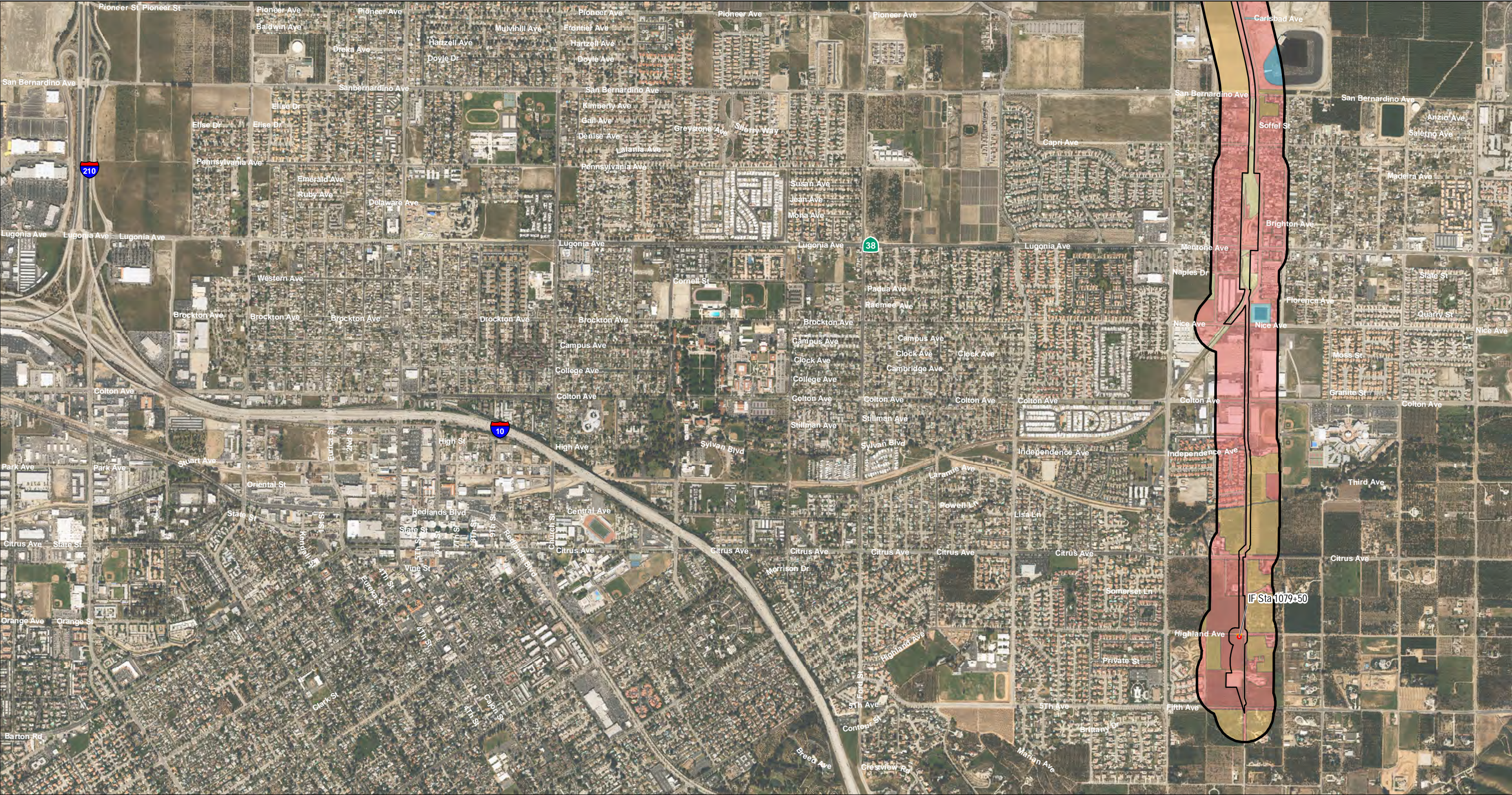
- Temporary
- Forest and Woodlands Alliances and Stands
- Cool Temperate Forest
- Riparian Forest

- Warm Temperate Forest
- Herbaceous Alliances and Stands
- Annual Grassland

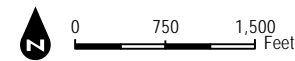
- Non-natural Land Covers/Unvegetated Communities
- Agriculture
- Basins and Watercourses
- Developed
- Shrubland Alliances and Stands
- Coastal Scrub
- Mixed Chaparral
- Riparian Scrub



SOURCE: Eagle Aerial 2015



- | | | | | |
|--------------------------|----------------|--|--|-----------|
| Project Footprint | Impacts | Herbaceous Alliances and Stands | Non-natural Land Covers/Unvegetated Communities | Developed |
| Programmatic Survey Area | Permanent | Annual Grassland | Agriculture | |
| | Temporary | | Basins and Watercourses | |



SOURCE: Eagle Aerial 2015

Appendix G

Hazards Records Search Results

Appendix G-1

HAZ Cleanup Sites

Table G-1-1. Cortese List Sites within 1 Mile and Other Cleanup Sites within 1/4 Mile of the Programmatic Footprint

Project Name	Address	City	Site Type	Lead Agency	Site Status	Status Date	Distance Zone (Miles)	Pipeline and Appendix G Grid No.
<i>Cortese List (includes site description)</i>								
Stringfellow Quarry Acid Pits: This superfund site is a former industrial liquid waste disposal facility located in Jurupa Valley, Riverside County. Improper disposal practices caused VOC, semi-VOC, pesticide, metal, and other contamination to soils and groundwater at the site. Cleanup, operations, and maintenance are ongoing at the facility. The site was listed on the Superfund National Priority List in 1982. The site is also listed on the SWRQCB list of solid waste disposal sites with waste constituents higher than hazardous waste levels outside the waste management unit. The site has an active groundwater pump-and-treat system which is currently operated by DTSC on behalf of the State of California, and land use restrictions are in place. The groundwater contamination plume has extended beneath and south of the superfund site (DTSC 2019).	3490 Pyrite Street	Mira Loma	Federal Superfund	EPA	Open – Active Cleanup	1/1/1980	1 mile	Upper Feeder; Figure 4.7-1
Rialto Perchlorate Investigation – BF Goodrich (aka Rockets, Fireworks, and Flares Site): A superfund site, also known as the “Rockets, Fireworks, and Flares Site” or “B.F. Goodrich site,” is located in the northern part of the city of Rialto and has resulted in soil and groundwater contamination with tetrachloroethylene (PCE) and other volatile organic compounds (VOCs). The impacts originate from a 160-acre area generally bounded by Alder Avenue to the west, West Casa Grande Drive to the north, North Locust Avenue to the east, and an extension of Summit Avenue to the south. Groundwater depths in this area are generally greater than 300 feet below ground surface (bgs) (AECOM 2018). The most recent available groundwater monitoring data (AECOM 2018; United Technologies 2018) indicates that the groundwater plume is located downgradient (southeast) of the original 160-acre site.	3196 North Locust Ave	Rialto	Federal Superfund	EPA	Open – Active Cleanup	2/28/2013	1/8 mile	Rialto Pipeline; Grid 3
Mid-Valley Landfill: Two sanitary landfills are located on this site, north and south of each other. A cleanup and abatement order (CAO) was issued in 1998 for cleanup of groundwater that was impacted by VOCs from the landfill. Groundwater monitoring is ongoing at the site; the most recent groundwater monitoring report (Geosyntec 2019) shows groundwater gradient is to the south-southeast, away from the program footprint. The monitoring network does not extend northward.	2390 N Alder Avenue	Rialto	Land Disposal Site (Active CAO)	SA RWQCB (R 8)	Open – Operating	1/1/1995	1/2 mile	Rialto Pipeline; Grid 3
Newmark Groundwater Contamination: A Superfund site that comprises an 8-square-mile area of groundwater contamination located in San Bernardino, north of Muscoy. Contaminants of concern are VOCs, PCE, and trichloroethylene (TCE). Groundwater depths in this are reportedly greater than 100 feet bgs (ACOE 2018). No source areas were identified; therefore, the U.S. Environmental Protection Agency (EPA) is managing ongoing remediation of the plume through the Superfund cleanup program.	Bunker Hill Groundwater Basin	San Bernardino	Federal Superfund	EPA	Open – Active Cleanup	4/22/1996	1/2 mile	Rialto Pipeline; Grid 7

Table G-1-1. Cortese List Sites within 1 Mile and Other Cleanup Sites within 1/4 Mile of the Programmatic Footprint

Project Name	Address	City	Site Type	Lead Agency	Site Status	Status Date	Distance Zone (Miles)	Pipeline and Appendix G Grid No.
SWRCB GeoTracker Database								
Liberty Groves	495 E 19th St	Upland	LUST Cleanup Site	SBC	Completed – Case Closed	1/11/1989	1/4 mile	Rialto Pipeline; Grid 1
Rialto Perchlorate Investigation – American Promotional Events Inc.	3196 N Locust Ave	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Site Assessment	9/17/2008	1/4 mile	Rialto Pipeline; Grid 3
Rialto Perchlorate Investigation – Hescox, Harry	Casa Grande Park Ave & Locust Ave	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Inactive	5/18/2015	1/4 mile	Rialto Pipeline; Grid 3
Rialto Perchlorate Investigation – West Coast Loading Company	3196 N. Locust Ave	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Site Assessment	10/23/2002	1/4 mile	Rialto Pipeline; Grid 3
Rialto Perchlorate Investigation – Lockheed/GCR	Bunkers	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Site Assessment	11/19/2004	1/8 mile	Rialto Pipeline; Grid 3
Rialto Perchlorate Investigation – Ensign-Bickford Company	3196 Locust Ave	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Site Assessment	6/26/2003	1/8 mile	Rialto Pipeline; Grid 3
Rialto Perchlorate Investigation – Ming Chung Wong	3196 North Locust Ave	Rialto	Cleanup Program Site	SA RWQCB (R 8)	Open – Site Assessment	6/13/2003	1/8 mile	Rialto Pipeline; Grid 3
Owl Rock Products	3221 N Riverside Ave	Rialto	LUST Cleanup Site	SBC	Completed – Case Closed	1/24/1994	1/8 mile	Rialto Pipeline; Grid 3
Unocal No. 6418	1305 N Mountain Ave	Ontario	LUST Cleanup Site	SBC	Completed – Case Closed	8/25/1992	1/8 mile	Upper Feeder; Grid 4
Former Alameda Management	1333 N Mountain Ave	Ontario	LUST Cleanup Site	SBC	Completed – Case Closed	7/26/1996	1/8 mile	Upper Feeder; Grid 4
Thrifty Oil No. 315	9690 Central Ave	Montclair	LUST Cleanup Site	SBC	Completed – Case Closed	10/17/1994	1/4 mile	Upper Feeder; Grid 4
Tosco/76 Station No. 5263	9494 Central Ave	Montclair	LUST Cleanup Site	SBC	Completed – Case Closed	7/27/1999	1/8 mile	Upper Feeder; Grid 4
Arco No. 9687	9690 N Central Ave	Montclair	LUST Cleanup Site	SBC	Completed – Case Closed	1/14/2002	1/4 mile	Upper Feeder; Grid 4
Pier 1 Imports	9160 Buffalo Ave	Rancho Cucamonga	LUST Cleanup Site	SBC	Completed – Case Closed	10/12/2001	1/4 mile	Upper Feeder; Grid 5
Generating Station, Etiwanda	8996 Etiwanda	Rancho Cucamonga	Land Disposal Site	SA RWQCB (R 8)	Completed – Case Closed	11/22/2006	1/8 mile	Etiwanda Pipeline; Grid 5
Air Liquide	12550 Arrow Rte	Rancho Cucamonga	LUST Cleanup Site	SBC	Completed – Case Closed	2/27/1996	1/8 mile	Etiwanda Pipeline; Grid 5
Soil Treatment, Rancho Cucamonga	12167 Arrow Rte	Rancho Cucamonga	Land Disposal Site	SA RWQCB (R 8)	Completed – Case Closed	11/11/1998	1/8 mile	Etiwanda Pipeline; Grid 5
All State Recycling	8949 Etiwanda Ave	Rancho Cucamonga	Cleanup Program Site	SA RWQCB (R 8)	Completed – Case Closed	6/28/2013	1/8 mile	Etiwanda Pipeline/Upper Feeder; Grid 5
Ameron Steel and Wire	12459 Arrow Hwy	Etiwanda	LUST Cleanup Site	SBC	Completed – Case Closed	12/4/1990	1/8 mile	Etiwanda Pipeline; Grid 5
Cumberland Swan	9817 7th St	Rancho Cucamonga	LUST Cleanup Site	SBC	Completed – Case Closed	7/26/1991	1/4 mile	Upper Feeder; Grid 5
Rancho Cucamonga Fire Station No. 174	11239 Jersey Blvd	Rancho Cucamonga	LUST Cleanup Site	SA RWQCB (R 8)	Completed – Case Closed	8/25/2015	1/4 mile	Upper Feeder; Grid 5
D and D Rubber Applications	10798 Catawba Ave	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	9/23/1992	1/4 mile	Upper Feeder; Grid 6
Former USF Bestway Inc.	10691 Poplar Ave	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	6/16/2004	1/8 mile	Upper Feeder; Grid 6
JS Fabrication	15777 Slover Ave	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	8/14/2000	1/8 mile	Upper Feeder; Grid 6

Table G-1-1. Cortese List Sites within 1 Mile and Other Cleanup Sites within 1/4 Mile of the Programmatic Footprint

Project Name	Address	City	Site Type	Lead Agency	Site Status	Status Date	Distance Zone (Miles)	Pipeline and Appendix G Grid No.
Carnival Time Shows	15513 Valley Blvd	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	11/24/1992	1/4 mile	Upper Feeder; Grid 6
Truck Roost	15252 Valley Blvd	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	8/14/2000	1/8 mile	Upper Feeder; Grid 6
Central Refrigeration/Dick Simon Trucking	15816 Santa Ana Ave	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	12/4/2003	1/4 mile	Upper Feeder; Grid 6
Heckett Plant No. 42	888 Calabash Ave	Fontana	LUST Cleanup Site	SBC	Completed – Case Closed	12/19/1995	1/4 mile	Upper Feeder; Grid 6
RDA Residence	14636 Randall Ave	Fontana	Cleanup Program Site	SBC	Completed – Case Closed	5/16/2012	1/8 mile	Upper Feeder; Grid 6
Caltrans	26660 E Highland Ave	Highland	LUST Cleanup Site	SBC	Completed – Case Closed	1/4/1990	1/8 mile	Inland Feeder; Grid 8
Mentone Service Station	1759 Mentone Blvd	Mentone	LUST Cleanup Site	SBC	Completed – Case Closed	10/4/2007	1/8 mile	Inland Feeder; Grid 9
Circle K No. 1971	1702 Mentone Blvd	Mentone	LUST Cleanup Site	SBC	Completed – Case Closed	6/26/1998	1/4 mile	Inland Feeder; Grid 9
DTSC EnviroStor Database								
Proposed Elementary School No. 35	Lytle Creek Rd/Three Mile Rd	Fontana	School Investigation	DTSC SCSBO	No Further Action	2/26/2007	1/8 mile	Rialto Pipeline; Grid 2
Middle School No. 10	Citrus Ave/Three Mile Rd	Fontana	School Investigation	DTSC SCSBO	No Further Action	4/26/2005	1/8 mile	Rialto Pipeline; Grid 2
Ontario Plaza	Northeast Corner of Fourth & Mountain Ave	Ontario	Voluntary Cleanup	DTSC Cleanup Cypress	Certified O&M – Land Use Restrictions Only	9/16/2009	1/4 mile	Upper Feeder; Grid 4
Chaffey High School Proposed New Classroom Building	1245 North Euclid Ave	Ontario	School Investigation	DTSC SCSBO	No Further Action	11/6/2015	1/8 mile	Upper Feeder; Grid 4
6th Street Continuation High School	East 7th St/Vineyard Ave	Ontario	School Investigation	DTSC SCSBO	No Further Action	11/15/2004	1/8 mile	Upper Feeder; Grid 4
Chaffey Stem High School	E 6th St & N Vineyard Ave	Ontario	School Investigation	DTSC SCSBO	No Further Action	10/14/2016	1/4 mile	Upper Feeder; Grid 4
New Middle School No. 35	Sixth St/Amador Ave	Ontario	School Investigation	DTSC SCSBO	No Further Action	12/23/2002	1/8 mile	Upper Feeder; Grid 4
Kaiser Steel	9400 Cherry Ave	Fontana	Voluntary Cleanup	DTSC SMBRP	Active	2/27/2012	1/4 mile	Upper Feeder; Grid 5
Metal Coaters of California	9133 Center Ave	Rancho Cucamonga	Tiered Permit	DTSC Cleanup Cypress	Certified O&M – Land Use Restrictions Only	2/14/2012	1/4 mile	Upper Feeder; Grid 5
Fontana Steel Inc.	12451 Arrow Rte	Rancho Cucamonga	Voluntary Cleanup	DTSC SCSBO	No Further Action	12/22/2000	1/8 mile	Etiwanda Pipeline; Grid 5
DP Etiwanda	8822 Etiwanda Ave	Rancho Cucamonga	Voluntary Cleanup	DTSC SCSBO	Active	3/26/2018	1/8 mile	Etiwanda Pipeline; Grid 5
Master Halco Inc.	9125 Cherry Ave	Fontana	Voluntary Cleanup	DTSC Cleanup Cypress	Refer: RCRA	8/23/2005	1/4 mile	Upper Feeder; Grid 6
Western States Refining	10763 Poplar Ave	Fontana	State Response	DTSC Cleanup Cypress	Certified O&M – Land Use Restrictions Only	12/10/1997	1/8 mile	Upper Feeder; Grid 6
Highland Fifth-Orange Partners LLC (HFO)	Southeast corner of Greenspot Rd & Orange St	Highland	Voluntary Cleanup	DTSC SCSBO	Active	9/28/2011	1/8 mile	Inland Feeder; Grid 8
Redlands Airport	1745 Sessums Dr	Redlands	Evaluation	DTSC SCSBO	No Further Action	2/8/2013	1/4 mile	Inland Feeder; Grid 9

Notes: SWRCB = State Water Resources Control Board; DTSC = Department of Toxic Substances Control; LUST = leaking underground storage tank; SBC = San Bernardino County; SA RWQCB = Santa Ana Regional Water Quality Control Board; R = Region; EPA = U.S. Environmental Protection Agency; SCSBO = Southern California Schools & Brownfields Outreach; SMBRP = Site Mitigation and Brownfields Reuse Program.

References

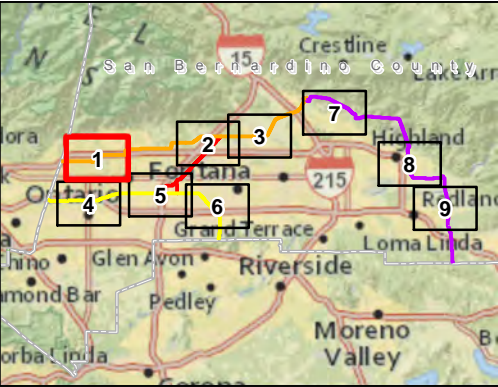
ACOE (U.S. Army Corps of Engineers). 2018. Third Five-Year Review Report for Newmark Groundwater Contamination Superfund Site, San Bernardino, California. September 26, 2018.

AECOM. 2018. Remedial Design Investigation Report, Source Area Operable Unit, Rockets, Fireworks, and Flares Site, EPA ID: CAN000905945. November 2018.

DTSC (California Department of Toxic Substances Control). 2019. Stringfellow *Superfund Site Community Update*. September 2019.

Geosyntec. 2019. Second Quarter 2019 Monitoring Report, Water Quality Monitoring Program, Corrective Action Program, Mid-Valley Sanitary Landfill, Rialto, California. July 2019.

United Technologies. 2018. 2018 Monitoring Well Sampling Report, Rockets, Fireworks, and Flares Superfund Site, Operable Unit 2, San Bernardino County, California. December 14, 2018.



WSB Pipeline Locations

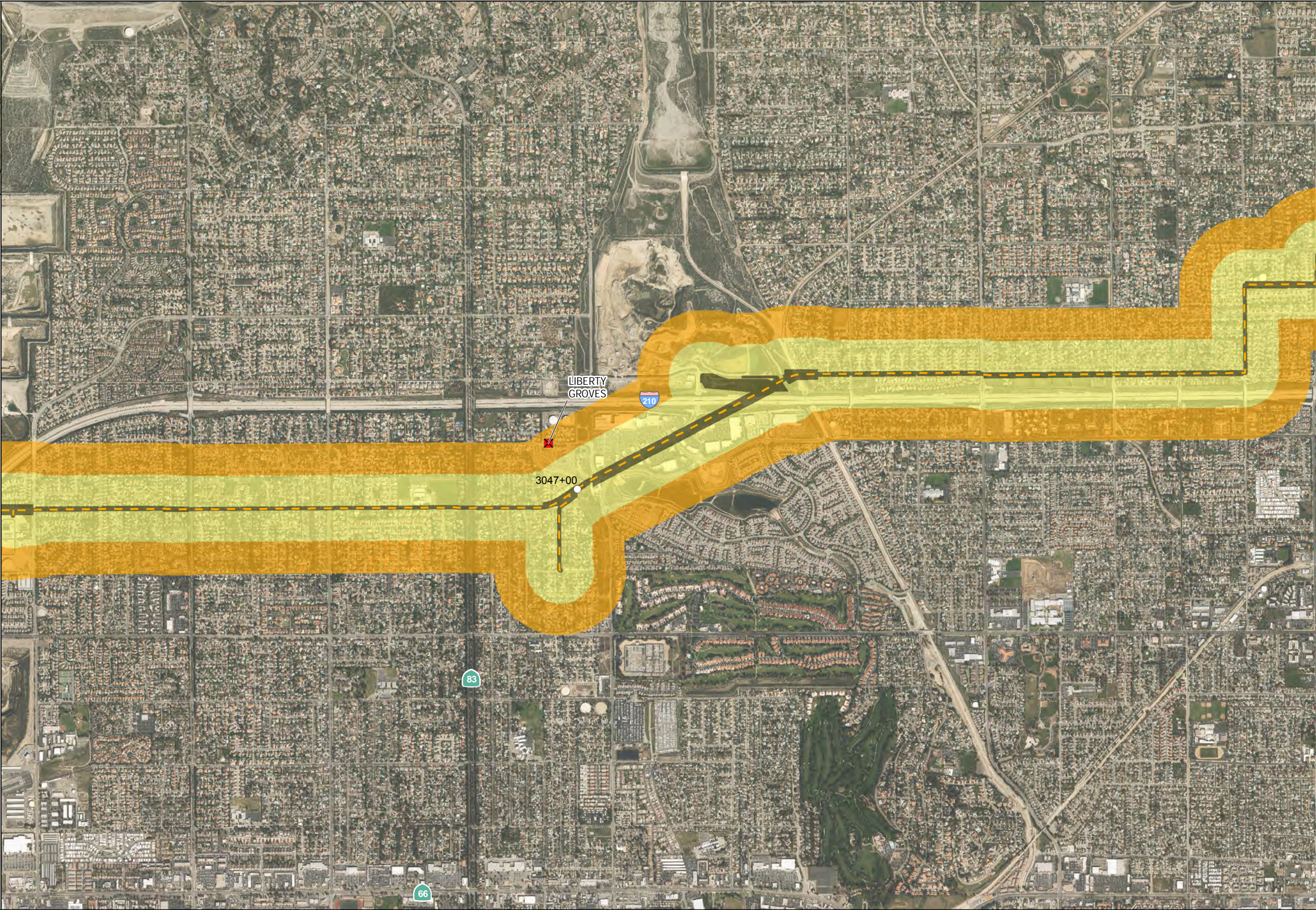
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- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- Stations

Geotracker Sites

- Leaking Underground Storage Tank (LUST) Cleanup Site
- Completed - Case Closed

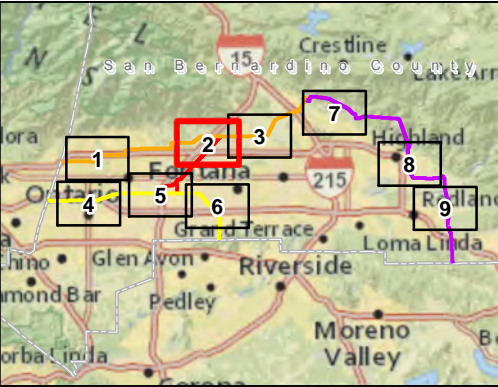
Distance from Project Footprint

- 0 – 1/8 Mile
- 1/8 – 1/4 Mile



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 1
Environmental Cleanup Sites



WSB Pipeline Locations

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- CIP Work Areas
- Stations

Envirostor Sites

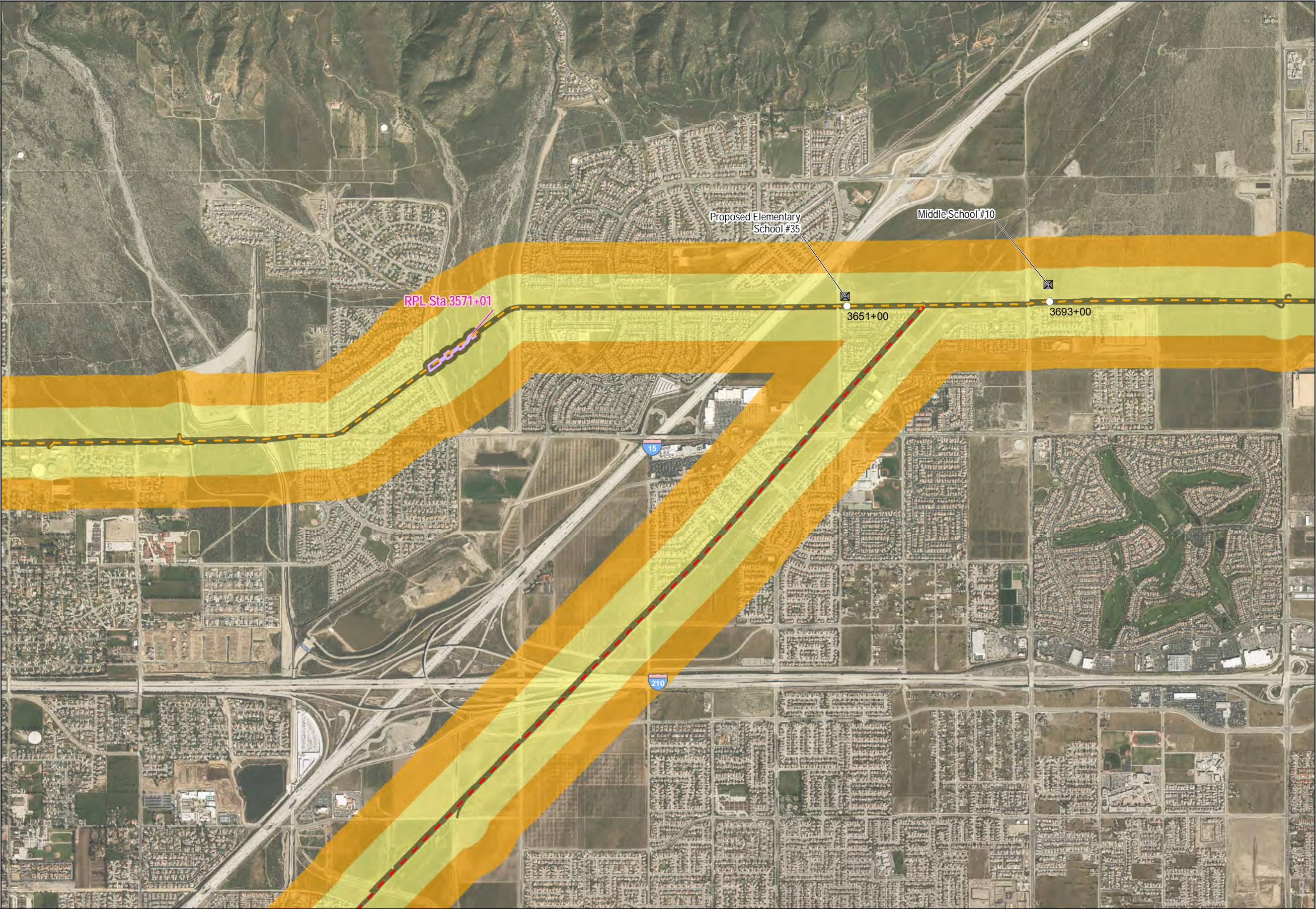
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Distance from Project Footprint

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- 1/8 – 1/4 Mile

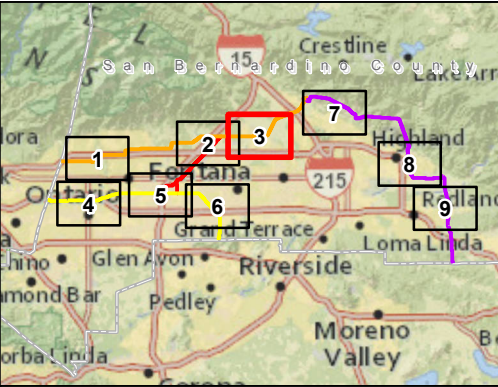


0 1,000 2,000 Feet



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 2
Environmental Cleanup Sites



WSB Pipeline Locations

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- Stations

Geotracker Sites

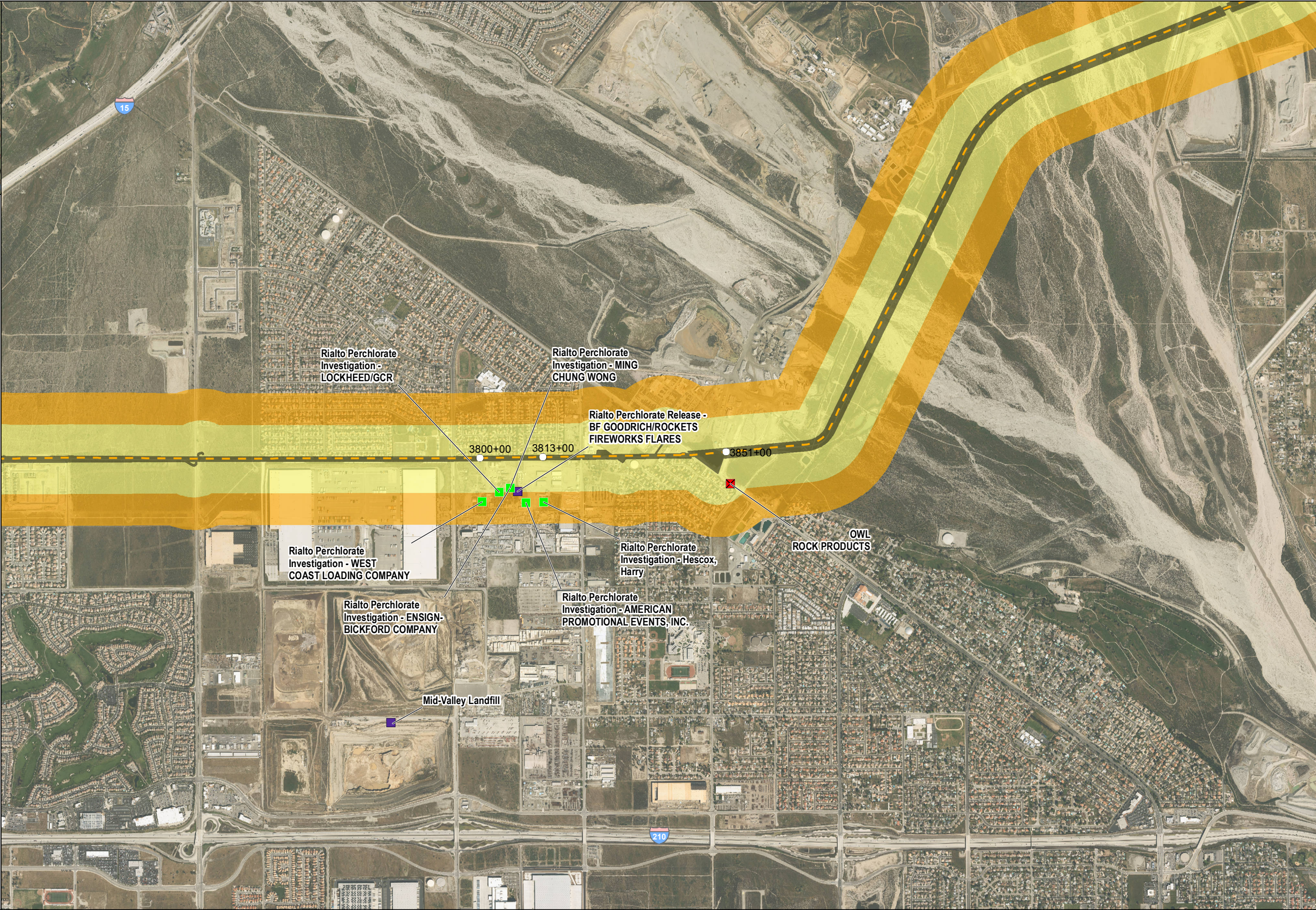
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- Other Cleanup Sites
- ⊗ Completed - Case Closed

Envirostor Sites

- Federal Superfund

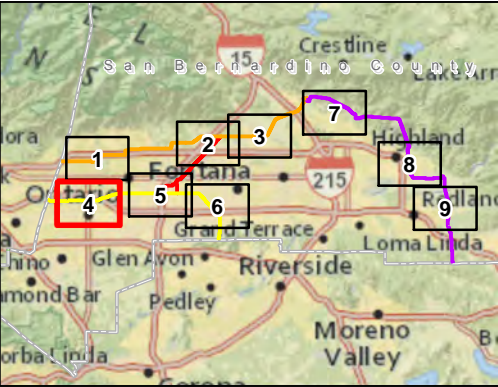
Distance from Project Footprint

- 0 - 1/8 Mile
- 1/8 - 1/4 Mile

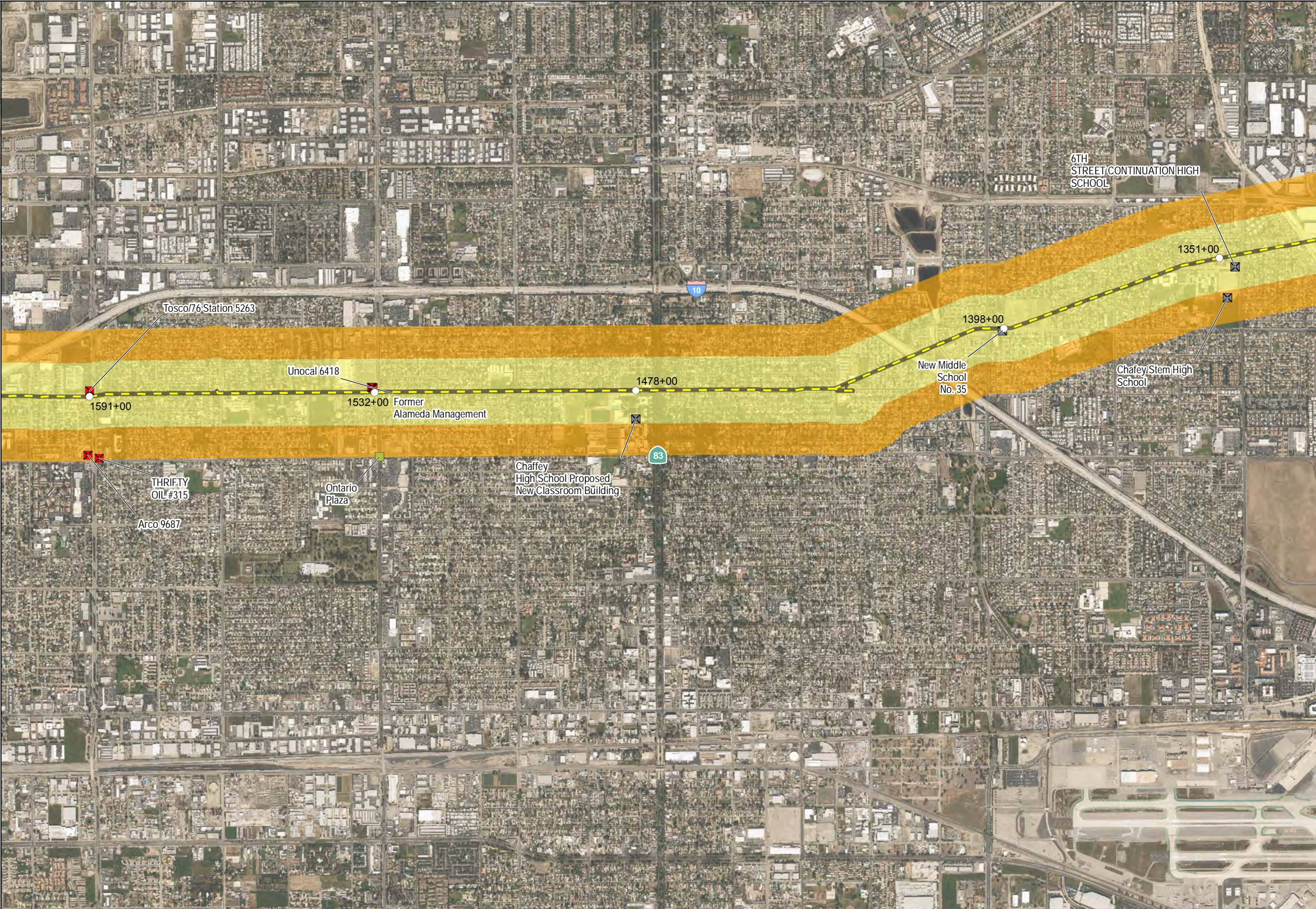
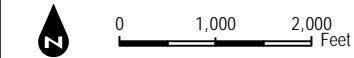


SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 3
Environmental Cleanup Sites

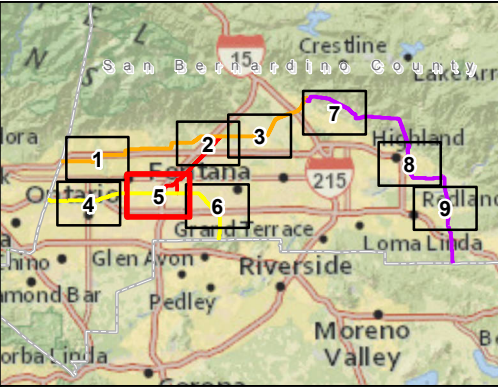


- WSB Pipeline Locations**
- Etiwanda Pipeline
 - Inland Feeder
 - Rialto Pipeline
 - Upper Feeder
 - Yorba Linda Feeder
 - WSB DSIPP Programmatic Footprint
 - Stations
- Geotracker Sites**
- Leaking Underground Storage Tank (LUST) Cleanup Site
 - ⊠ Completed - Case Closed
- Envirostor Sites**
- Voluntary Cleanup
 - School Investigation
 - ⊠ No Further Action
- Distance from Project Footprint**
- 0 – 1/8 Mile
 - 1/8 – 1/4 Mile



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 4
Environmental Cleanup Sites



WSB Pipeline Locations

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- CIP Work Areas
- Stations

Geotracker Sites

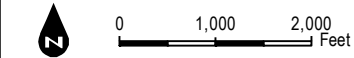
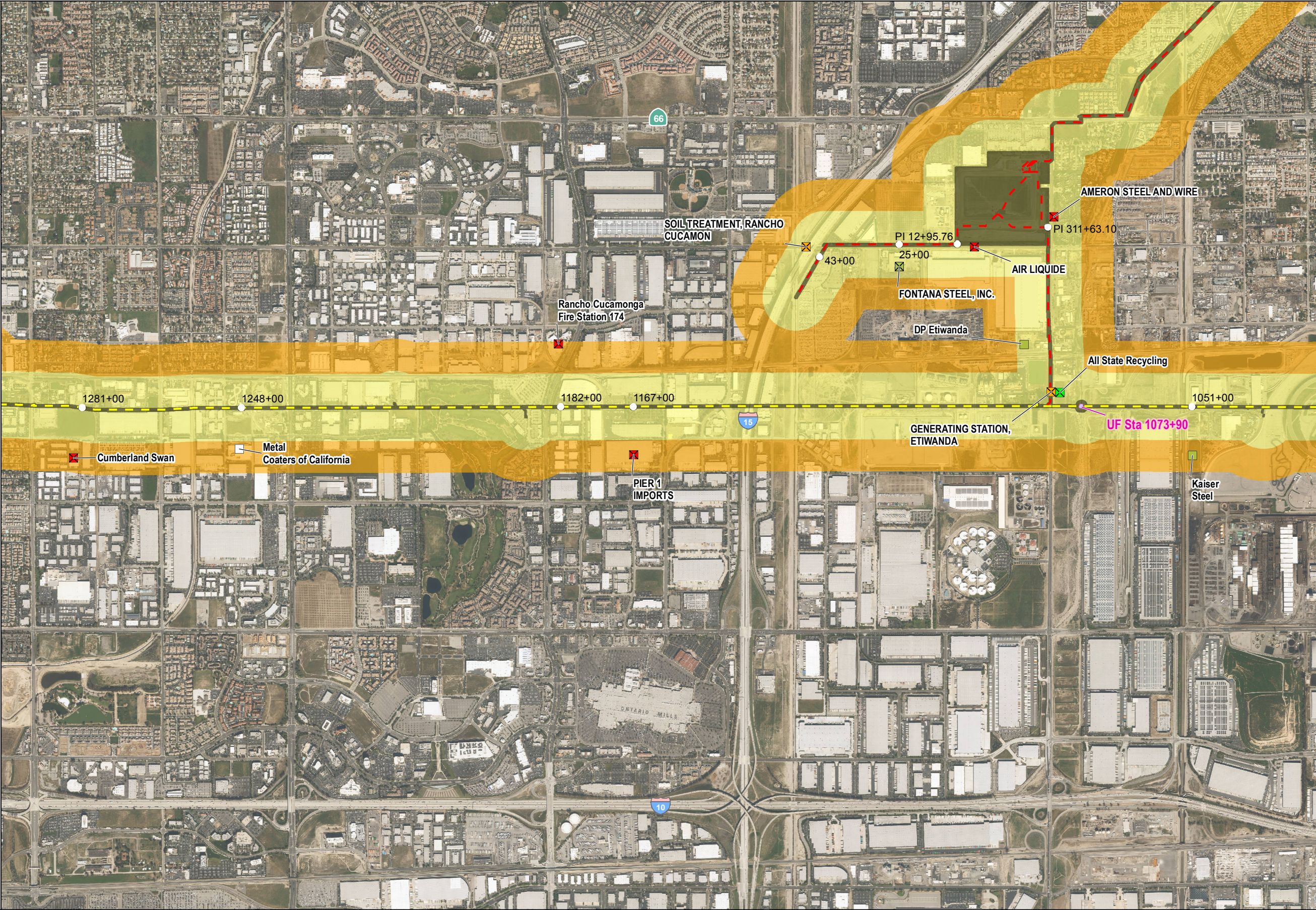
- Leaking Underground Storage Tank (LUST) Cleanup Site
- Other Cleanup Sites
- Land Disposal Sites
- Completed - Case Closed

Envirostor Sites

- Voluntary Cleanup
- Tiered Permit
- No Further Action

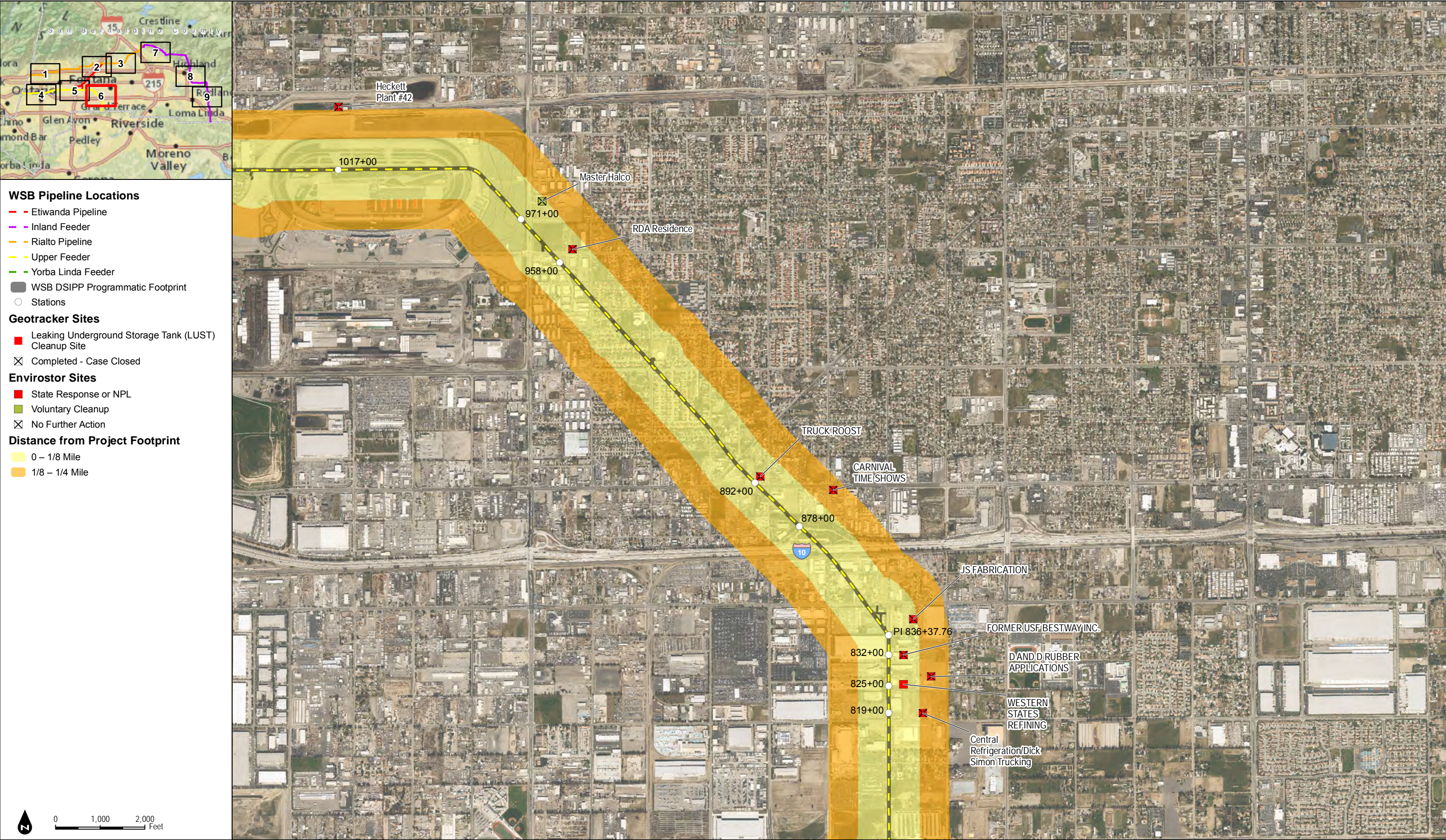
Distance from Project Footprint

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- 1/8 - 1/4 Mile



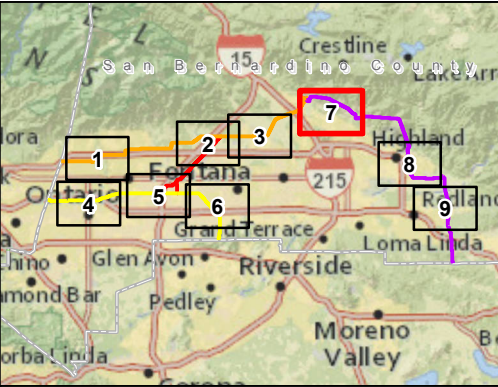
SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 5
Environmental Cleanup Sites



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 6
Environmental Cleanup Sites



WSB Pipeline Locations

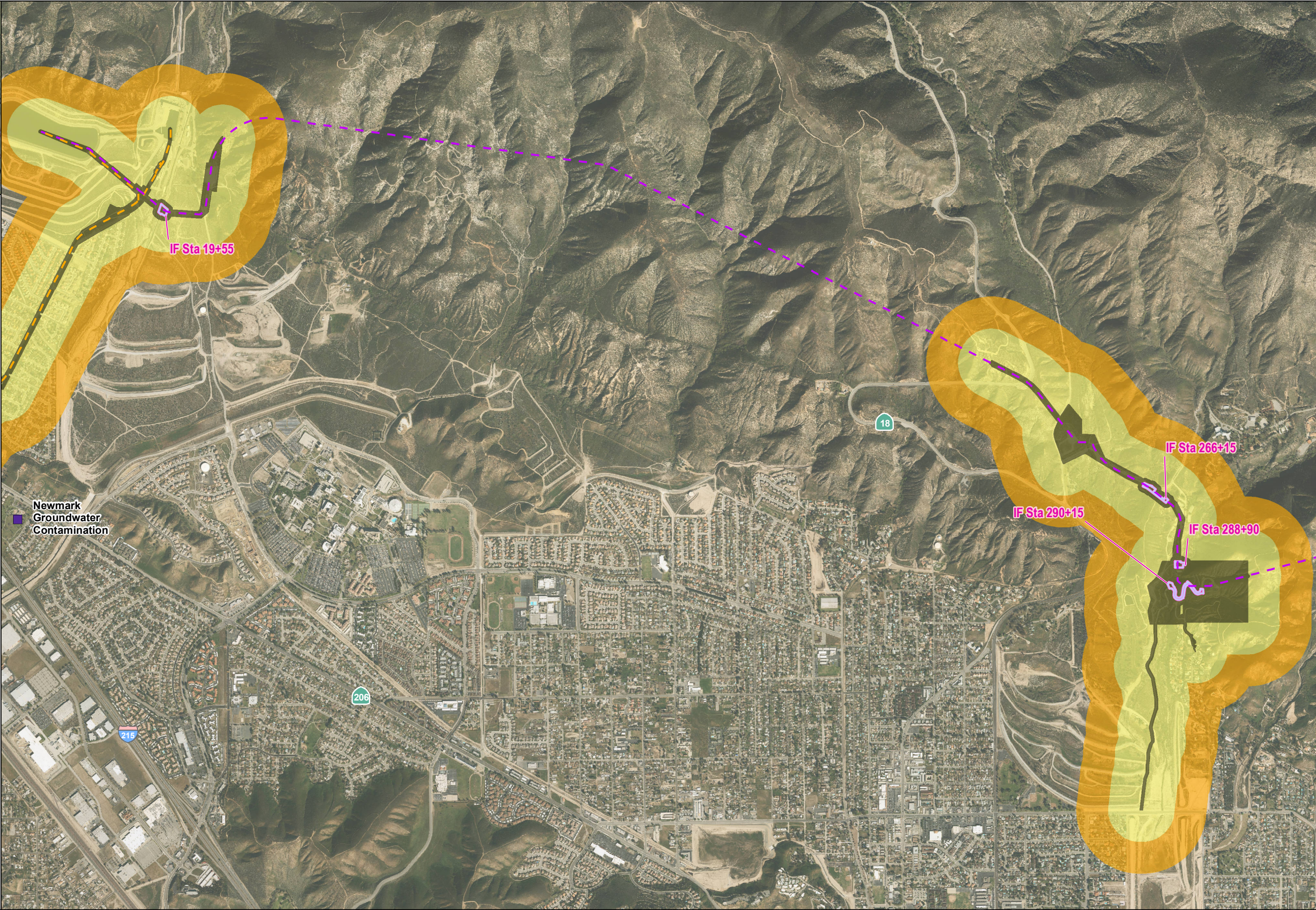
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- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- CIP Work Areas

Envirostor Sites

- Federal Superfund

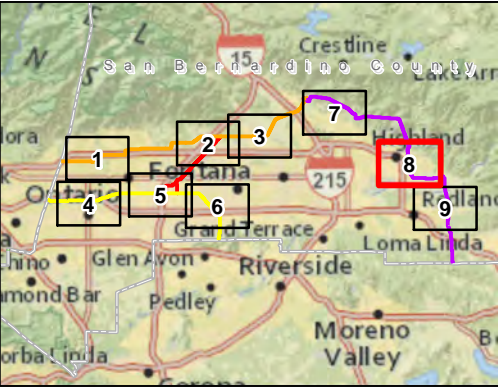
Distance from Project Footprint

- 0 - 1/8 Mile
- 1/8 - 1/4 Mile



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 7
Environmental Cleanup Sites



WSB Pipeline Locations

- Etiwanda Pipeline
- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- CIP Work Areas
- Stations

Geotracker Sites

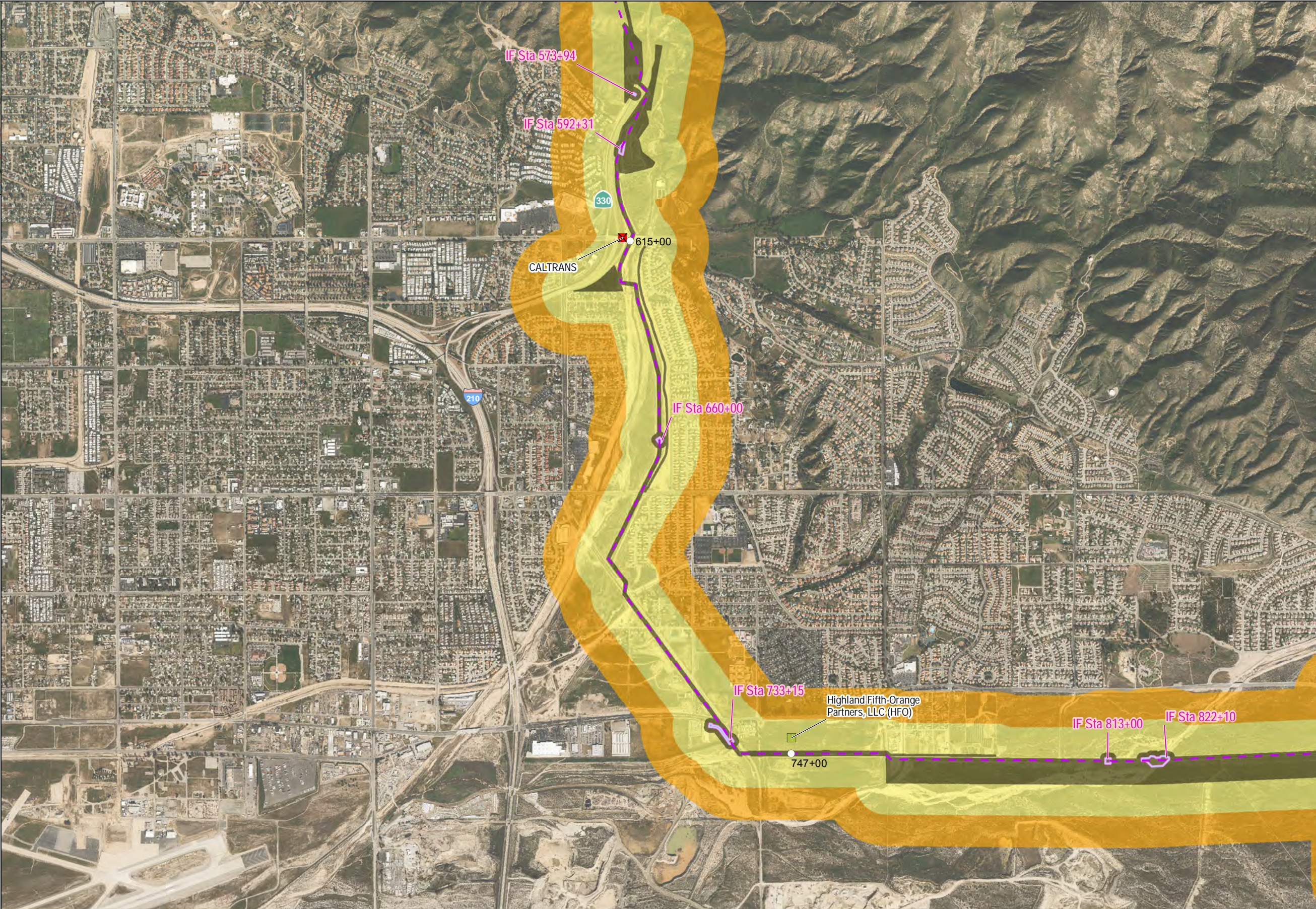
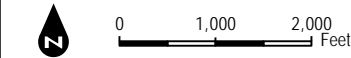
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- ⊠ Completed - Case Closed

Envirostor Sites

- Voluntary Cleanup

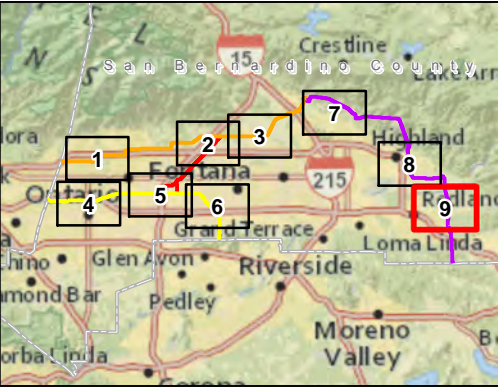
Distance from Project Footprint

- 0 – 1/8 Mile
- 1/8 – 1/4 Mile



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

APPENDIX G - GRID 8
Environmental Cleanup Sites



WSB Pipeline Locations

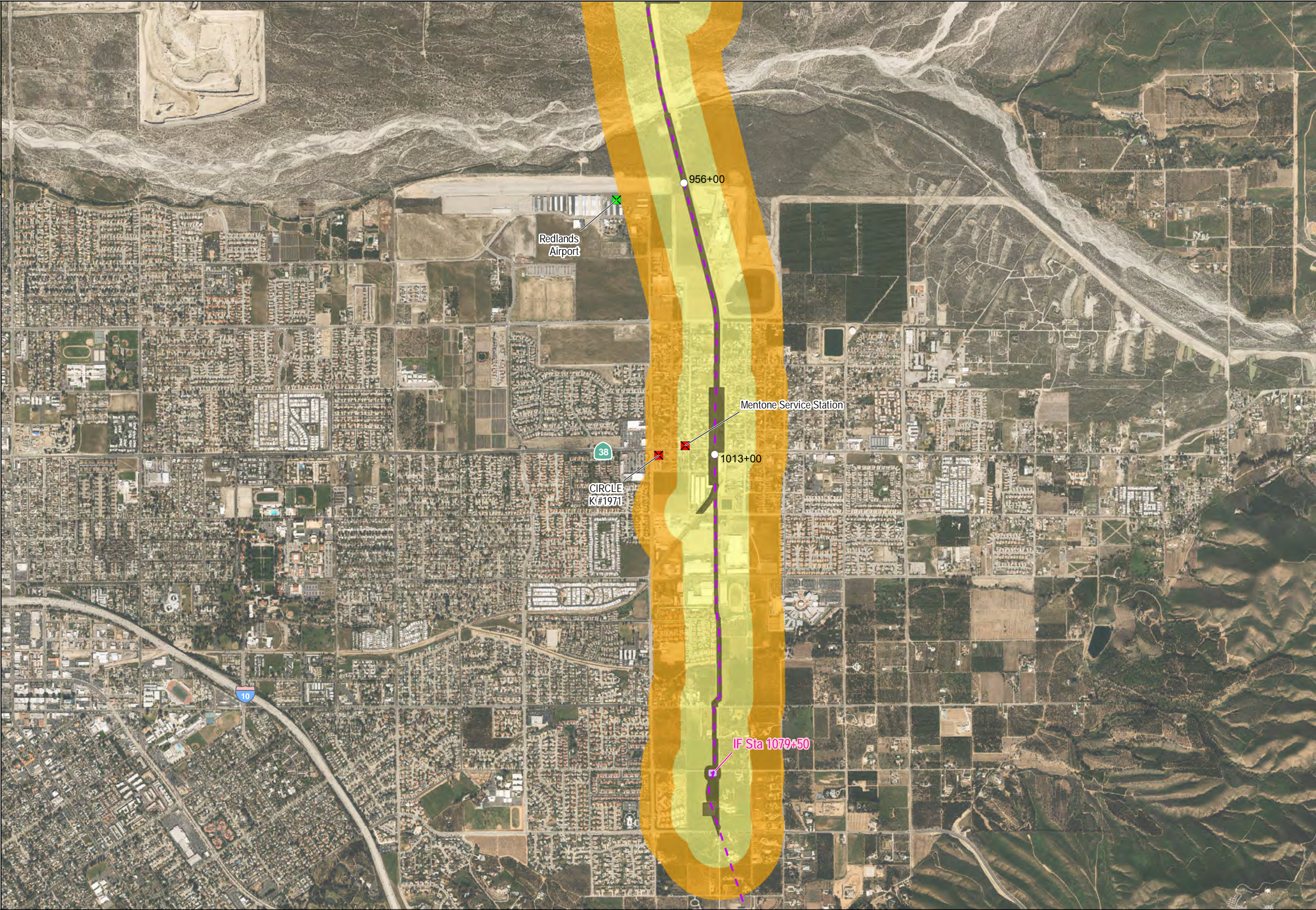
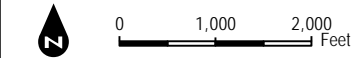
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- Inland Feeder
- Rialto Pipeline
- Upper Feeder
- Yorba Linda Feeder
- WSB DSIPP Programmatic Footprint
- CIP Work Areas
- Stations

Geotracker Sites

- Leaking Underground Storage Tank (LUST) Cleanup Site
- Other Cleanup Sites
- Completed - Case Closed

Distance from Project Footprint

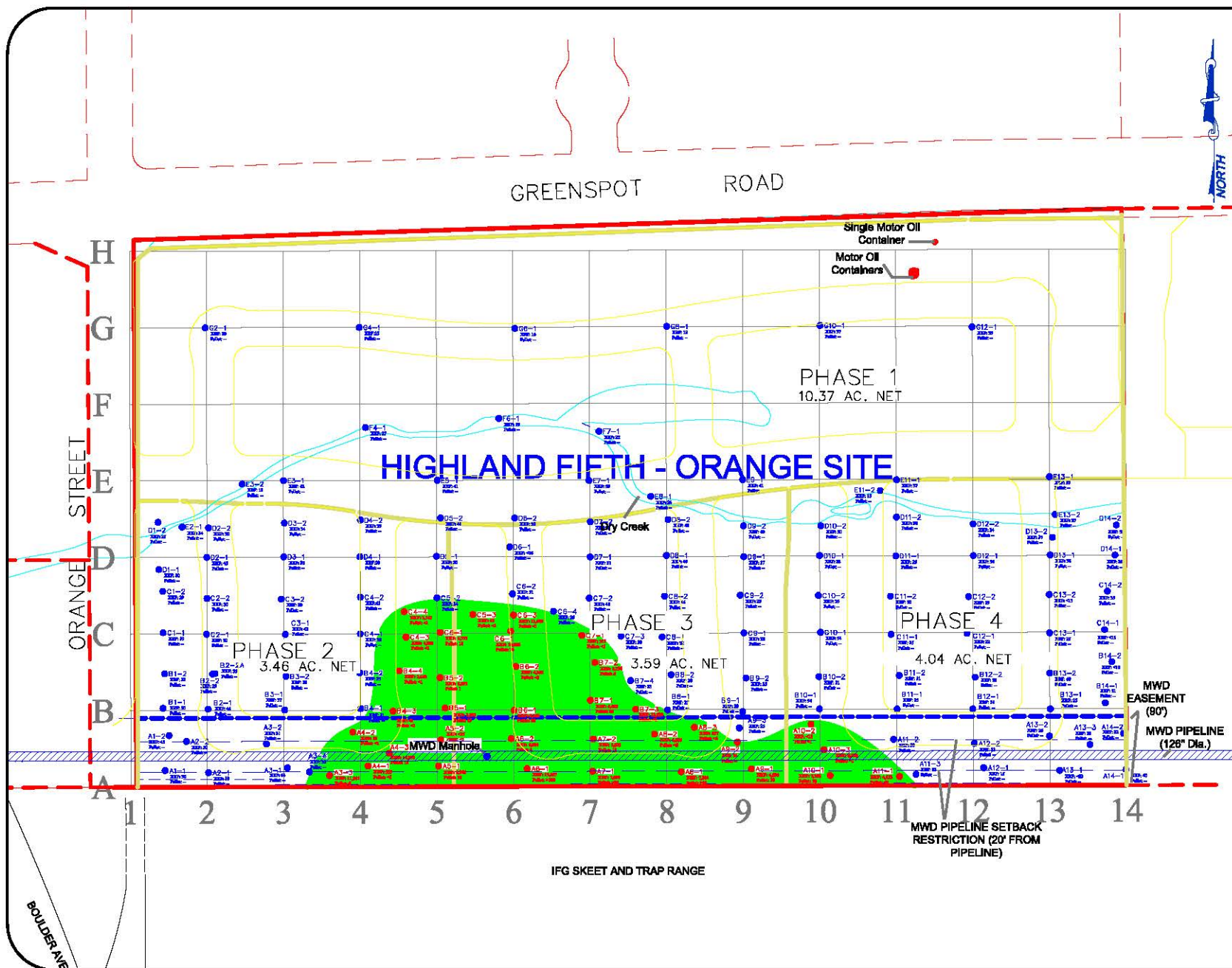
- 0 – 1/8 Mile
- 1/8 – 1/4 Mile



SOURCE: ArcGIS Online Basemap (Nat Geo), Eagles Aerial 2016, CGS 2002

Appendix G-2

Highland Lease Area Figures



General Notes

- Surface XRF Sampling Location
Red: Leadshot Pellet and/or high XRF
Blue: No Leadshot Pellet and low XRF
- Lead Shotfall Area
- All XRF lead readings in ppm
- Leadshot pellet count is approximate per square foot

Project Details

Name
Highland Property

Address
5th St. and Orange St.
Highland, CA

Number
7699

Figure Details

SITE PLAN WITH SURFACE XRF LEAD SCREENING
AND OBSERVED PELLET LOCATIONS

Figure #
Figure 4

Revision Date
July 2013

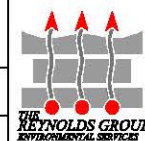
0' 120' Scale
1" = 120'
Approximate Scale

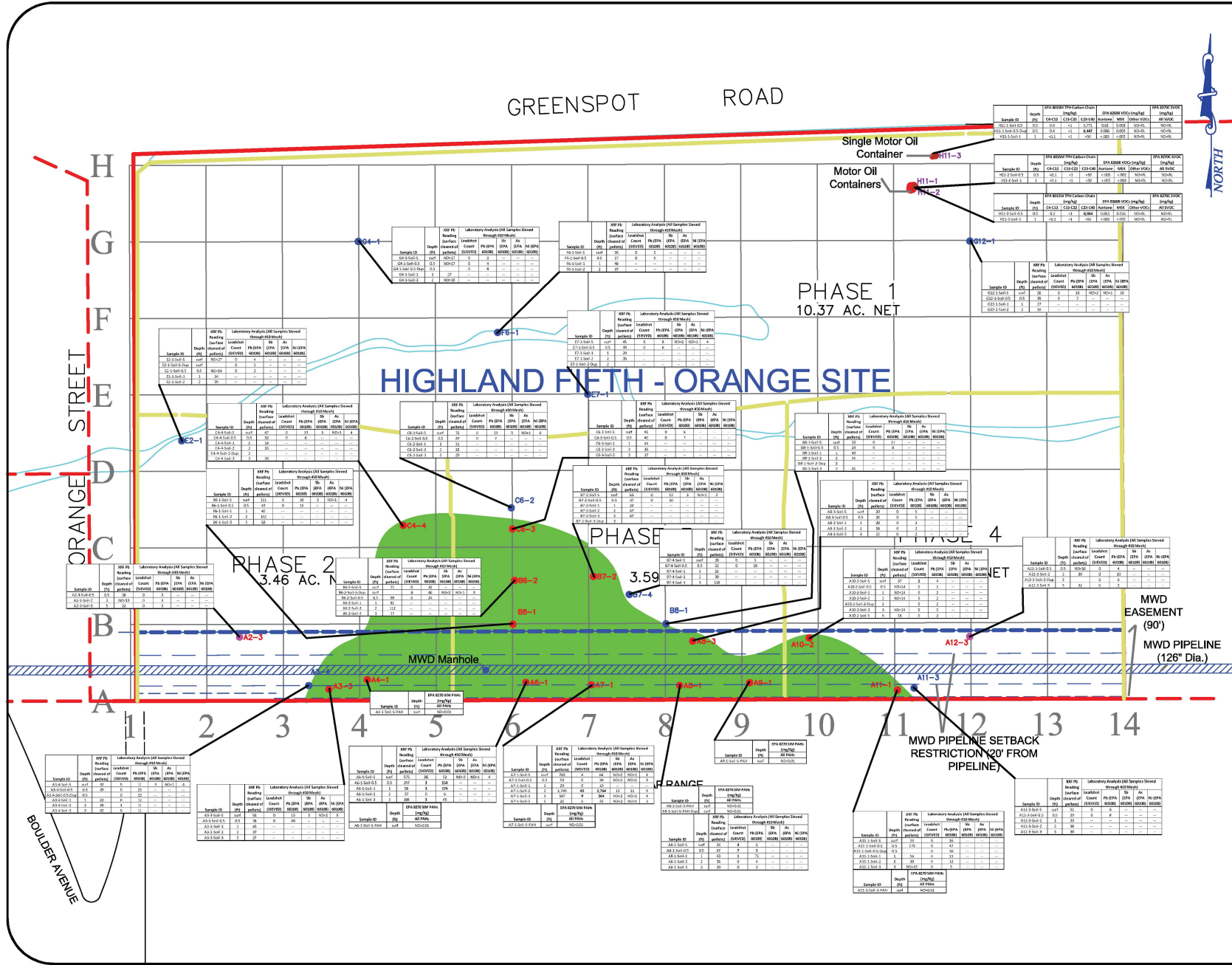
Company Information

Address
520 West 1st Street
Tustin, CA 92780

Telephone
(714) 750-5597

Fax
(714) 750-6476





General Notes

- Soil Sampling Locations
- Lead Shotfall Area

Project Details

Name
Highland Property

Address
5th St. and Orange St.
Highland, CA

Number
7699

Figure Details

SITE PLAN WITH SOIL SAMPLING RESULTS

Figure #
Figure 5

Revise Date
July 2013

Scale
0' 120' 1" = 120'

Company Information

Address
520 West 1st Street
Tustin, CA 92780

Telephone
(714) 730-5397

Fax
(714) 730-6476



Appendix H

Land Use Policy

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
County of San Bernardino		
County of San Bernardino General Plan (2007) Circulation and Infrastructure Element		<p>Goal CI 11: The County will coordinate and cooperate with governmental agencies at all levels to ensure safe, reliable, and high quality water supply for all residents and ensure prevention of surface and ground water pollution.</p> <p>Policy CI 11.1: Apply federal and state water quality standards for surface and groundwater and wastewater discharge requirements in the review of development proposals that relate to type, location and size of the proposed project to safeguard public health.</p> <p>Policy CI 11.6: Cooperate with state, regional, and responsible authorities to expand water sampling programs to determine ambient groundwater quality conditions affecting public, agricultural, and private wells. Identify the sources, extent, and types of organic and inorganic groundwater contaminants, and evaluate their impacts on groundwater resources.</p> <p>Policy CI 11.7: Assist in the development of additional conveyance facilities and use of groundwater basins to store surplus surface or imported water.</p> <p>Policy CI 11.8: Encourage local distribution systems to interconnect with regional and local systems, where feasible, to assist in maximizing use of local ground and surface water during droughts and emergencies.</p>
City of Chino Hills		
City of Chino Hills General Plan (2015) Land Use Element		<p>Policy LU-2.3: Ensure public land uses and utilities blend with surrounding development.</p> <p>Action LU-2.3.2: Locate and design public facilities to ensure visual and functional compatibility with adjacent residential and commercial land uses.</p> <p>Action LU-2.3.3: Require all utilities to be designed and installed in a manner that minimizes visual and environmental impacts.</p> <p>Goal C-5: Ensure an Adequate and Well Maintained Infrastructure System</p> <p>Policy C-5.1: Provide adequate infrastructure improvements in conjunction with development.</p> <p>Action C-5.1.1: Plan and design new roadways and expansion/completion of existing roadways to allow for co-location of water, sewer, storm drainage, communications, and energy facilities within the road right of way.</p> <p>Action C-5.1.2: Require private and public development projects to be responsible for providing road improvements along all frontages abutting a public street right of way in accordance with the design specifications for that roadway.</p> <p>Action C-5.1.3: Require private and public development projects to be responsible for providing traffic control devices and wet and dry utility improvements necessary to meet the needs of the project, and to properly integrate into the established and planned infrastructure systems.</p> <p>Goal CN-4: Ensure adequate water supply and delivery</p> <p>Policy CN-4.2: Plan for water resources and distribution.</p>

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
City of Fontana		
City of Fontana General Plan (2003) Public Facilities, Services, and Infrastructure Element		<p>Goal 5: Careful planning ensures the timely, logical and cost-effective development of infrastructure facilities in our City.</p> <p>Policy 1: Development and supporting infrastructure shall be phased so that contemporary infrastructure is available concurrent with the occupancy of development projects.</p> <p>Policy 2: Development should be approved in a pattern that avoids the need to extend infrastructure excessive distances to provide service and support.</p> <p>Policy 3: Infrastructure installation shall be coordinated within public rights-of-way so that multiple disruptions are avoided.</p> <p>Policy 4: Sufficient financial support for infrastructure maintenance shall be devoted so that current levels of service, health and safety are sustained or improved.</p> <p>Policy 5: Development within the City's sphere of influence shall be accompanied by infrastructure at the same standards as those imposed by the City.</p>
City of Highland		
City of Highland General Plan (2006) Public Services and Facilities Element		<p>Goal 4.1: Coordinate and balance the provision of public services with development activity to eliminate service gaps, maximize the use of public facilities, provide efficient and economical public services, achieve the equitable and legally defensible sharing of costs of such services and facilities, and maintain adequate service systems capable of meeting the needs of Highland residents.</p> <p>Policy 1: Prior to permitting, ensure that all major extensions of services, facilities and utilities are comprehensively reviewed for related social, economic and environmental impacts and identify mitigation measures as appropriate.</p> <p>Policy 2: Ensure that proposed development, which requires the extension of public services and facilities, will generate sufficient municipal income to pay for the operations, maintenance and replacement of those services and facilities by the City.</p> <p>Policy 3: Ensure that existing residents and businesses are not burdened with the cost of financing infrastructure aimed at supporting new development or the intensification of existing development.</p> <p>Policy 4: Continue to ensure that public water, sewer, drainage and other facilities needed for a project phase are constructed prior to or concurrent with initial development within that phase, unless otherwise approved by the City.</p> <p>Policy 5: Continue to make the project sponsor of a proposed development ultimately responsible for ensuring the timely availability of all infrastructure improvements (including system-wide improvements) needed to support the development.</p> <p>Policy 6: Continue to require that deficiencies in existing public services and facilities are</p>

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
		<p>corrected prior to or concurrent with proposed development.</p> <p>Policy 7: Continue to coordinate with public service and utility companies to assure the long-term provision of services including water, wastewater, solid waste, electricity, natural gas and other private utilities (e.g., cable, Internet, telephone) for City residents.</p> <p>Policy 8: Continue to direct future growth to areas with adequate existing facilities and services, or areas with adequate facilities and services committed, or areas where public services and facilities can be economically extended.</p> <p>Policy 9: Develop a public facility assessment reporting system as part of the Capital Improvement Program and in accordance with AB 1600 to monitor the capacity of existing facilities to ensure that new developments do not overwhelm existing facilities. The following are guidelines for developing the reporting system:</p> <ul style="list-style-type: none"> • Identify and understand the demands for services that will be placed on Highland by regional demographic and economic changes. • Monitor the progress of current local development projects, and ensure that public service and facility plans, as well as their forecasts and funding mechanisms, reflect changing conditions. • Track the status of capital improvement program implementation. • Develop a community survey to identify public facility deficiencies and usage. <p>Policy 10: Conduct and maintain an inventory of the availability and adequacy of public services and facilities in coordination with the County and service agencies in the area. Use the information to coordinate capital improvement programs and to make determinations on the adequacy of community facilities.</p> <p>Policy 11: Continue to follow the procedures established for the regular exchange of information regarding proposed development and availability and adequacy of public services and facilities.</p> <p>Policy 12: Continue to utilize a proactive approach to assuring that the flow of information between service agencies is maintained.</p> <p>Policy 13: Utilize performance standards to determine the adequacy of public services and facilities and to establish requirements, fees and exactions provided by new development in the City.</p> <p>Policy 14: Maintain a development review process that places the ultimate responsibility on the project sponsor for ensuring that necessary infrastructure improvements (including system-wide improvements) needed to support new development are, in fact, available at the time they are needed.</p> <p>Policy 15: Require the construction of public facilities as a condition of approval for a proposed development if the development exceeds the capacity of existing public facilities to support</p>

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
		<p>such development.</p> <p>Policy 16: Continue to require that project applicants provide sufficient information in the application process so that the City may comprehensively determine the potential impacts and/or the need for improvements to existing services and facilities to support project buildout consistent with the City's performance.</p> <p>Policy 17: Continue to require that all new development pay the applicable Development Impact Fees established by the City Council.</p> <p>Policy 18: Maintain flexibility in the collection and application of Development Impact Fees to permit the construction of master planned facilities in lieu of fees when the City determines that it is in the public interest to do so.</p> <p>Policy 19: Continue to require the construction of public facilities as a condition of approval where the value of the services and facilities needed to support buildout of a proposed development exceed established Development Impact Fees, as consistent with the City's performance standards. Require an agreement with the developer for reimbursement from future development fees for the excess costs. Such reimbursements shall be from future fees collected for the specific excess facilities, which the initial developer was required to construct.</p> <p>Policy 20: In the event that the performance standards for public services and facilities are not being met, the following conditions shall apply:</p> <ul style="list-style-type: none"> • Where the performance standards are not being met due to needs created by existing development, the City Council shall adopt in its Capital Improvement Plan a program to ensure that the performance criteria will be met at the earliest possible date. • In instances where the performance standards are being exceeded prior to approval of a proposed development as the result of existing development, require that the proposed development provide such facilities as are necessary to ensure that performance criteria are met for new public facilities and services provided to the development, and that existing public services and facilities are not further downgraded. <p>Policy 21: Review the development fee structure, user charges, and mitigation fees every five years in accordance with the provisions of AB 1600 to ensure that the charges are consistent with the costs of improvement and maintenance and that public services and facilities are being expanded in a cost-efficient manner. Utilize the City's performance standards for public services and facilities as the basis for this review.</p> <p>Policy 22: Continue to require that planned communities participate in the development of public infrastructure, in addition to the payment of development impact fees, through the following methods:</p> <ul style="list-style-type: none"> • An approved development agreement for all new specific plan or planned unit development projects that specifies the timing of infrastructure improvements in relation to project

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
		<p>development.</p> <ul style="list-style-type: none"> An annual review of improvements conducted for all new specific plans and an annual report in a format that can be easily included in the City's infrastructure assessment and reporting system. <p>Policy 23: Continue to proactively monitor and review development proposals in surrounding areas to protect City interests and minimize impacts on the community.</p> <p>Policy 24: Continue to work with the County on a system of requiring appropriate mitigation to ensure that new unincorporated development will not impact services and facilities in the City.</p> <p>Policy 25: Continue to support an assessment district alternative to development impact fees for large-scale developments undergoing urbanization when a single owner or small number of owners is involved, and when it is in the public interest to do so.</p> <p>Policy 26: Continue to allow new development and the intensification of existing development only where and when adequate public services and facilities can be provided.</p> <p>Goal 4.2: Provide a water system that produces high quality water, sufficient water pressure and necessary quantities of water to meet domestic demands.</p>
City of Montclair		
City of Montclair General Plan (2002) Conservation Element		<p>Goal LU-1.7.0. To coordinate all aspects of City development in accordance with the General Plan, including land use (commercial, industrial, housing), population densities, public facilities, circulation, transportation, and utilities, based on public need.</p> <p>Goal LU-1.1.19. Provide adequate streets (rights-of-way and paved widths), sidewalks, utilities, water, sewers, storm drainage and street lighting systems in balance with the varying neighborhood population densities.</p> <p>Goal PF- 1.4.0. To emphasize quality in all development by providing for a stable, steady population growth. To ensure that the residents of the City shall be provided with adequate services including utilities, street capacities, open spaces for recreation and other public facilities.</p> <p>Goal PU- 1.1.0. To coordinate the location, size and type of public services including water, electricity, telephone, sewers and gas with the land use element they are to serve.</p> <p>Goal PU- 1.1.1. Review the public utility plans for the city and ensure that they are coordinated with the City's plans.</p> <p>Goal PU- 1.1.3. Promote the beautification of all public utility buildings, structures, and fixtures through cooperation with the various public utility agencies. Beautification can be accomplished by painting, landscaping and using similar materials for walls and structures which are in accord with the community design policies.</p>

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Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
City of Ontario		
The Ontario Plan (2010) Land Use Compatibility		<p>Goal LU2: Compatibility between a wide range of uses.</p> <p>Policy LU2-1: <i>Land Use Decisions.</i> We minimize adverse impacts on adjacent properties when considering land use and zoning requests.</p> <p>Policy LU2-2: <i>Buffers.</i> We require new uses to provide mitigation or buffers between existing uses where potential adverse impacts could occur.</p> <p>Policy LU2-3: <i>Hazardous Uses.</i> We regulate the development of industrial and similar uses that use, store, produce or transport toxic substances, air emissions, other pollutants or hazardous materials.</p> <p>Policy LU2-4: <i>Regulation of Nuisances.</i> We regulate the location, concentration and operations of potential nuisances.</p> <p>Policy LU2-5: <i>Regulation of Uses.</i> We regulate the location, concentration and operations of uses that have impacts on surrounding land uses.</p> <p>Policy LU2-6: <i>Infrastructure Compatibility.</i> We require infrastructure to be aesthetically pleasing and in context with the community character.</p> <p>Policy LU2-7: <i>Inter-Jurisdictional Coordination.</i> We maintain an ongoing liaison with IEUA, LAWA, Caltrans, Public Utilities Commission, the railroads and other agencies to help minimize impacts and improve the operations and aesthetics of their facilities.</p> <p>Policy LU2-8: <i>Transitional Areas.</i> We require development in transitional areas to protect the quality of life of current residents.</p> <p>Policy LU2-9: <i>Methane Gas Sites.</i> We require sensitive land uses and new uses on former dairy farms or other methane-producing sites be designed to minimize health risks.</p>
City of Rancho Cucamonga		
City of Rancho Cucamonga General Plan (2010) Public Facilities and Infrastructure Element		<p>Goal PF-1: Provide state-of-the-art public and community facilities that support existing programs, accommodate future needs, and are accessible to all members of the community.</p> <p>Policy PF-1.1: Continue to implement high-quality standards for new public facilities and improvements to existing buildings.</p> <p>Policy PF-1.2: Promote community facilities as focal points for gatherings, events, and celebrations.</p> <p>Policy PF-1.3: Locate new community facilities in neighborhoods and centers where they will serve populations with the greatest needs.</p> <p>Policy PF-1.4: Maintain public facilities and optimize their usefulness during their lifespan.</p> <p>Policy PF-1.5: Continue to incorporate low-maintenance features into public facilities consistent with the City's sustainability plan.</p> <p>Policy PF-1.6: Maintain multi-functional, flexible, and complementary space at community</p>

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GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
		<p>facilities.</p> <p>Policy PF-1.7: Maximize public facility use by sharing with nonprofit organizations, school districts, and community organizations. Look for opportunities to create joint-use community space at facilities owned by private organizations such as faith-based groups and service clubs.</p> <p>Goal PF-5: Ensure provision of water infrastructure to support future growth needs and existing development.</p> <p>Policy PF-5.1: Support programs of the CVWD that make every practical effort to minimize leaks in the water and recycled water distribution systems, through regular monitoring and maintenance.</p> <p>Policy PF-5.2: Support the efforts of the CVWD and San Bernardino County agencies to provide and expand water treatment facilities to treat local water sources from canyon surface waters and groundwater.</p>
City of Redlands		
City of Redlands General Plan (1995) Health and Safety Element, Open Space and Conservation Element		<p>Policy 8.20a: Work with the local and regional water agencies to improve and enhance groundwater quality in the region.</p> <p>Policy 8.20b: Oppose approval of development projects within the Planning Area that would rely on package wastewater treatment plants.</p> <p>Policy 8.20c: Where feasible given flood control requirements, maintain the natural condition of waterways and flood plains to ensure adequate groundwater recharge and water quality.</p> <p>Policy 8.20d: The City of Redlands shall give priority to providing its citizens the highest quality water for domestic use as is reasonably available to it.</p> <p>Policy 8.20e: The City of Redlands shall give priority to utilizing the surface water of Mill Creek, which is the highest quality water presently available to it.</p> <p>Policy 8.20f: The City will give the next higher priority to utilizing the surface water of the Santa Ana River available to it through stock ownership rights or other rights.</p> <p>Policy 8.20g: In the event the supply from local surface water sources is insufficient to meet demand, the City will also use local groundwater sources of good quality.</p> <p>Policy 8.20h: State Water Project water shall be considered, to the extent possible, as supplemental water, and shall be utilized only as necessary to meet demand.</p> <p>Policy 8.20i: The City will actively protect all water supply sources, to the extent legally possible, from contamination and from a diminution of supply, will undertake all necessary steps to provide a secure supply of high quality water to meet the present and future needs of its citizens.</p> <p>Policy 8.20j: Participate in the ongoing regional response to EPA's stormwater permit regulations.</p> <p>Policy 8.20o: Design projects to minimize the possibility of wind or water erosion and, where</p>

APPENDIX H
GENERAL PLAN LAND USE POLICIES

Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
		<p>necessary, require preparation and implementation of a soil erosion plan, including soil erosion mitigation during construction.</p> <p>Policy 8.40a: Protect lives and property and ensure that structures proposed for sites located on flood plains subject to the 100-year flood are provided adequate protection from floods.</p> <p>Policy 8.40d: Where feasible given flood control requirements, maintain the natural condition of waterways and flood plains to ensure adequate groundwater recharge and water quality, preservation of habitat, and access to mineral resources.</p> <p>Policy 8.40g: Cooperate with all public and private agencies involved to ensure that flood control improvements do not disrupt environmentally sensitive areas beyond a level of mitigability.</p> <p>Policy 7.22a: Minimize dependence on imported water by increasing entitlement in local surface sources, using wise groundwater management practices, conservation measures, and the use of reclaimed wastewater and nonpotable water for irrigation of landscaping and agriculture, where feasible.</p>
City of Rialto		
City of Rialto General Plan (2010) Economic Development, Redevelopment and Infrastructure Element		<p>Goal 3-6: Require that all developed areas within Rialto are adequately served with essential public services and infrastructure.</p> <p>Goal 3-8: Promote affordable and quality water service capable of adequately meeting normal and emergency water demands to all areas in Rialto.</p>
City of San Bernardino		
City of San Bernardino General Plan (2004) Utilities Element		<p>Goal 9.3: Provide water supply, transmission, distribution, storage, and treatment facilities to meet present and future water demands in a timely and cost effective manner.</p> <p>Goal 9.4: Provide appropriate storm drain and flood control facilities where necessary.</p> <p>Goal 9.10: Ensure that the costs of infrastructure improvements are borne by those who benefit.</p>

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Jurisdiction	CIP Project and/or O&M Activity	Applicable Goals, Objectives, and Policies
City of Upland		
City of Upland General Plan (2003) Public Facilities and Services Element		<p>Goal PFS-1: A functional and well-maintained City with adequate public facilities, infrastructure and services.</p> <p>Goal PFS-8: A community with a reliable and adequate supply of water for all members of the community.</p> <p>Policy PFS-8.6: Water Infrastructure. Maintain water storage, conveyance, and treatment infrastructure in good working condition in order to supply domestic water to all users with adequate quantities, flows, and pressures.</p> <p>Policy PFS-8.9: Design of Water Systems. Require future water systems and facilities to be designed to minimize the likelihood of damage from vandalism or terrorist activity.</p> <p>Goal PFS-9: A community that supports the use of water conservation measures and the provision of recycled water to minimize the demand on potable water resources.</p>

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Appendix I

Noise Analysis

Appendix I-1

Applicable Noise Ordinances

APPENDIX I-1
APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
County of San Bernardino	
County of San Bernardino Code of Ordinances (Title 8, Division 3, Chapter 83.01)	<p>§ 82.18.030 Development Standards When a land use application or development permit is proposed within the NH Overlay, the following standards shall apply with respect to residential uses:</p> <ul style="list-style-type: none"> A. Acoustical Report Required. Noise levels shall be identified. An acoustical report shall be performed to identify noise impact. Any recommendation for noise attenuation or other mitigation measures shall be incorporated into the design standards or conditions of approval as applicable. B. Interior Noise Levels. Interior noise levels in all single-family and multi-family residences and educational institutions shall not exceed 45 dBA Ldn emanating from sources outside of the residential building. C. Exterior Noise Levels. Exterior noise levels in all single-family residential land use areas and multi-family residential land use areas should not exceed 65 dBA Ldn. Exterior noise levels shall not exceed 70 dBA Ldn for any residential use areas. Ability to mitigate exterior noises to the levels of 65 dBA Ldn and 70 dBA Ldn shall be considered by the review authority when determining the actual Ldn level with which the land uses must comply. D. Noise Mitigation Measures. In areas where noise exceeds the noise standard, measures shall be taken to mitigate noise levels. An acoustical report identifying these mitigation measures shall be required and reviewed by the Environmental Health Services Division before issuance of any required development permits or approval of land use applications. <p>(Ord. 4011, passed - -2007)</p> <p>§ 83.01.080 Noise This Section establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses.</p> <ul style="list-style-type: none"> A. Noise Measurement. Noise shall be measured: <ul style="list-style-type: none"> 1. At the property line of the nearest site that is occupied by, and/or zoned or designated to allow the development of noise-sensitive land uses; 2. With a sound level meter that meets the standards of the American National Standards Institute (ANSI § SI4 1979, Type 1 or Type 2); 3. Using the “A” weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A). B. Noise Impacted Areas. Areas within the County shall be designated as “noise-impacted” if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subdivision (d) (Noise Standards for Stationary Noise Sources) and Subdivision (e) (Noise Standards for Adjacent Mobile Noise Sources), below. New development of residential or other noise-sensitive land uses shall not be allowed in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses. C. Noise Standards for Stationary Noise Sources.

Jurisdiction	Applicable Goals, Objectives, and Policies															
	<div>1. Noise Standards. Table 83-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties:</div> <div>Table 83-2 Noise Standards for Stationary Noise Sources</div> <table><tr><th>Affected Land Uses (Receiving Noise)</th><th>7:00 a.m. - 10:00 p.m. Leq</th><th>10:00 p.m. - 7:00 a.m. Leq</th></tr><tr><td>Residential</td><td>55 dB(A)</td><td>45 dB(A)</td></tr><tr><td>Professional Services</td><td>55 dB(A)</td><td>55 dB(A)</td></tr><tr><td>Other Commercial</td><td>60 dB(A)</td><td>60 dB(A)</td></tr><tr><td>Industrial</td><td>70 dB(A)</td><td>70 dB(A)</td></tr></table> <div><p>Notes: Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.</p><p>dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.</p><p>Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.</p></div> <div>2. Noise Limit Categories. No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:</div> <div><div>a) The noise standard for the receiving land use as specified in Subdivision (b) (Noise- Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.</div><div>b) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.</div><div>c) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.</div><div>d) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.</div><div>e) The noise standard plus 20 dB(A) for any period of time.</div></div> <div>D. Noise Standards for Adjacent Mobile Noise Sources. Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (Noise Standards for Adjacent Mobile Noise Sources).</div>	Affected Land Uses (Receiving Noise)	7:00 a.m. - 10:00 p.m. Leq	10:00 p.m. - 7:00 a.m. Leq	Residential	55 dB(A)	45 dB(A)	Professional Services	55 dB(A)	55 dB(A)	Other Commercial	60 dB(A)	60 dB(A)	Industrial	70 dB(A)	70 dB(A)
Affected Land Uses (Receiving Noise)	7:00 a.m. - 10:00 p.m. Leq	10:00 p.m. - 7:00 a.m. Leq														
Residential	55 dB(A)	45 dB(A)														
Professional Services	55 dB(A)	55 dB(A)														
Other Commercial	60 dB(A)	60 dB(A)														
Industrial	70 dB(A)	70 dB(A)														

Table 83-3 Noise Standards for Adjacent Noise Sources

Land Use		Ldn (or CNEL) dB(A)	
Categories	Uses	Interior ¹	Exterior ²
Residential	Single and multi-family, duplex, mobile homes	45	60(3)
Commercial	Hotel, motel, transient housing	45	60(3)

Table 83-3 Noise Standards for Adjacent Noise Sources

Land Use	Ldn (or CNEL) dB(A)	50	N/A
Categories	Uses	Interior ¹	Exterior ²
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes:

¹ The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.

² The outdoor environment shall be limited to:

Hospital/office building patios

Hotel and motel recreation areas

Mobile home parks

Multi-family private patios or balconies

Park picnic areas

Private yard of single-family dwellings

School playgrounds

(3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.

APPENDIX I-1

APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies										
	<p>CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 a.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.</p> <p>E. Increases in Allowable Noise Levels. If the measured ambient level exceeds any of the first four noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level</p> <p>F. Reductions in Allowable Noise Levels. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 83-2 (Noise Standards for Stationary Noise Sources) shall be reduced by five dB(A).</p> <p>G. Exempt Noise. The following sources of noise shall be exempt from the regulations of this Section:</p> <ol style="list-style-type: none"> 1. Motor vehicles not under the control of the commercial or industrial use. 2. Emergency equipment, vehicles, and devices. 3. Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays. <p>H. Noise Standards for Other Structures. All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to not exceed the criteria.</p> <p>Table 83-4 Noise Standards for Other Structures</p> <table> <tr> <th>Typical Uses</th><th>12-Hour Equivalent Sound Level (Interior) in dBA Ldn</th></tr> <tr> <td>Educational, institutions, libraries, meeting facilities, etc.</td><td>45</td></tr> <tr> <td>General office, reception, etc.</td><td>50</td></tr> <tr> <td>Retail stores, restaurants, etc.</td><td>55</td></tr> <tr> <td>Other areas for manufacturing, assembly, testing, warehousing, etc.</td><td>65</td></tr> </table> <p>In addition, the average of the maximum levels on the loudest of intrusive sounds occurring during a 24- hour period shall not exceed 65 dBA interior. (Ord. 4011, passed - 2007)</p>	Typical Uses	12-Hour Equivalent Sound Level (Interior) in dBA Ldn	Educational, institutions, libraries, meeting facilities, etc.	45	General office, reception, etc.	50	Retail stores, restaurants, etc.	55	Other areas for manufacturing, assembly, testing, warehousing, etc.	65
Typical Uses	12-Hour Equivalent Sound Level (Interior) in dBA Ldn										
Educational, institutions, libraries, meeting facilities, etc.	45										
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Retail stores, restaurants, etc.	55										
Other areas for manufacturing, assembly, testing, warehousing, etc.	65										
City of Chino Hills											
City of Chino Hills Code of Ordinances	<p>8.08.020 - Regulation of Construction Noise</p> <p>A. Except when necessary for the immediate preservation of life, health, or property, no person shall construct, repair, remodel, demolish, or grade any real property or structures thereon at any time other than between the hours of 7:00</p>										

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>a.m. and 7:00 p.m. on weekdays, and between 8:00 a.m. and 6:00 p.m. on Saturdays, excluding federal holidays. Notwithstanding the foregoing, an individual residential property owner or tenant in addition to the above permissible hours of construction may also construct, repair, or remodel his or her real property or any structure on such property during the hours of 7:00 p.m. and 10:00 p.m. on weekdays and between 6:00 p.m. and 10:00 p.m. on Saturdays, and between the hours of 8:00 a.m. and 10:00 p.m. on Sundays and federal holidays provided that the noise or sounds associated with such activities cannot be heard by a reasonable person beyond the boundary lines of the property.</p> <p>B. Any person violating this section, shall be guilty of an infraction and subject to punishment in accordance with Section 1.36.030 of this code.</p> <p>C. Any violation of this section is deemed and declared to be a public nuisance and subject to punishment and abatement as provided in this code and state law.</p> <p>(Ord. 46 § 1, 1993)</p> <p>16.48.20 - Noise.</p> <p>A. Noise Measurement. Noise will be measured with a sound level meter which meets the standards of the American National Standards Institute (ANSI) Section S14-1979, Type I or Type 2. Noise levels shall be measured using the "A" weighted sound pressure level scale in decibels (reference pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A). The City Engineer shall be the noise control officer.</p> <p>B. Noise Standards.</p> <ol style="list-style-type: none"> 1. The noise standards contained in Table N-1 "Noise/Land Use Compatibility Matrix" in the Noise Element of the General Plan shall apply to land uses Citywide and shall be used to define acceptable and unacceptable noise levels. 2. No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed: <ol style="list-style-type: none"> a) The "Zone C" noise standard for that receiving land use specified in Table N-1 of the General Plan Noise Element for a cumulative period of more than thirty (30) minutes in any hour; or b) The noise standard plus 5 dBA for a cumulative period of more than five minutes in any hour; or c) The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour; or d) The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or e) The noise standard plus 20 dBA for any period of time. 3. If the measured ambient level exceeds any of the first four noise limit categories above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level. 4. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in subsection (B)(2)(a) of this section shall be reduced by 5 dBA. <p>C. Exempt Noises. Except as provided in Chapter 8.08 of the Municipal Code, the following sources of noise are exempt from the standards contained in subsection B above:</p>

APPENDIX I-1

APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<ol style="list-style-type: none"> 1. Motor vehicles subject to regulation under the California Vehicle Code. 2. Emergency equipment, vehicles, and devices. <p>(Ord. 68 § 9.90.020, 1995)</p>
City of Highland	
City of Highland Municipal Code	<p>8.50.030 Prohibited Acts</p> <p>A. It shall be unlawful for any person to engage in the following activities:</p> <ol style="list-style-type: none"> 1. Sounding any horn or signal device on any automobile, motorcycle, bus or other motor vehicle in any other manner or circumstance(s) or for any other purpose than required or permitted by the Vehicle Code or other state laws. 2. Racing the engine of any motor vehicle while the vehicle is not in motion, except when necessary to do so in the course of repairing, adjusting or testing the same. 3. Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured. 4. Operating or permitting the use or operation of personal or commercial music or sound amplification or production equipment that is: <ol style="list-style-type: none"> a) Plainly audible across property boundaries; b) Plainly audible through partitions common to two residences within a building; c) Plainly audible at a distance of 50 feet in any direction from the source of music or sound, between the hours of 7:00 a.m. and 10:00 p.m.; or d) Plainly audible at a distance of 25 feet in any direction from the source of music or sound, between the hours of 10:00 p.m. and 7:00 a.m. 5. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or any motor vehicle burglar alarm, except for emergency purposes or for testing, unless such alarm is terminated within 15 minutes of activation. 6. Creating excessive noise adjacent to any school, church, court or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed, clearly visible to the motoring public, indicating the presence of a school, institution of learning, church, court or hospital. 7. Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary or unusual noise that disturbs the comfort, repose, health, peace and quiet or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated include, but are not limited to, the following: <ol style="list-style-type: none"> a) The level of noise; b) Whether the nature of the noise is usual or unusual; c) Whether the origin of the noise is natural or unnatural;

APPENDIX I-1
APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<ul style="list-style-type: none"> d) The level of the background noise; e) The proximity of the noise to sleeping facilities; f) The nature and zoning of the area(s) within which the noise emanates; g) The density of the inhabitation of the area within which the noise emanates; h) The time of day or night the noise occurs; i) The duration of the noise; and j) Whether the noise is produced by a commercial or noncommercial activity. <p>B. A violation of this section is a public nuisance.</p> <p>C. A violation of this section may result in the following:</p> <ul style="list-style-type: none"> 1. Issuance of an administrative citation, where the fines and penalties shall be assessed as infractions in accordance with HMC 2.56.110; 2. Issuance of a notice of public nuisance and abatement pursuant to Chapter 8.28 HMC; 3. Imposition of criminal and civil penalties, including those in Chapter 1.24 HMC; and 4. Confiscation and impoundment as evidence of the components that are amplifying or transmitting the prohibited noise. <p>D. An enforcement officer who encounters a violation of this section may issue a written notice to the responsible person demanding immediate abatement of the violation (written notice). The written notice shall inform the recipient that a second violation of the same provision within a 72-hour period may result in the issuance of a criminal citation and/or notice of public nuisance, the imposition of criminal and civil penalties, and confiscation and impoundment as evidence of the components that are amplifying or transmitting the prohibited noise.</p> <p>E. Any peace officer who encounters a second violation of this section within a 72-hour period following issuance of a written notice is empowered to confiscate and impound as evidence any or all of the components amplifying or transmitting the sound.</p> <p>F. Any person claiming legal ownership of the items confiscated and impounded under this section may request the return of the item by filing a written request with the police department within seven calendar days of the confiscation. Such requests shall be processed in accordance with the procedures adopted by the police department. (Ord. 370 § 27, 2012; Ord. 324 § 2, 2008)</p> <p>8.50.040 Excessive Noise and Vibration Emanating from a Motor Vehicle</p> <p>A. No person shall operate or occupy a motor vehicle on any public right-of-way, public place or private property, while operating or permitting the use or operation of any radio, stereo receiver, musical instrument, television, computer, compact disc player, tape recorder, cassette player or any other device for the production or reproduction of sound from within the motor vehicle, so that the sound is plainly audible at a distance of 50 feet from such vehicle, or in the case of a motor vehicle on private property, beyond the property line.</p> <p>B. A violation of this section is a public nuisance.</p> <p>C. A violation of this section may result in the following:</p>

APPENDIX I-1
APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<ol style="list-style-type: none"> 1. Issuance of an administrative citation, where the fines and penalties shall be assessed as infractions in accordance with HMC 2.56.110; 2. Issuance of a notice of public nuisance and abatement pursuant to Chapter 8.28 HMC; 3. Imposition of criminal and civil penalties, including those in Chapter 1.24 HMC; and 4. Immediate confiscation and impoundment as evidence of the components that are amplifying or transmitting the prohibited noises or the immediate confiscation and impoundment of the motor vehicle to which the component is attached if the same may not be removed without causing harm to the vehicle or the component. <p>D. Any person claiming legal ownership of a motor vehicle confiscated and impounded under this section may request the return of the vehicle by filing a written request with the police department within seven calendar days of the confiscation. Such requests shall be processed in accordance with procedures adopted by the police department.</p> <p>E. Any person claiming legal ownership of the items confiscated and impounded under this section, other than a motor vehicle, may request the return of the item by filing a written request with the police department, which shall be processed in accordance with procedures adopted by the police department. (Ord. 370 § 28, 2012; Ord. 324 § 2, 2008)</p> <p>8.50.050 Controlled Hours of Operation</p> <p>It shall be unlawful for any person to engage in the following activities at a time other than between the hours of 5:00 a.m. and 10:00 p.m. on any day in the industrial (I) zone, and between the hours of 7:00 a.m. and 10:00 p.m. on any day in all other zones:</p> <ol style="list-style-type: none"> A. Operate or permit the use of powered model vehicles and planes. B. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous or unnecessary noise within 1,000 feet of a residence. C. Operate or permit the use of domestic power tools, machinery, or any other equipment or tool in any garage, workshop, house or any other structure. D. Operate or permit the use of gasoline or electric-powered leaf blowers such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters and other property. E. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the code enforcement officer. F. Operate or permit the use of electrically operated compressor(s), fan(s) and other similar device(s). G. Operate or permit the use of pile driver(s), steam or gasoline shovel(s), pneumatic hammer(s), steam or electric hoist(s) or other similar device(s). H. Perform ground maintenance on golf course grounds and tennis courts contiguous to golf courses that creates a noise disturbance across a residential or commercial property line. I. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or of any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than 15 minutes in any hour while the vehicle is stationary and on a public right-of-way or public space, except when movement of said vehicle is restricted by other traffic.

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>J. Repair, rebuild, reconstruct or dismantle any motor vehicle or other mechanical equipment or device(s) in a manner so as to be plainly audible across property lines.</p> <p>K. Load, unload, open, close or otherwise handle garbage cans, recycling bins or other similar objects between the hours of 10:00 p.m. and 7:00 a.m. the following morning, except city-permitted trash collection. (Ord. 352 § 1, 2010; Ord. 324 § 2, 2008)</p> <p>8.50.060 Exemptions</p> <p>The following activities and noise sources shall not be subject to the provisions of this chapter:</p> <p>A. Those noise events in the community (e.g., airport noise, arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy, utilizing the community noise equivalent level (CNEL) method.</p> <p>B. Activities conducted on the grounds of any public or private school during regular hours of operation.</p> <p>C. Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are authorized by the city.</p> <p>D. Legally permitted activities conducted at public places during regular hours of operation.</p> <p>E. Any mechanical device, apparatus, or equipment used, related to or connected with emergency machinery, vehicle or work.</p> <p>F. All mechanical devices, apparatus, or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.</p> <p>G. Mobile noise sounds associated with agricultural operations, provided such operations do not take place between the hours of 10:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or a state holiday.</p> <p>H. Mobile noise sources associated with agricultural pest control through pesticide application.</p> <p>I. Warning devices necessary for the protection of the public safety, including, but not limited to, police, fire and ambulance sirens and train horns and sounds for the purpose of alerting persons to the existence of an emergency.</p> <p>J. Construction, repair or excavation necessary for the immediate preservation of life or property.</p> <p>K. Construction, operation, maintenance and repair of equipment, apparatus or facilities of the park and recreation department, public work projects or essential public services and facilities, including trash collection and those of public utilities subject to the regulatory jurisdiction of the Public Utilities Commission.</p> <p>L. Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions, which agreement provides for noise mitigation measures.</p> <p>M. Any activity, to the extent regulation thereof has been preempted by state or federal law.</p> <p>N. Any specific activity or noise source governed elsewhere in this code. Such activities include, but are not limited to:</p> <ol style="list-style-type: none"> 1. Security alarm systems (Chapter 8.04 HMC); 2. Animal noise (Chapter 6.04 HMC); 3. Loud, unruly or disorderly private parties or assemblies (Chapter 9.17 HMC). (Ord. 324 § 2, 2008)

Jurisdiction	Applicable Goals, Objectives, and Policies
City of San Bernardino	
City of San Bernardino Municipal Code	<p>8.54.020 Prohibited Acts</p> <p>It shall be unlawful for any person to engage in the following activities:</p> <ul style="list-style-type: none"> A. Sounding any horn or signal device on any automobile, motorcycle, bus, or other motor vehicle in any other manner or circumstances or for any other purpose than required or permitted by the California Vehicle Code, or other laws, for an unnecessary or unreasonable period of time; B. Racing the engine of any motor vehicle while the vehicle is not in motion, except when necessary to do so in the course of repairing, adjusting, or testing the same. C. Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler, or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured. D. Using, operating, or permitting to be played, used or operated any radio receiving set, musical instrument, phonograph, or other sound amplification or production equipment for producing or reproducing sound in such a manner as to disturb the peace, quiet, or comfort of neighboring persons, or at any time with louder volume than is necessary for the convenient hearing of the person or persons who are in the room, vehicle, or other enclosure in which such machine or device is operated, and who are voluntary listeners thereto and that is: <ul style="list-style-type: none"> 1. Plainly audible across property boundaries; 2. Plainly audible through partitions common to two residences within a building; 3. Plainly audible at a distance of 50 feet in any direction from the source of the music or sound between the hours of 8:00 a.m. and 10:00 p.m.; or 4. Plainly audible at a distance of 25 feet in any direction from the source of the music or sound between the hours of 10:00 p.m. and 8:00 a.m. E. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or any motor vehicle burglar alarm, except for emergency purposes or for testing, unless such alarm is terminated within fifteen minutes of activation. F. Yelling, shouting, whistling, or singing in a loud and boisterous manner on the public streets so as to disturb the quiet, comfort, or repose of persons in any office, dwelling, hotel, or other type of residence, or neighborhood. G. The keeping of any animal, fowl, or bird which by causing frequent or long continued noise disturbs the comfort, quiet, or repose of any person or neighborhood. H. The unnecessary or excessive blowing of whistles, sounding of horns, ringing of bells, or use of signaling devices by operators of trains, motor trucks, and other transportation equipment. I. The creation of loud and excessive noise in connection with the loading or unloading of motor trucks and other vehicles. J. The shouting and crying of peddlers, hawkers, and vendors which disturbs the peace and quiet of any considerable number of persons or neighborhood. K. The doing of automobile, automotive body or fender repair work, or other work on metal objects and metal parts in a residential district so as to cause loud and excessive noise which disturbs the peace, quiet, and repose of any person occupying adjoining or closely situated property or neighborhood.

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>L. The operation or use between the hours of 10:00 p.m. and 8:00 a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City.</p> <p>M. Creating excessive noise adjacent to any school, church, court, or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets indicating the presence of a school, institution of learning, church, court, or hospital.</p> <p>N. Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary, or unusual noise that disturbs the comfort, repose, health, peace and quiet, or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated include, but are not limited to, the following:</p> <ol style="list-style-type: none"> 1. The level of noise; 2. The level of background noise; 3. The proximity of the noise to sleeping facilities; 4. The nature and zoning of the areas within which the noise emanates; 5. The density of the inhabitation of the area within which the noise emanates; 6. The time of day or night the noise occurs; 7. The duration of the noise; 8. Whether the noise is recurrent, intermittent, or constant; and 9. Whether the noise is produced by a commercial or noncommercial activity. <p>(Ord. MC-1246, 5-23-07; Ord. 2102, 4-03-56; Ord. 1925, 11-06-51)</p> <p>8.54.060 Exemptions</p> <p>The following activities and noise sources shall be exempt from the provisions of this chapter:</p> <ol style="list-style-type: none"> A. The use of horns, sirens, or other signaling or warning devices by persons vested with legal authority to use the same, and in pursuit of their lawful duties, such as on ambulances, fire, police, or other governmental or official equipment. B. Such noises as are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose, except where there is evidence that such noise is a nuisance and that such a nuisance is a result of the employment of unnecessary and injurious methods of operation. C. Activities conducted on the grounds of any public or private school during regular hours of operation. D. Outdoor gatherings, public dances, shows, and sporting and entertainment events provided said events are authorized by the City. E. Activities conducted at public spaces during regular hours of operation. F. Any mechanical devices, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, or work. G. Construction, repair, or excavation necessary for the immediate preservation of life or property.

Jurisdiction	Applicable Goals, Objectives, and Policies																					
	<p>H. Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including, but not limited to, trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.</p> <p>I. Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures.</p> <p>J. Any activity to the extent that regulation thereof has been preempted by State or Federal law.</p> <p>Sounds generated in connection with speech or communication protected by the United States Constitution or the California Constitution, except to the extent such sounds are subject to permissible time, place, and manner restrictions.</p> <p>8.54.070 Disturbances from Construction Activity</p> <p>No person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m. (Ord. MC-1246, 5-23-07)</p>																					
City of Redlands																						
City of Redlands Municipal Code	<p>8.06.070: Exterior Noise Limits</p> <p>A. The noise standards for the categories of land uses identified in table 1 of this section shall, unless otherwise specifically indicated, apply to all such property within a designated zone.</p> <p>Table 1 Maximum Permissible Sound Levels by Receiving Land Use</p> <table><tr><th>Receiving Land Use Category</th><th>Time Period</th><th>Noise Level - dBA</th></tr><tr><td rowspan="2">Single-family residential districts</td><td>10:00 P.M. - 7:00 A.M.</td><td>50</td></tr><tr><td>7:00 A.M. - 10:00 P.M.</td><td>60</td></tr><tr><td rowspan="2">Multi-family residential districts; public space; institutional</td><td>10:00 P.M. - 7:00 A.M.</td><td>50</td></tr><tr><td>7:00 A.M. - 10:00 P.M.</td><td>60</td></tr><tr><td rowspan="2">Commercial</td><td>10:00 P.M. - 7:00 A.M.</td><td>60</td></tr><tr><td>7:00 A.M. - 10:00 P.M.</td><td>65</td></tr><tr><td>Industrial</td><td>Any time</td><td>75</td></tr></table> <p>B. No person shall operate, or cause to be operated, any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured on any other property to exceed:</p>	Receiving Land Use Category	Time Period	Noise Level - dBA	Single-family residential districts	10:00 P.M. - 7:00 A.M.	50	7:00 A.M. - 10:00 P.M.	60	Multi-family residential districts; public space; institutional	10:00 P.M. - 7:00 A.M.	50	7:00 A.M. - 10:00 P.M.	60	Commercial	10:00 P.M. - 7:00 A.M.	60	7:00 A.M. - 10:00 P.M.	65	Industrial	Any time	75
Receiving Land Use Category	Time Period	Noise Level - dBA																				
Single-family residential districts	10:00 P.M. - 7:00 A.M.	50																				
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Commercial	10:00 P.M. - 7:00 A.M.	60																				
	7:00 A.M. - 10:00 P.M.	65																				
Industrial	Any time	75																				

Jurisdiction	Applicable Goals, Objectives, and Policies
	<ol style="list-style-type: none"> 1. The noise standard for that land use specified in table 1 of this section for a cumulative period of more than thirty (30) minutes in any hour; or 2. The noise standard specified in table 1 of this section plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or 3. The noise standard specified in table 1 of this section plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or 4. The noise standard specified in table 1 of this section plus fifteen (15) dB for a cumulative period of more than one minute in any hour; or 5. The noise standard specified in table 1 of this section plus twenty (20) dB or the maximum measured ambient level, for any period of time. <p>C. If the measured ambient level exceeds the allowable noise exposure standard within any of the first four (4) noise limit categories above, the allowable noise exposure standard shall be adjusted in five (5) dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.</p> <p>D. The ambient noise shall be measured at the same location along the property line utilized in subsection 8.06.060B of this chapter, with the alleged offending noise source inoperative. If the alleged offending noise source cannot be shut down, the ambient noise shall be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dB, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.</p> <p>E. In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech, hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in table 1 of this section shall be reduced by five (5) dB. (Ord. 2579 § 1, 2004)</p> <p>8.06.090: Noise Disturbances Prohibited</p> <p>The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:</p> <ol style="list-style-type: none"> A. Radio, Television Set, Etc.: Operating, playing, or permitting the operation or playing of any radio, television set, phonograph, drum, musical instrument or similar device which produces or reproduces sound: <ol style="list-style-type: none"> 1. Between the hours of ten o'clock (10:00) P.M. and seven o'clock (7:00) A.M. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of section 8.06.030 or 8.06.070 of this chapter. 2. In such a manner as to exceed the levels set forth for public space in table 1 of this chapter, measured at a distance of at least fifty feet (50') from such device operating on a public right of way or public space. B. Loudspeaker Or Stereo Systems: Using or operating for any purpose any loudspeaker, loudspeaker system, stereo system or similar device between the hours of ten o'clock (10:00) P.M. and seven o'clock (7:00) A.M., such that

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>the sound therefrom creates a noise disturbance across a residential property line, or at any time violates the provisions of section 8.06.030 or 8.06.070 of this chapter, except for noncommercial public speaking, public assembly or activity for which an exemption has been provided for in either this section or section 8.06.120 of this chapter.</p> <p>C. Street Sales: Offering for sale, selling anything, or advertising by shouting or outcry within the city except by permit issued by the city. This subsection shall not be construed to prohibit the selling by outcry of merchandise, food or beverages at licensed sporting events, parades, fairs, circuses or other similar licensed public entertainment events.</p> <p>D. Animals And Birds: Owning, possessing or harboring any animal or bird which frequently, or for long duration, howls, barks, meows, squawks or makes other sound which creates a noise disturbance across a residential or commercial real property line or within a noise sensitive zone.</p> <p>E. Loading And Unloading: Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, refuse containers or similar objects between the hours of ten o'clock (10:00) P.M. and six o'clock (6:00) A.M. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate section 8.06.030 of this chapter.</p> <p>F. Construction and/or Demolition: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of six o'clock (6:00) P.M. and seven o'clock (7:00) A.M., including Saturdays, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work by public service utilities, the city or another governmental entity. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with exhaust and air intake silencers in proper working order, or suitable to meet the standards set forth herein.</p> <p>G. Vibration: Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty feet (150') from the source if on a public space or public right of way.</p> <p>H. Powered Model Vehicles: Operating or permitting the operation of powered model vehicles:</p> <ol style="list-style-type: none"> 1. Between the hours of seven o'clock (7:00) P.M. and seven o'clock (7:00) A.M. so as to create a noise disturbance across a residential or commercial real property line or at any time in violation of section 8.06.030 of this chapter. 2. In such a manner as to exceed the levels set forth for public space land use in table 1 of this chapter measured at a distance not less than one hundred feet (100') from any point on the path of a vehicle operating on public space or public right of way. <p>I. Stationary, Nonemergency Signaling Devices:</p> <ol style="list-style-type: none"> 1. Sounding or permitting the sounding of any electronically amplified signal from any stationary bell, chime, siren, whistle or similar device intended primarily for nonemergency purposes, from any place for more than ten (10) seconds in any hourly period. 2. Places of worship and public and private schools shall be exempt from the operation of this subsection. <p>J. Emergency Signaling Devices:</p>

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Jurisdiction	Applicable Goals, Objectives, and Policies
	<ol style="list-style-type: none"> 1. Alarms, Sirens, Whistles: The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing as provided in subsection J2 of this section. 2. Testing: <ol style="list-style-type: none"> a) Testing of a stationary emergency signaling device shall not occur before seven o'clock (7:00) A.M. or after seven o'clock (7:00) P.M. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed sixty (60) seconds. b) Testing of the complete emergency signaling system, including the functioning of the signaling device, and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before seven o'clock (7:00) A.M. or after ten o'clock (10:00) P.M. The time limit specified in subsection J2a of this section shall not apply to such complete system testing. 3. Burglar, Fire, Motor Vehicle Alarms: Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is terminated within five (5) minutes of activation. K. Noise Sensitive Zones: Creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards set forth in table 1 of this chapter and subsection 8.06.070B of this chapter, or so as to interfere with the functions of such activity or annoy the occupants in the activity, provided that conspicuous signs are displayed indicating the presence of the zone. L. Domestic Power Tools And Machinery: <ol style="list-style-type: none"> 1. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool between ten o'clock (10:00) P.M. and seven o'clock (7:00) A.M., so as to create a noise disturbance across a residential or commercial real property line. 2. Motor, machinery and pumps, such as swimming pool equipment, shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with table 1, section 8.06.070 of this chapter. M. Places Of Public Entertainment: Operating or permitting the operation or playing of any loudspeaker, musical instrument or other source of sound in any place of public entertainment that exceeds ninety five (95) dBA as read on the slow response of a sound level meter at any point normally occupied by a customer, without a conspicuous and legible sign with minimum one inch (1") letter height stating: WARNING! SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT. <p>(Ord. 2579 § 1, 2004)</p>
City of Montclair	
City of Montclair Code of Ordinances	<p>6.12.010 - Excessive Noise Prohibited</p> <ol style="list-style-type: none"> A. Notwithstanding any noise level specified within this chapter, it is unlawful and a public nuisance for any person to cause, create, permit, maintain, or suffer any loud or unusual noise that unreasonably disturbs or interferes with the peace, comfort, quiet, health, or safety of any neighborhood or of any reasonable person of normal sensitivities. B. The following factors shall be considered in determining whether a violation of the provisions of this section exists shall include, but shall not be limited to, the following:

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Jurisdiction	Applicable Goals, Objectives, and Policies			
	(Prior code § 5-4.05)			
	6.12.050 - Maximum Residential/ Nonresidential Noise Levels			
	It is unlawful for any person within any zone to create any noise or allow the creation of any noise on the property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level, when measured on the exterior of the property, to exceed the base ambient noise level as adjusted below:			
	Noise Level Exceeded		Maximum Duration Period	
	Base Ambient Noise Level (BANL)		30 minutes in any hour	
	5–9 dB(A)		above BANL 15 minutes in any hour	
	10–14 dB(A)		above BANL 5 minutes in any hour	
	15–16 dB(A)		above BANL 1 minute in any hour	
16 dB(A) or greater above BANL		Not permitted		
City of Ontario				
City of Ontario Municipal Code	Sec. 5-29.04. Exterior Noise Standards			
	A. The following exterior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.			
	Allowable Exterior Noise Level (1)		Allowed Equivalent Noise Level, Leq. (2)	
	Noise Zone	Type of Land Use	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
	I	Single-Family Residential	65 dBA	45 dBA
	II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
	III	Commercial Property	65 dBA	60 dBA
	IV	Residential Portion of Mixed Use	70 dBA	70 dBA
	V	Manufacturing and Industrial, Other Uses	70 dBA	70 dBA
	I	Single-Family Residential	65 dBA	45 dBA
	II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
	1. If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.			

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>2. Measurements for compliance are made on the affected property pursuant to § 5-29.15.</p> <p>B. It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:</p> <ol style="list-style-type: none"> 1. The noise standard for the applicable zone for any fifteen-minute (15) period; and 2. A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response). <p>C. In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.</p> <p>D. The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.</p> <p>E. If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.</p> <p>(§ 2, Ord. 2888, eff. March 6, 2008)</p> <p>Sec. 5-29.06. Exemptions</p> <p>The following activities shall be exempted from the provisions of this chapter:</p> <ol style="list-style-type: none"> A. Any activity conducted on public property, or on private property with the consent of the owner, by any public entity or its officers, employees, representatives, agents, subcontractors, permittees, licensees or lessees that the public entity has authorized are exempt from the provisions of this chapter. This includes, without limitation, sporting and recreational activities that are sponsored, co-sponsored, permitted or allowed by the City or any school district within the City's jurisdictional boundaries. This also includes, without limitation, occasional outdoor gatherings, public dances, shows or sporting and entertainment events, provided such events are conducted pursuant to an approval, authorization, contract, lease, permit or sublease by the appropriate public entity, specifically the planning commission or City Council; B. Occasional outdoor gatherings, public dances, show, sporting and entertainment events, provided said events are conducted pursuant to a permit or license issued by the appropriate jurisdiction relative to the staging of said events; C. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle, work or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within forty-five (45) minutes in any hour of its being activated; D. Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of § 5-29.09; E. Noise sources associated with construction, repair, remodeling, demolition or grading of public rights-of-way or during authorized seismic surveys; F. All mechanical devices, apparatus or equipment associated with agriculture operations provided that: <ol style="list-style-type: none"> 1. Operations do not take place between 8:00 p.m. and 7:00 a.m.;

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APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>2. Such operations and equipment are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; or</p> <p>3. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by or regulations enforced by the California Department of Agriculture;</p> <p>G. Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of § 5-29.08;</p> <p>H. Any activity to the extent regulation thereof has been preempted by state or federal law;</p> <p>I. Any noise sources associated with people and/or music associated with a party at a residential property. Such noise shall be subject to the provisions of OMC § 5-29.07;</p> <p>J. Any noise source emanating from an ice cream truck within the City. Such noise shall be subject to the provisions of OMC § 4-18.04;</p> <p>K. Any noise sources associated with barking dogs or other intermittent noises made by animals on any properly within the City. Such noise shall be subject to the provisions of OMC Chapter 1, Title 6;</p> <p>L. Noise sources related to uses approved by a permit or development agreement adopted prior to the date of adoption of this chapter and that contains acoustic or noise standard conditions of approval. This exemption shall only be applicable during the effective period of the City-approved permit or development agreement.</p> <p>(§ 2, Ord. 2888, eff. March 6, 2008)</p> <p>Sec. 5-29.09. Construction Activity Noise Regulations</p> <p>A. No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.</p> <p>B. No landowner, construction company owner, contractor, subcontractor, or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.</p> <p>C. Exceptions.</p> <p>1. The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the City Manager or his or her designee;</p> <p>The provisions of this chapter shall not be construed to prohibit any work at different hours by or under the direction of any other public agency or public or private utility companies in cases of necessity or emergency.</p>

Jurisdiction	Applicable Goals, Objectives, and Policies
City of Rancho Cucamonga	
City of Rancho Cucamonga Municipal Code	<p>Sec. 17.66.050. - Noise Standards</p> <p>A. Purpose. In order to control unnecessary, excessive, and annoying noise and vibration in the city, it is hereby declared to be the policy of the city to prohibit such noise generated from or by all sources as specified in this section. The provisions apply within all jurisdictions within all zoning districts. Provisions apply based on the designated noise zones:</p> <ul style="list-style-type: none"> • Noise Zone I: All single- and multiple-family residential properties. • Noise Zone II: All commercial properties. <p>B. Decibel measurement criteria. Any decibel measurement made pursuant to the provisions of this section shall be based on a reference sound pressure of 20 micropascals as measured with a sound level meter using the A-weighted network (scale) at slow response.</p> <p>C. Exterior noise standards.</p> <ol style="list-style-type: none"> 1. It shall be unlawful for any person at any location within the city to create any noise or allow the creation of any noise on the property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on the property line of any other property to exceed the basic noise level as adjusted below: <ol style="list-style-type: none"> a) Basic noise level for a cumulative period of not more than 15 minutes in any one hour; or b) Basic noise level plus five dBA for a cumulative period of not more than ten minutes in any one hour; or c) Basic noise level plus 14 dBA for a cumulative period of not more than five minutes in any one hour; or d) Basic noise level plus 15 dBA at any time. 2. If the measurement location is a boundary between two different noise zones, the lower noise level standard shall apply. 3. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the noise is in operation shall be compared directly to the allowable noise level standards as specified respective to the measurement's location, designated land use, and for the time of day the noise level is measured. The reasonableness of temporarily discontinuing the noise generation by an intruding noise source shall be determined by the planning director for the purpose of establishing the existing ambient noise level at the measurement location. <p>D. Special exclusions. The following activities shall be exempted from the provisions of this section:</p> <ol style="list-style-type: none"> 1. City- or school-approved activities conducted on public parks, public playgrounds, and public or private school grounds including, but not limited to, athletic and school entertainment events between the hours of 7:00 a.m. and 10:00 p.m. 2. Occasional outdoor gatherings, dances, shows, and sporting and entertainment events, provided said events are conducted pursuant to the approval of a temporary use permit issued by the city. 3. Any mechanical device, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, work, or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within 30 minutes in any hour of its being activated.

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>Additional:</p> <ul style="list-style-type: none"> A. It shall be unlawful for any person at any location within the city to create any noise or to allow the creation of any noise which causes the noise level when measured within any other fully enclosed (windows and doors shut) residential dwelling unit to exceed the interior noise standard in the manner described herein. B. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, each of the noise limits above shall be reduced five dBA for noise consisting of impulse or simple tone noise.
City of Fontana	
City of Fontana Code of Ordinances	<p>Sec. 18-62. - Prohibited Noise Generally, Penalties, Remedies</p> <ul style="list-style-type: none"> A. It shall be unlawful for any person within the city to make, cause, or to continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities. B. All violations of any portion of this article shall be punished as either an infraction or misdemeanor, pursuant to Fontana Municipal Code section 1-7, and may be punished as provided therein. C. Any person who negligently or knowingly violates any provision of this article may also be subject to administrative fine(s) pursuant to section 2-442 of this Code. The city council may establish, through resolution, the maximum amounts for all administrative fines issued pursuant to this section. In the absence of any resolution, where the violation would otherwise be an infraction or misdemeanor, the administrative fine shall not exceed the maximum fine amounts for infractions and misdemeanors set forth in Government Code §§ 36900 and 36901. The manner of issuing administrative citations shall comply with all the procedures specified in article XI of chapter 2 of this Code. The remedies set forth in this article are nonexclusive and the city may seek any and all legal and equitable relief permitted by law in addition to those remedies set forth in this article. <p>(Code 1968, § 17-2; Ord. No. 1560, § 1, 9-11-07)</p> <p>Sec. 18-63. - Scope, Enumeration of Prohibited Noises</p> <ul style="list-style-type: none"> A. This article shall apply to loud, excessive, impulsive or intrusive interior and exterior sound or noise that annoys or disturbs persons of ordinary sensibilities emanating from any type of property or source within the city. B. The following acts, which create loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities from a distance of 50 feet or more from the edge of the property, structure or unit in which the source is located, are declared to be in violation of this article, but such enumeration shall not be deemed to be exclusive, namely: <ul style="list-style-type: none"> 1. <i>Horns, signaling devices, etc.</i> The sounding of any horn or signaling device on any automobile, motorcycle, streetcar or other vehicle on any street or public place of the city, except as a danger warning; the creation by means of any such signaling device of any unreasonably loud, excessive, impulsive or intrusive noise; and the sounding of any such device for an unnecessary and unreasonable period of time; the use of any signaling device except one operated by hand or electricity; the use of any horn, whistle or other device operated by engine exhaust; and the use of any such signaling device when traffic is for any reason held up.

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APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<ol style="list-style-type: none"> 2. <i>Sound amplifying equipment.</i> The use or operation of any radio receiving set, musical instrument, phonograph, loudspeaker, sound amplifier or any other machine or device in a manner that creates loud, excessive, impulsive or intrusive noise that annoys or disturbs a person of ordinary sensibilities. Such sound amplifying equipment shall not be construed to include electronic devices, including, but not limited to, radios, tape players, tape recorders, compact disc players, MP3 players, electric keyboards, music synthesizers, record players or televisions, which are designed and operated for personal use, or used entirely within a building and are not designed or used to convey the human voice, music or any other sound to an audience outside such building, or which are used in vehicles and heard only by occupants of the vehicle in which installed. 3. <i>Animals, birds, etc.</i> Keeping any animal or allowing any animal to be kept or suffering, or permitting any animal to remain upon the premises under the control of a person, when such animal habitually barks, whines or makes loud, excessive, impulsive or intrusive noises in such a manner as to disturb the peace and quiet of the neighbors surrounding or in the vicinity of such premises, or whose barking or howling or other sound or cry interferes with any person of ordinary sensitiveness in the reasonable and comfortable enjoyment of life and property. 4. <i>Exhausts.</i> The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motorboat or motor vehicle, except through a muffler or other device which will effectively prevent loud, excessive, impulsive or intrusive noises therefrom; provided, however, that the provisions of this section and article do not apply to any raceway, racetrack or drag strip which is being operated in accordance with the provisions of chapter 17, article IX. 5. <i>Defect in vehicle or load.</i> The use of any automobile, motorcycle or vehicle so out of repair or loaded or used in such manner as to create loud, excessive, impulsive or intrusive and unnecessary grating, grinding, rattling or other noise. 6. <i>Loading, unloading or opening boxes.</i> The creation of a loud, excessive, impulsive or intrusive and excessive noise in connection with loading or unloading of any vehicle or the opening and destruction of bales, boxes, crates and containers. 7. <i>Construction or repairing of buildings or structures.</i> The erection (including excavating), demolition, alteration or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or structure or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done on weekdays within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. 8. <i>Noise near schools, courts, place of worship or hospitals.</i> The creation of any loud, excessive, impulsive or intrusive noise on any street adjacent to any school, institution of learning, places of worship or court while the premises are in

Jurisdiction	Applicable Goals, Objectives, and Policies														
	<p>use, or adjacent to any hospital which unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital; provided conspicuous signs are displayed in such streets indicating that the street is a school, hospital or court street.</p> <p>9. <i>Transportation of metal rails, pillars and columns.</i> The transportation of rails, pillars or columns of iron, steel or other material over and along streets and other public places upon carts, drays, cars or trucks, or in any other manner so loaded as to cause loud, excessive, impulsive or intrusive noise or as to disturb the peace and quiet of such streets or other public places.</p> <p>10. <i>Piledrivers, hammers, etc.</i> The operation between the hours of 6:00 p.m. and 7:00 a.m. of any piledriver, steamshovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud, excessive, impulsive or intrusive noise.</p> <p>11. <i>Blowers.</i> The operation of any noise-creating blower or power fan or any internal combustion engine other than from the hours of 7:00 a.m. and 6:00 p.m. on a weekday and the hours of 8:00 a.m. and 5:00 p.m. on a Saturday, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise.</p> <p>(Code 1968, § 17-3; Ord. No. 1460, § 2, 10-5-04; Ord. No. 1560, § 2, 9-11-07)</p> <p>Sec. 30-182. - Noise</p> <p>A. No use shall create or cause to be created any sound that exceeds the ambient noise standards outlined in Table 30-182.A.</p> <p>B. No use shall create or cause creation of noise from a portable electronic device such as a car stereo, portable radio and/or cassette/compact disc player or similar device which exceeds the ambient noise standards outlined in Table 30-182.A.</p> <p>Table 30-182.A. Noise Standards</p> <table><tr><th rowspan="2">Location of Measurement</th><th colspan="2">Maximum Allowable</th></tr><tr><th>7:00 a.m. to 10:00 p.m.</th><th>10:00 p.m. to 7:00 a.m.</th></tr><tr><td>A. All zoning districts</td><td></td><td></td></tr><tr><td>Interior</td><td>45 db</td><td>45 db</td></tr><tr><td>Exterior</td><td>65 db</td><td>65 db</td></tr></table>	Location of Measurement	Maximum Allowable		7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.	A. All zoning districts			Interior	45 db	45 db	Exterior	65 db	65 db
Location of Measurement	Maximum Allowable														
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.													
A. All zoning districts															
Interior	45 db	45 db													
Exterior	65 db	65 db													
City of Rialto															
City of Rialto Code of Ordinances	<p>Chapter 9.50 - Noise Control</p> <p>9.50.010 - Purpose and Intent</p> <p>A. It is the purpose of these regulations to implement the goals and objectives of the noise element of the city's general plan to establish community-wide noise standards and to serve as a reference for locating other city regulations relating to</p>														

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>noise in the community. It is further the purpose of these regulations to recognize that the existence of excessive noise within the city is a condition that is detrimental to the health, safety, welfare and quality of life of the citizens and shall be regulated in the public interest.</p> <p>B. In furtherance of the foregoing purpose, it is found and declared as follows:</p> <ol style="list-style-type: none"> 1. The making, creation or maintenance of such loud, unnecessary, unnatural or unusual noises that are prolonged, unusual, annoying, disturbing and unnatural in their time, place and use are a detriment to public health, comfort, convenience, safety, general welfare and the peace and quiet of the city and its inhabitants; and 2. The public necessity for the provisions and prohibitions contained in and enacted by this chapter is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions set forth in and enacted by this chapter are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, general welfare and property and the peace and quiet of the city and its inhabitants. <p>(Ord. 1417 § 1 (part), 2008)</p> <p>9.50.060 - Exemptions</p> <p>The following activities and noise sources shall be exempt from the provisions of this chapter:</p> <ol style="list-style-type: none"> A. Those noise events in the community (e.g., airport noise, arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy, utilizing the community noise equivalent level (CNEL) method; B. Activities conducted on the grounds of any public or private school during regular hours of operation; C. Outdoor gatherings, public dances, shows and sporting and entertainment events provided the events are authorized by the city; D. Activities conducted at public spaces during regular hours of operation; E. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work; F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; G. Mobile noise sounds associated with agricultural operations provided such operations do not take place between the hours of eight p.m. and seven a.m. on weekdays, including Saturdays, or at any time on Sunday or a state holiday; H. Mobile noise sources associated with agricultural pest control through pesticide application; I. Warning devices necessary for the protection of the public safety, including, but not limited to, police, fire and ambulance sirens and train horns and sounds for the purpose of alerting persons to the existence of an emergency; J. Construction, repair or excavation necessary for the immediate preservation of life or property; K. Construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public work projects or essential public services and facilities, including trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission;

APPENDIX I-1

APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>L. Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions which agreement provides for noise mitigation measures;</p> <p>M. Any activity to the extent regulation thereof has been preempted by state or federal law;</p> <p>(Ord. 1417 § 1 (part), 2008)</p>
City of Upland	
Upland Municipal Code	<p>9.40.100 Noises Prohibited—Unnecessary Noise Standard</p> <p>The following acts are declared to be loud, disturbing and unnecessary noises in violation of this chapter, but such enumeration shall not be deemed to be exclusive, namely:</p> <ul style="list-style-type: none"> A. Impact, Repetitive and Tone Noise Levels. In the event any offending noise consists primarily of impact noise, repetitive noise, or simple tone noise, each of the maximum permitted noise levels specified in Section 9.40.070 of this chapter shall be reduced by five dB(A). B. Radios, Televisions and Stereos. It is unlawful for any person to play, use, operate, or permit to be played, used or operated any radio, television set, musical instrument, phonograph, stereophonic equipment, jukebox or other machine or device for producing, reproducing or amplifying sound when audible at a distance of 50 feet or more from the source of the sound and/ or when audible within any other residence or establishment. C. Hawkers and Peddlers. It is unlawful for any person to sell anything by public outcry within any area of the city. The provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, and other similar licensed public entertainment events. D. Drums and Musical Instruments. It is unlawful for any person to use any drum or other percussion or musical instrument or device of any kind for the purpose of attracting attention by the creation of noise within the city. E. Machinery, Equipment, Fans and Air Conditioning. It is unlawful for any person to operate, cause to operate or permit the operation of any machinery, equipment, device, pump, fan, compressor, air conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient noise base level by five dB(A). F. Motor Driven Vehicles. It is unlawful for any person to operate any motor driven vehicle within the city that, due to the nature of the operation of the vehicle, or due to the operating condition of the vehicle, or due to any modification made to the vehicle, generates noise so that a reasonable person is caused discomfort or annoyance. G. Horns, Signaling Devices. It is unlawful for any person to cause the sounding of any horn or signaling device on any automobile, motorcycle, street car or other motor driven vehicle on any street or public place of the city, except as a danger warning; to create by means of any such signaling device any unreasonably loud or harsh sound; and to create the sounding of any such device for an unnecessary and unreasonable period of time. It is unlawful for any person to use any signaling device except one operated by hand or electricity; to use any horn, whistle or other device operated by engine exhaust; or to use any such signaling device when traffic is for any reason held up. H. Loudspeakers, Amplifiers for Advertising. It is unlawful for any person to use, operate or permit to be played, used, or operated any radio receiving set, musical instrument, phonograph, loudspeaker, sound amplifier, or other machine or

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>device for the producing or reproducing of sound which is cast upon the public streets for the purpose of commercial advertising or attracting the attention of the public to any building or structure.</p> <ul style="list-style-type: none"> I. Yelling, Shouting. It is unlawful for any person to yell, shout, hoot, whistle, or sing on the public streets, particularly between the hours of 11:00 p.m. and 7:00 a.m., or at any time or place so as to annoy or disturb the quiet, comfort, or repose of any persons in the vicinity. J. Animals and Fowl. It is unlawful for any person to keep or maintain, or to permit such activity, upon any premises owned, or occupied, or controlled by such person any animal or fowl otherwise permitted to be kept which, by any sound, cry, or behavioral noise, causes annoyance or discomfort to a reasonable person in any residential neighborhood. K. Exhaust. It is unlawful for any person to discharge into the open air the exhaust of any steam engine, stationary internal combustion engine, motorboat, or motor driven vehicle except through a muffler or other device which will effectively prevent loud or explosive noises therefrom. L. Loading, Unloading, Opening Boxes. It is unlawful for any person to create any loud and excessive noise in connection with loading or unloading any vehicle or the opening and destruction of bales, boxes, crates, and containers. M. Construction or Repairing of Buildings. It is unlawful for any person to engage in or permit the erection (including excavation), demolition, alteration or repair of any building other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues, and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he or she shall further determine that loss or inconvenience would result to any party in interest, he or she may grant permission for such work to be done within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. N. Metal Rails, Pillars and Columns—Transportation Thereof. It is unlawful for any person to transport rails, pillars or columns of iron, steel or other material over and along streets and other public places upon carts, trays, cars, trucks, or in any other manner so loaded as to cause loud noises or as to disturb the peace and quiet of such streets or other public places. O. Hammers, Etc. It is unlawful for any person to operate between the hours of 10:00 p.m. and 7:00 a.m. any steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise. P. Blowers. It is unlawful for any person to operate any noise-creating blower or power fan or any internal combustion engine, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise. Q. Exceptions. This section shall not apply to persons who are participants in events for which they have obtained a valid permit from the city and have been authorized to engage in such conduct. (Prior code § 5400.1000) R. Horns, Signaling Devices. It is unlawful for any person to cause the sounding of any horn or signaling device on any automobile, motorcycle, street car or other motor driven vehicle on any street or public place of the city, except as a

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>danger warning; to create by means of any such signaling device any unreasonably loud or harsh sound; and to create the sounding of any such device for an unnecessary and unreasonable period of time. It is unlawful for any person to use any signaling device except one operated by hand or electricity; to use any horn, whistle or other device operated by engine exhaust; or to use any such signaling device when traffic is for any reason held up.</p> <p>S. Loudspeakers, Amplifiers for Advertising. It is unlawful for any person to use, operate or permit to be played, used, or operated any radio receiving set, musical instrument, phonograph, loudspeaker, sound amplifier, or other machine or device for the producing or reproducing of sound which is cast upon the public streets for the purpose of commercial advertising or attracting the attention of the public to any building or structure.</p> <p>T. Yelling, Shouting. It is unlawful for any person to yell, shout, hoot, whistle, or sing on the public streets, particularly between the hours of 11:00 p.m. and 7:00 a.m., or at any time or place so as to annoy or disturb the quiet, comfort, or repose of any persons in the vicinity.</p> <p>U. Animals and Fowl. It is unlawful for any person to keep or maintain, or to permit such activity, upon any premises owned, or occupied, or controlled by such person any animal or fowl otherwise permitted to be kept which, by any sound, cry, or behavioral noise, causes annoyance or discomfort to a reasonable person in any residential neighborhood.</p> <p>V. Exhaust. It is unlawful for any person to discharge into the open air the exhaust of any steam engine, stationary internal combustion engine, motorboat, or motor driven vehicle except through a muffler or other device which will effectively prevent loud or explosive noises therefrom.</p> <p>W. Loading, Unloading, Opening Boxes. It is unlawful for any person to create any loud and excessive noise in connection with loading or unloading any vehicle or the opening and destruction of bales, boxes, crates, and containers.</p> <p>X. Construction or Repairing of Buildings. It is unlawful for any person to engage in or permit the erection (including excavation), demolition, alteration or repair of any building other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues, and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he or she shall further determine that loss or inconvenience would result to any party in interest, he or she may grant permission for such work to be done within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work.</p> <p>Y. Metal Rails, Pillars and Columns—Transportation Thereof. It is unlawful for any person to transport rails, pillars or columns of iron, steel or other material over and along streets and other public places upon carts, trays, cars, trucks, or in any other manner so loaded as to cause loud noises or as to disturb the peace and quiet of such streets or other public places.</p> <p>Z. Hammers, Etc. It is unlawful for any person to operate between the hours of 10:00 p.m. and 7:00 a.m. any steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise.</p>

APPENDIX I-1

APPLICABLE NOISE ORDINANCES

Jurisdiction	Applicable Goals, Objectives, and Policies
	<p>AA. Blowers. It is unlawful for any person to operate any noise-creating blower or power fan or any internal combustion engine, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise.</p> <p>BB. Exceptions. This section shall not apply to persons who are participants in events for which they have obtained a valid permit from the city and have been authorized to engage in such conduct.</p> <p><i>(Prior code § 5400.1000)</i></p>

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Appendix I-2

Noise Measurement Data

Site ID	Measurement Location	Slow Response dBA weighting 2.0 dB resolution stats																		
		Date hh:mm:ss	LeqPeriod	Leq	SEL	Lmax	Lmin	L1%	L5%	L10%	L50%	L90%	L95%	L99%	Lmedian	Lmean	StdDev	L2%	L8%	L25%
M1	6488 Carol Avenue, Rancho Cucamonga	9/29/2016 10:19	15.0 min	56.4	85.9	64.2	53.5	59	57	57	55	55	53	53	55	55.4	1.12	57	57	55
M2	1700 E 7 th Street, Ontario	9/29/2016 11:33	15.0 min	61.9	91.4	73.3	52	69	65	65	59	55	53	51	59	59	3.85	69	65	61
M3	13150 Garcia Drive, Rancho Cucamonga	9/29/2016 12:24	15.0 min	53.4	82.9	62.1	50.6	57	55	53	51	51	51	51	51	52.2	1.47	55	55	53
M4	5541 Crestline Place, Rancho Cucamonga	9/29/2016 13:17	15.0 min	53.3	82.8	60.5	48.4	59	55	55	51	49	49	47	51	51.8	2.24	57	55	53
M5	11962 Alpine Drive, Fontana	9/29/2016 14:20	15.0 min	50.9	80.4	62.9	44.4	57	55	53	47	45	45	43	47	48.5	3.25	55	53	51
M6	6495 N Ventura Avenue, San Bernardino	9/29/2016 15:29	15.0 min	51.3	80.8	64	47.5	59	53	51	49	49	47	47	49	49.7	2.02	57	53	51
M7	4040 E Piedmont Drive, Highland	9/29/2016 16:40	15.0 min	51.2	80.7	62.1	48.4	57	53	53	49	49	47	47	49	49.9	1.84	55	53	51
M8	28479 Greenspot Road, Highland	9/29/2016 17:10	15.0 min	71.2	100.7	84.6	59	77	73	73	69	63	61	61	69	68.8	3.74	75	73	71
M9	1348 Opal Avenue, Mentone	9/29/2016 17:51	15.0 min	64.3	93.8	79.6	52.3	75	71	67	55	53	53	53	55	57.4	5.66	73	69	59

Appendix I-3

RCNM Input/Output Files

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Engineered Erosion Control_Site Preparation

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
				Spec	Actual	Receptor	Estimated	
		Impact		Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Flat Bed Truck		No	40		74.3	100	0	
Excavator		No	40		80.7	100	0	
Front End Loader		No	40		79.1	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening	Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A	N/A
Excavator		74.7	70.7	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
	Total	74.7	73.5	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Engineered Erosion Control_Grading

		----- Receptor #1 -----					
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Generic Receiver 100'	Residential	65	60	55			
		Equipment					
		Impact	Spec	Actual	Receptor	Estimated	
Description		Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator		No	40		80.7	100	0
Front End Loader		No	40		79.1	100	0
Flat Bed Truck		No	40		74.3	100	0
		Results					

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day	Leq	Evening	Leq	Night
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	68.2	64.3	N/A	N/A	N/A	N/A	N/A
Total	74.7	73.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Engineered Erosion Control_Building 1

		---- Receptor #1 ----		
Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		100	0
Front End Loader	No	40		79.1	100	0

		Results						
Equipment		Calculated (dBA)		Noise Limits (dBA)				
		*Lmax	Leq	Day	Leq	Evening	Leq	Night
Grader		79	75	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Total		79	76	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Engineered Erosion Control_Building 2

		---- Receptor #1 ----		
Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Equipment			
Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Front End Loader	No		40	79.1	100	0
Flat Bed Truck	No		40	74.3	100	0

Results							
Calculated (dBA)				Noise Limits (dBA)			
		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	68.2	64.3	N/A	N/A	N/A	N/A	N/A
Total	73.1	70.3	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Engineered Erosion Control_Building 3

---- Receptor #1 ----				
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Equipment						
		Spec	Actual	Receptor	Estimated	
Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)	
Front End Loader	No	40	79.1	100	0	
Flat Bed Truck	No	40	74.3	100	0	

Results							
Calculated (dBA)				Noise Limits (dBA)			
		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	68.2	64.3	N/A	N/A	N/A	N/A	N/A
Total	73.1	70.3	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Patrol Road Grading O&M #1_Building 2

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
				Spec	Actual	Receptor	Estimated	
		Impact		Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Grader		No	40	85		100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A
	Total	79	75	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Erosion Control O&M #6_Grading

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
				Spec	Actual	Receptor	Estimated	
		Impact		Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader		No	40		79.1	100	0	
Backhoe		No	40		77.6	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A

Total	73.1	71.4	N/A	N/A	N/A	N/A	N/A
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*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Erosion Control O&M #6_Building 1

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver	100'	Residential	65	60	55			
		Equipment						
		Impact			Spec	Actual	Receptor	Estimated
Description		Device	Usage(%)	Lmax	Lmax	Lmax	Distance	Shielding
Pumps		No	50			80.9	100	0
		Results						
		Calculated (dBA)			Noise Limits (dBA)			
				Day			Evening	Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Pumps		74.9	71.9	N/A	N/A	N/A	N/A	N/A
	Total	74.9	71.9	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Erosion Control O&M #6_Building 2

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact		Spec	Actual	Receptor	Estimated	
Description		Device	Usage(%)	Lmax	Lmax	Distance	Shielding	
				(dBA)	(dBA)	(feet)	(dBA)	
Front End Loader		No	40		79.1	100	0	
Backhoe		No	40		77.6	100	0	
		Results						
		Calculated (dBA)			Noise Limits (dBA)			

Equipment		Day		Evening		Night	
		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A
	Total	73.1	71.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Grading O&M #1_High Maintenance Grading

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
				Spec	Actual	Receptor	Estimated	
		Impact		Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Grader		No	40	85		100	0	
Front End Loader		No	40		79.1	100	0	
Dump Truck		No	40		76.5	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day	Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Dump Truck		70.4	66.5	N/A	N/A	N/A	N/A	N/A
	Total	79	76.5	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Grading O&M #1_High Maintenance Grading

		Baselines (dBA)			---- Receptor #1 ----		
Description	Land Use	Daytime	Evening	Night			
Generic Receiver 100'	Residential	65	60	55			
		Equipment					
		Impact		Spec	Actual	Receptor	Estimated
		Device	Usage(%)	Lmax	Lmax	Distance	Shielding
Description				(dBA)	(dBA)	(feet)	(dBA)
Grader		No	40	85		100	0
Front End Loader		No	40		79.1	100	0
Dump Truck		No	40		76.5	100	0
		Results					

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day	Evening	Night		
Grader	79	75	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Dump Truck	70.4	66.5	N/A	N/A	N/A	N/A	N/A
Total	79	76.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Grading O&M #1_Low Maintenance Grading

---- Receptor #1 ----				
Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Description	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
	Spec	Actual		
Impact Device	Usage(%)	Lmax (dBA)		
Grader	No	40	85	100
Front End Loader	No	40	79.1	100

Results							
Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day	Evening	Night		
Grader	79	75	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Total	79	76	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Grading O&M #1_Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Grader	No	40	85		100	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A
	Total	79	75	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Grading O&M #1_Building 2

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Equipment

Description	Impact	Spec	Actual	Receptor	Estimated
	Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)
Grader	No	40	85	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader			79	75 N/A	N/A	N/A	N/A	N/A
	Total		79	75 N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Patrol Road Improvements Activity 1_Site Prep

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact	Spec	Actual	Receptor	Estimated		
Description		Device	Usage(%)	Lmax	Lmax	Distance	Shielding	
				(dBA)	(dBA)	(feet)	(dBA)	
Grader		No	40	85		100	0	
Flat Bed Truck		No	40		74.3	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A	N/A
	Total	79	75.4	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Patrol Road Improvements Activity 1_Site Prep

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact	Spec	Actual	Receptor	Estimated		
Description		Device	Usage(%)	Lmax	Lmax	Distance	Shielding	
				(dBA)	(dBA)	(feet)	(dBA)	
Grader		No	40	85		100	0	
Flat Bed Truck		No	40		74.3	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day	Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Grader		79	75	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A	N/A
Total		79	75.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Patrol Road Improvements Activity 1_Paving

		Baselines (dBA)		---- Receptor #1 ----				
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact		Spec	Actual	Receptor	Estimated	
		Device	Usage(%)	Lmax	Lmax	Distance	Shielding	
				(dBA)	(dBA)	(feet)	(dBA)	
Paver		No	50		77.2	100		0
Roller		No	20		80	100		0
Front End Loader		No	40		79.1	100		0
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Paver		71.2	68.2	N/A	N/A	N/A	N/A	N/A
Roller		74	67	N/A	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
	Total	74	73	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Patrol Road Improvements Activity 1_Building Construction 1

				---- Receptor #1 ----			
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Generic Receiver 100'	Residential	65	60	55			
					Equipment		
				Spec	Actual	Receptor	Estimated
		Impact		Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)

Grader	No	40	85	100	0
Flat Bed Truck	No	40	74.3	100	0
Roller	No	20	80	100	0

Results

		Calculated (dBA)			Noise Limits (dBA)		
Equipment		*Lmax	Leq	Day	Evening		Night
				Lmax	Leq	Lmax	Leq
Grader		79	75	N/A	N/A	N/A	N/A
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A
Roller		74	67	N/A	N/A	N/A	N/A
	Total	79	75.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Improvements Activity 1 Building Construction 2

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Grader	No	40		85	100	0
Front End Loader	No	40		79.1	100	0

Results

		Calculated (dBA)			Noise Limits (dBA)		
Equipment		*Lmax	Leq	Day	Evening		Night
				Lmax	Leq	Lmax	Leq
Grader		79	75	N/A	N/A	N/A	N/A
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A
	Total	79	76	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Partrol Road Structural Repairs O&M #15_Site Preparation

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
				Spec	Actual	Receptor	Estimated	
		Impact		Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Grader		No	40	85		100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A
	Total	79	75	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Partrol Road Structural Repairs O&M #15_Grading

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact		Spec	Actual	Receptor	Estimated	
Description		Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)	
Grader		No	40	85		100	0	
Front End Loader		No	40		79.1	100	0	
Backhoe		No	40		77.6	100	0	
		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79	75	N/A	N/A	N/A	N/A	N/A

Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A
Total		79	76.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Structural Repairs O&M #15_Building 1

		Baselines (dBA)			---- Receptor #1 ----			
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact		Spec	Actual	Receptor	Estimated	
Description		Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)	
Backhoe		No	40		77.6	100	0	
		Results						
		Calculated (dBA)			Noise Limits (dBA)			
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A
	Total	71.5	67.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Patrol Road Structural Repairs O&M #15_Building 3

---- Receptor #1 ----							
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Generic Receiver 100'	Residential	65	60	55			
		Equipment					
		Impact		Spec	Actual	Receptor	Estimated
		Device	Usage(%)	Lmax	Lmax	Distance	Shielding
Description				(dBA)	(dBA)	(feet)	(dBA)
Grader		No	40		85	100	0
Results							
Calculated (dBA)				Noise Limits (dBA)			

Equipment		Day				Evening		Night
		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		79		75 N/A	N/A	N/A	N/A	N/A
	Total	79		75 N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Slope Stabilization CIP#3_Site Prep

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Generic Receiver 100'	Residential	65	60	55				
		Equipment						
		Impact		Spec	Actual	Receptor	Estimated	
Description		Device	Usage(%)	(dBA)	(dBA)	Distance (feet)	Shielding (dBA)	
Front End Loader		No	40		79.1	100	0	
Flat Bed Truck		No	40		74.3	100	0	
Excavator		No	40		80.7	100	0	
		Results						
		Calculated (dBA)			Noise Limits (dBA)			
				Day	Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A	N/A
Excavator		74.7	70.7	N/A	N/A	N/A	N/A	N/A
	Total	74.7	73.5	N/A	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.								

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017
Case Description: Slope Stabilization CIP#3_Building 1

		---- Receptor #1 ----				
		Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night		
Generic Receiver 100'	Residential	65	60	55		
		Equipment				
		Impact	Spec	Actual	Receptor	Estimated
Description	Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Front End Loader	No	40		79.1	100	0
Flat Bed Truck	No	40		74.3	100	0
Excavator	No	40		80.7	100	0
		Results				

		Calculated (dBA)			Noise Limits (dBA)		
		*Lmax	Leq	Day	Leq	Evening	Night
Equipment							
Front End Loader		73.1	69.1	N/A	N/A	N/A	N/A
Flat Bed Truck		68.2	64.3	N/A	N/A	N/A	N/A
Excavator		74.7	70.7	N/A	N/A	N/A	N/A
	Total	74.7	73.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 1/3/2017

Case Description: Slope Stabilization CIP#3_Building 2

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Front End Loader	No	40		79.1	100	0
Flat Bed Truck	No	40		74.3	100	0
Excavator	No	40		80.7	100	0
Dump Truck	No	40		76.5	100	0
Dump Truck	No	40		76.5	100	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	68.2	64.3	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A
Dump Truck	70.4	66.5	N/A	N/A	N/A	N/A	N/A
Dump Truck	70.4	66.5	N/A	N/A	N/A	N/A	N/A
Total	74.7	75	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/3/2017

Case Description: Structure Maintenance O&M #11_Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Generic Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		100	0
Backhoe	No	40		77.6	100	0

Equipment	Calculated (dBA)		Results				
	*Lmax	Leq	Day		Evening		Night
Grader	79	75	N/A	N/A	N/A	N/A	N/A
Backhoe	71.5	67.6	N/A	N/A	N/A	N/A	N/A
Total	79	75.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Appendix J

Trip Generation Analysis Memo

TECHNICAL MEMORANDUM

To: Michelle Morrison, Metropolitan Water District of Southern California
From: Dennis Pascua, Transportation Services Manager
Subject: Trip Generation and Vehicle Miles Traveled (VMT) Analysis for the Distribution System Infrastructure Protection Program (DSIPP) for the San Bernardino County Operating Region
Date: January 21, 2020
cc: Rachel Struglia, Dudek
Attachment(s): Attachment A – DSIPP Study Area Map
Attachment B – CIP and O&M Project Construction Assumptions
Attachment C – Minimum and Maximum Trip Generation Scenario Worksheets

1 Introduction

The following trip generation and vehicles miles traveled (VMT) analysis has been prepared for the Metropolitan Water District of Southern California's (Metropolitan) Distribution System Infrastructure and Protection Program (DSIPP) (proposed project). As shown in Attachment A, DSIPP Study Area Map, the individual Capital Improvement Plan (CIP) sites within the overall DSIPP are located within San Bernardino County. This technical memorandum summarizes the methodology, analysis, and findings of the trip generation and VMT estimates of several representative CIP and Operations and Maintenance (O&M) projects of the DSIPP. The findings of this technical memorandum will be summarized in the proposed project's Program Environmental Impact Report (PEIR).

2 Project Description

The proposed project is a series of CIP and O&M projects that will occur within San Bernardino County. To provide for a conservative analysis, it was assumed that three CIP and three O&M projects (total of six projects) would occur concurrently. While these projects would occur concurrently, they would be spread out over the entire study area, and their vehicle-generated trips would not travel on the same street networks as the other concurrent projects. CIP projects include the design and construction of projects that are projected to only occur once, and range in duration from 1 to 36 days. O&M activities would maintain the CIP projects on a regular basis and would either be ongoing or have a duration from 1 to 90 days.

Capital Improvement Plan Projects

The proposed CIP projects generally consist of patrol road improvements and paving, engineered erosion control, and slope stabilization to address access or infrastructure problems that threaten system reliability. A list of the proposed CIP projects identified in the Western San Bernardino County DSIPP Assessment Report is included in Appendix B of the PEIR. It should be noted that the proposed program description for CIP infrastructure projects

only includes design and construction of the projects; O&M activities following construction of CIP projects would be covered under the O&M component of this program description. CIP projects consist of the following:

1. Patrol Road Improvements and Paving (CIP Activity Code No. 1)
2. Engineered Erosion Control (CIP Activity Code No. 2)
3. Slope Stabilization (CIP Activity Code No. 3)

Of the 13 proposed CIP projects, 8 projects include CIP Activity Code No. 1 activities (Patrol Road Improvements and Paving) as the primary purpose of the improvement project or in combination with another CIP project category (i.e., projects coded CIP Activity Code No. 1, CIP Activity Code Nos. 1 and 2, and CIP Activity Code Nos. 1, 2, and 3). Twelve of the CIP projects include CIP Activity Code No. 2 activities (Erosion Control) (i.e., projects coded CIP Activity Code No. 2, CIP Activity Code Nos. 1 and 2, CIP Activity Code Nos. 2 and 3, and CIP Activity Code Nos. 1, 2, and 3). Four CIP projects include CIP Activity Code No. 3 activities (Slope Stabilization) (i.e., projects coded CIP Activity Code No. 3, CIP Activity Code Nos. 2 and 3, and CIP Activity Code Nos. 1, 2, and 3).

Operations and Maintenance Projects

The proposed O&M activities would be conducted on a regular and ongoing basis and are intended to maintain existing structures, patrol roads, and other appurtenant pipeline structures. For the purposes of this analysis and the PEIR, O&M activities are divided into two categories:

1. Routine O&M activities
2. Single-occurrence O&M activities

Routine O&M activities do not require extensive engineering or involve the construction of new facilities. They are repeated, routine activities that occur and will continue to occur at regular intervals to maintain patrol roads and other infrastructure in good condition. These activities include patrols and visual inspections; patrol road maintenance; maintenance/cleanout of drainage features; facility maintenance, repair, and replacement; vegetation management/maintenance; and other activities such as pipeline shutdowns/dewatering and emergency work.

Single-occurrence O&M activities would typically be conducted on a one-time basis and would include repair, rehabilitation, or replacement of existing structures to support the continued operation and maintenance of existing pipelines and appurtenant pipeline structures. This includes reestablishment of access to structures through repair and rehabilitation of the patrol roads. In the Western San Bernardino County Operating Region, single-occurrence O&M activities are primarily limited to patrol road structural repairs, and would include installation of Arizona crossings and culverts, and/or bridges.

There are 15 proposed O&M activities that have been identified and are divided into the two general categories described above. Emergency O&M activities would correlate with activities assessed in the single-occurrence O&M activities or they would be exempt under CEQA (14 CCR 15269); therefore, emergency O&M activities are not analyzed herein. Routine O&M activities include 6 O&M activity codes that involve patrol road maintenance (O&M Activity Code Nos. 1–6); 1 activity code that involves patrol and inspection (O&M Activity Code No. 7); 5 activity codes that involve routine structure maintenance, repair, and replacement (O&M Activity Code Nos. 8–12); and, 2 activity codes that involve other activities such as shutdowns/dewatering and emergency work (O&M Activity Code Nos. 13–14). Single-occurrence O&M activities include one O&M activity code (O&M Activity Code No. 15), which involves patrol road structural repairs (Arizona crossings, culverts, bridges).

Many of the O&M activities do not necessitate the use of diesel construction equipment, trucks transporting materials, and/or a construction crew. This includes O&M Activity Code No. 8, which involves cleaning of equipment and structures, and O&M Activity Code No. 9, which involves graffiti removal and coating of structures.

The DSIPP Preliminary Design Report for the Western San Bernardino County Operating Region identifies proposed CIP and single-occurrence O&M projects and provided location specifics, details of existing site issues, potential options for addressing the identified issues, and the proposed solution. Construction activities associated with the proposed CIP projects and single-occurrence O&M activities are anticipated to occur over 2 years. It is estimated that 60% of the required activities would occur in the first year, and the remaining 40% would occur in the second year. All CIP projects are expected to be completed within 2 years.

Applicant-Proposed Measures

Applicant-proposed measures provided in the PEIR for the DSIPP CIP and O&M projects are provided below:

APM-TR-1 Traffic Control Plan.

- a. Where appropriate for work on public roadways and as required by the local jurisdiction, prior to the start of the construction phase, The Metropolitan Water District of Southern California (Metropolitan) or Metropolitan's contractor shall submit a Traffic Control Plan to the appropriate local jurisdiction for review and approval. The plan shall be consistent with the Caltrans Traffic Manual, Chapter 5. Traffic control shall be in accordance with the California Code of Regulations (CCR) Title 8.
- b. Where appropriate for work on public roadways, Metropolitan will submit a set of proposed construction plans to agencies with jurisdiction over the roadways to allow them to comment on the proposed plans.
- c. During construction on public roadways, Metropolitan shall implement traffic management measures, as deemed necessary and applicable by a properly licensed engineer. Measures could include the following, as appropriate:
 - i. Temporary traffic lanes shall be marked and barricades and lights shall be provided at excavations and crossings per the Manual of Traffic Controls for Construction and Maintenance Work Zones.
 - ii. Construction activities shall affect the least number of travel lanes as possible, with both directions of traffic flow being maintained at all times, to the extent feasible.
 - iii. Construction shall avoid the morning and evening peak traffic periods to the extent feasible.
 - iv. Construction across on- and off-street bikeways shall be done in a manner that allows for safe bicycle access, or bicycle traffic will be safely rerouted.
 - v. Private driveways located within construction areas shall remain open to maintain access to the maximum extent feasible. Should construction be required that prevents access to a private driveway, Metropolitan would coordinate with owners and would implement measures such as installation of metal plates to provide access.

- d. During construction of projects that would impact emergency or public access, Metropolitan shall notify all affected fire, police, and paramedic departments/services as well as any affected public transportation agencies of the schedule and duration of construction activities.
- e. During construction of projects that would impact underlying or adjacent property owners, Metropolitan will send notification to and coordinate with these owners about the construction activity and duration.

3 Traffic Impact Analysis Thresholds

The San Bernardino County Public Works Department and the San Bernardino County Transportation Authority (SBCTA) have specific guidelines as to when a formal traffic impact analysis (TIA) or traffic impact study (TIS) report is required. Per the San Bernardino County Transportation Impact Study Guidelines (San Bernardino County 2019), the requirement to prepare a TIS should be based upon, but not limited to, one or more of the following criteria:

- *If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.*
- *If a project is located within 300 feet of*
 - *The intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan or*
 - *An impacted intersection as determined by the Traffic Division.*
- *If this project creates safety or operational concerns.*
- *The project has the potential to generate VMT that could result in a transportation impact as noted in the significance criteria presented later in this memorandum.*
- *If a project generates less than 100 trips without consideration of pass-by trips during any peak hour, a study maybe required if there are special concerns.*

Per Appendix B of the San Bernardino County Congestion Management Program (SANBAG 2016) – Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County:

[...]TIA Reports shall be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary. However, TIA Reports must be prepared to satisfy CMP requirements, except as noted below, when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source. Pass-by trips shall not be considered in the threshold determination. However, industrial, warehousing and truck projects shall convert trucks to PCE's before applying the threshold [...]

4 Trip Generation

Construction assumptions have been provided by Metropolitan for each type of project (see Attachment B, CIP and O&M Project Construction Assumptions). Metropolitan also provided typical hours of operation and daily procedures. To assess potential traffic impacts, daily and peak-hour vehicle types and quantities were determined for each activity. Each vehicle type is then multiplied by the appropriate passenger car equivalence (PCE) factor resulting in PCE-adjusted daily and peak-hour vehicle trips.

The trips for the DSIPP activities have been broken into three vehicles types: (1) worker trucks, (2) vendor trucks, and (3) haul trucks. Each worker truck has been assumed to enter and exit the site 1.5 times per day (for a total of 3 worker trips per day), and have a PCE factor of 1.5 PCE (i.e., one truck equals 1.5 passenger cars). Each vendor truck has been assumed to enter and exit 1 time per day and have a PCE factor of 2.5 PCE. Each haul truck has been assumed to enter and exit the site 1 time per day and have a PCE factor of 3.0 PCE. In some cases, equipment would be left at the job sites overnight.

Once the daily vehicle trips in PCE have been calculated, the morning (AM) and afternoon/evening (PM) peak-hour vehicle trips in PCE can be determined. Typically, construction-related activities start in the early morning (7:00 a.m.) at the beginning of the morning peak-commute period (7:00 a.m. to 9:00 a.m.), and workers have arrived at the job site before the AM peak hour. Construction activities generally end before 4:00 p.m. (or earlier for smaller construction activities), which is the start of the afternoon/evening peak-commute period (4:00 p.m. to 6:00 p.m.). Based on those characteristics, the proposed project's traffic in the AM peak hour has been assumed to account for 35% of the daily vehicle trips; and, the PM peak hour has been assumed to account for 10% of the daily vehicle trips. The inbound and outbound splits have been assumed to be 90% inbound and 10% outbound during the AM peak hour; and, 10% inbound and 90% outbound during the PM peak hour. Attachment C, Minimum and Maximum Trip Generation Scenario Worksheets, provides the detailed analysis worksheets of the trip generation and VMT analyses for the minimum (Table A) and maximum (Table B) project trip generation scenarios.

Capital Improvement Plan Projects

CIP Project A, Patrol Road Improvements and Paving (CIP Activity Code No. 1 at Inland Feeder Station 660+00), is considered to be a 10-day activity. It is projected to generate a minimum of 9 daily PCE trips, 3 AM PCE peak-hour trips, and 1 PM PCE peak-hour trip. CIP Project A is projected to generate a maximum of 61 daily PCE trips, 21 AM PCE peak-hour trips, and 6 PM PCE peak-hour trips.

CIP Project B, Engineered Erosion Control (CIP Activity Code No. 2 at Inland Feeder Station 592+31), is considered to be a 16-day activity. It is projected to generate a minimum of 32 daily PCE trips, 11 AM PCE peak-hour trips, and 3 PM PCE peak-hour trips. CIP Project B is projected to generate a maximum of 48 daily PCE trips, 17 AM PCE peak-hour trips, and 5 PM PCE peak-hour trips.

CIP Project C, Slope Stabilization (CIP Activity Code No. 3 at Inland Feeder Station 19+55), is considered to be a 36-day activity. It is projected to generate a minimum of 44 daily PCE trips, 16 AM PCE peak-hour trips, and 4 PM PCE peak-hour trips. CIP Project C is projected to generate a maximum of 79 daily PCE trips, 28 AM PCE peak-hour trips, and 8 PM PCE peak-hour trips.

Operations and Maintenance Projects

O&M Activity A-1 (O&M Activity Code No. 1, high maintenance scenario at 1 mile per day of patrol road graded) is considered to be a 1-day (per 1 mile of patrol road graded) activity. It is projected to generate 51 daily PCE trips, 18 AM PCE peak-hour trips, and 6 PM PCE peak-hour trips.

O&M Activity A-2 (O&M Activity Code No. 1, moderate maintenance scenario at 2 miles per day of patrol road graded) is also considered to be a 1-day (per 2 miles of patrol road graded) activity. It is projected to generate 46 daily PCE trips, 16 AM PCE peak-hour trips, and 5 PM PCE peak-hour trips.

O&M Activity A-4.5 (O&M Activity Code No. 1, low maintenance scenario at 4.5 miles per day of patrol road graded) is also considered to be a 1-day activity. It is projected to generate 19 daily PCE trips, 7 AM PCE peak-hour trips, and 2 PM PCE peak-hour trips.

O&M Activity B (O&M Activity Code No. 6, erosion control at Upper Feeder Station 728+50) is considered to be a 10-day activity. It is projected to generate a minimum of 26 daily PCE trips, 9 AM PCE peak-hour trips, and 3 PM PCE peak-hour trips. O&M Activity C is projected to generate a maximum of 46 daily PCE trips, 16 AM PCE peak-hour trips, and 5 PM PCE peak-hour trips.

O&M Activity C (O&M Activity Code No. 11, structure maintenance, repair, and replacement at Inland Feeder Station 573+94) is considered to be a 3-day activity. It is projected to generate a minimum of 9 daily PCE trips, 3 AM PCE peak-hour trips, and 1 PM PCE peak-hour trip. O&M Activity D is projected to generate a maximum of 32 daily PCE trips, 11 AM PCE peak-hour trips, 3 PM PCE peak-hour trips.

O&M Activity D (O&M Activity Code No. 15, patrol road structural repairs at Inland Feeder Station 3571+01) is considered to be a 24-day activity. It is projected to generate a minimum of 9 daily PCE trips, 3 AM PCE peak-hour trips, and 1 PM PCE peak-hour trip. O&M Activity E is projected to generate a maximum of 32 daily PCE trips, 11 AM PCE peak-hour trips, 3 PM PCE peak-hour trips.

Maximum Trip Generation Estimates

Based on the trip generation analysis above, and summarized in Table 1, the maximum projected trip generation for any one activity is CIP Project C (CIP Activity Code No. 3, Slope Stabilization at Inland Feeder Station 19+55) which would generate a maximum of 79 daily PCE trips, 28 AM PCE peak-hour trips, and 8 PM PCE peak-hour trips.

Per the intersection analysis thresholds for San Bernardino County and the SBCTA, a TIA is not required for any of the proposed O&M or CIP projects, as they would generate less than 100 peak-hour trips (per San Bernardino County thresholds) and less than 250 peak-hour trips (per SBCTA thresholds).

Table 1. Trip Generation Summary

Activity	Case ¹	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
CIP Project A (CIP Activity Code No. 1)	Minimum	9	3	0	3	0	1	1
	Maximum	61	19	2	21	1	5	6
CIP Project B (CIP Activity Code No. 2)	Minimum	32	10	1	11	0	3	3
	Maximum	48	15	2	17	0	4	4
CIP Project C (CIP Activity Code No. 3)	Minimum	44	14	2	16	0	4	4
	Maximum	79	25	3	28	1	7	8
O&M Activity A-1 (O&M Activity Code No. 1)	Typical	51	16	2	18	1	5	6
O&M Activity A-2 (O&M Activity Code No. 1)	Typical	46	14	2	16	0	4	4
O&M Activity A-4.5 (O&M Activity Code No. 1)	Typical	19	6	1	7	0	2	2
O&M Activity B (O&M Activity Code No. 6)	Minimum	26	8	1	9	0	2	2
	Maximum	46	14	2	16	0	4	4
O&M Activity C (O&M Activity Code No. 11)	Minimum	9	3	0	3	0	1	1
	Maximum	31	10	1	11	0	3	3
O&M Activity D (O&M Activity Code No. 15)	Minimum	9	3	0	3	0	1	1
	Maximum	32	10	1	11	0	3	3

Source: Morrison, pers. comm. 2019.

Notes: CIP = Capital Improvement Plan; O&M = Operations and Maintenance.

¹ See Attachment C, Minimum and Maximum Trip Generation Scenario Worksheets.

5 Vehicle Miles Traveled

The VMT for each of the CIP and O&M activities has been estimated based on the trip generation estimates presented above, and the average trip lengths provided by Metropolitan. The trip types for the proposed projects have been specified by worker trucks, vendor trucks, and haul trucks. Each worker truck has been assumed to travel 14.7 miles for each trip; each vendor truck has been assumed to travel 16.0 miles for each trip; and, each haul truck has been assumed to travel 20.0 miles for each trip. Below is a summary of the VMT calculations, and the details of the analysis are provided in Attachment C.

CIP Project A, Patrol Road Improvements and Paving (CIP Activity Code No. 1 at Inland Feeder Station 660+00) is considered to be a 10-day activity. It is projected to generate a total of approximately 357 PCE vehicle trips and approximately 2,763 VMT over the entire activity.

CIP Project B, Engineered Erosion Control (CIP Activity Code No. 2 at Inland Feeder Station 592+31) is considered to be a 16-day activity. It is projected to generate a total of approximately 674 PCE vehicle trips and approximately 5,286 VMT over the entire activity.

CIP Project C, Slope Stabilization (CIP Activity Code No. 3 at Inland Feeder Station 19+55) is considered to be a 36-day activity. It is projected to generate a total of approximately 2,344 PCE vehicle trips and approximately 17,278 VMT over the entire activity.

O&M Activity A-1 (O&M Activity Code No. 1, high maintenance scenario at 1 mile per day of patrol road graded) is considered to be a 1-day activity. It is projected to generate a total of approximately 51 PCE vehicle trips and approximately 392 VMT over the entire activity.

O&M Activity A-2 (O&M Activity Code No. 1, moderate maintenance scenario at 2 miles per day of patrol road graded) is considered to be a 1-day activity. It is projected to generate a total of approximately 46 PCE vehicle trips and approximately 360 VMT over the entire activity.

O&M Activity A-4.5 (O&M Activity Code No. 1, low maintenance scenario at 4.5 miles per day of patrol road graded) is also considered to be a 1-day activity. It is projected to generate a total of approximately 19 PCE vehicle trips and approximately 152 VMT over the entire activity.

O&M Activity B (O&M Activity Code No. 6, erosion control at Upper Feeder Station 728+50) is considered to be a 10-day activity. It is projected to generate a total of approximately 337 PCE vehicle trips and approximately 2,591 VMT over the entire activity.

O&M Activity C (O&M Activity Code No. 11, structure maintenance, repair, and replacement at Inland Feeder Station 573+94) is considered to be a 3-day activity. It is projected to generate a total of approximately 70 PCE vehicle trips and approximately 577 VMT over the entire activity.

O&M Activity D (O&M Activity Code No. 15, patrol road structural repairs at Inland Feeder Station 3571+01) is considered to be a 24-day activity. It is projected to generate a total of approximately 484 PCE vehicle trips and approximately 4,199 VMT over the entire activity.

6 Conclusions

Based on the trip generation and VMT analyses provided in this technical memorandum, the following conclusions are made:

1. The individual project sites of the CIP and O&M activities are located within San Bernardino County.
2. The proposed project is a series of smaller projects that would not all occur at the same time, and would be spread out over the entire study area (within San Bernardino County).
3. The maximum projected trip generation for any one activity is CIP Project C (CIP Activity Code No. 3, Slope Stabilization [CIP Activity Code No. 3 at Inland Feeder Station 19+55]), which would generate a maximum of 79 daily PCE trips, 28 AM PCE peak-hour trips, and 8 PM PCE peak-hour trips.
4. In San Bernardino County, a TIA is not required if the proposed project generates less than 100 peak-hour trips; and, for facilities under the SBCTA, a TIA is not required if the proposed project generates less than 250 peak-hour trips.
5. Based on the intersection analysis thresholds for San Bernardino County and the SBCTA, a TIA is not required for any of the proposed O&M or CIP projects of the DSIPP.

7 References

Morrison, M. 2019. WSB CIP Locations. Email from M. Morrison [Metropolitan Water District of Southern California] to S. Riggs [Dudek]. December 19, 2019.

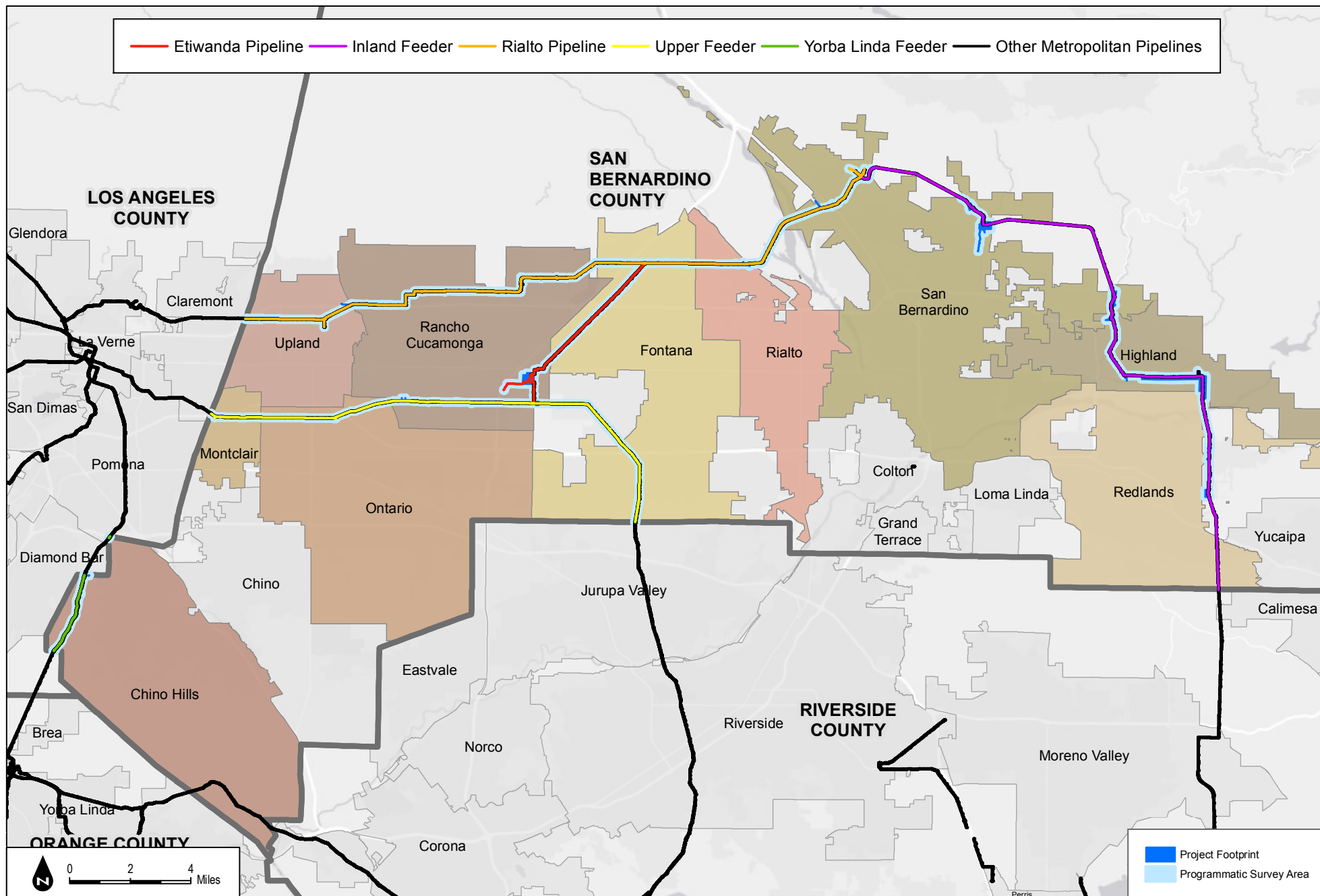
SANBAG (San Bernardino Associated Governments). 2016. *San Bernardino County Congestion Management Program, 2016 Update*.

San Bernardino County. 2019. San Bernardino County Transportation Impact Study Guidelines. July 9, 2019. Accessed January 2020. <https://cms.sbcounty.gov/Portals/50/transportation/Traffic-Study-Guidelines.pdf?ver=2019-10-03-155637-153>.



Attachment A

DSIPP Study Area Map



SOURCE: ArcGIS Online Basemap

Western San Bernardino County Operating Region Pipeline Locations



Attachment B

CIP and O&M Project Construction Assumptions

Western San Bernardino County Distribution System Infrastructure Protection Program PEIR
Air Quality and GHG Emissions Modeling Assumptions

Table 1. Representative CIP Projects Summary

Representative Project	CIP Activity Code No.	CIP Project Category	Selected Representative Project
A	1	Patrol Road Improvements and Paving	Inland Feeder Station 660+00
B	2	Engineered Erosion Control	Inland Feeder Station 592+31
C	3	Slope Stabilization	Inland Feeder Station 19+55

Source: Metropolitan 2016.

Note: This table corresponds with Table 4.2-6 presented in Section 4.2, Air Quality, of the PEIR.

Table 2. Representative CIP Project A – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
Site preparation – clear and grub	2	4	2 ^a	8	Motor graders (graders)	1
Grading – over-excavation	3	6	2 ^a	0	Motor graders (graders)	1
Building construction 1 – lay base	3	6	14 ^a	12	Motor graders (graders)	1
					Rollers	1
Paving	1	12	8	4	Paving equipment	1
					Rollers	1
					Skid steer loaders	1
Building construction 2 – finish work	1	4	0	0	Motor graders (graders)	1
					Skid steer loaders	1

Source: Metropolitan 2016.

Notes: This table corresponds with Table 4.2-7 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

^a Water trucks are included as vendor trips for construction modeling.

Table 3. Representative CIP Project B – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
	4	6	2 ^a	24	Excavators	1

Table 3. Representative CIP Project B – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
Site preparation – removing materials and mobilization					Rubber-tired loaders	1
Grading	2	6	8 ^a	0	Excavators	1
					Rubber-tired loaders	1
Building construction 1 – place riprap rock	4	8	12	0	Motor graders (graders)	1
					Tractors/loaders/backhoes	1
Building construction 2 – concrete grout	2	10	10 ^a	0	Loader (Tractors/loaders/backhoes)	1
Building construction 3 – finish work and place base rock	3	10	10 ^a	0	Loader (Tractors/loaders/backhoes)	1
Building construction 4 – demobilization	1	6	0	6	N/A	N/A

Source: Metropolitan 2016.

Notes: This table corresponds with Table 4.2-8 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

^a Water trucks are included as vendor trips for construction modeling.

Table 4. Representative CIP Project C – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks ^a	Equipment	
					Equipment Type	Quantity
Site preparation – clear and grub	10	8	8 ^a	40	Excavator	1
					Loader	1
Building construction 1 – restore the slope	6	8	8 ^a	12	Excavator	1
					Loader	1
Building construction 2 – geotextile and riprap	20	8	22 ^a	40 ^b	Excavator	1
					Loader	1

Source: Metropolitan 2016.

Notes: This table corresponds with Table 4.2-9 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

^a Water trucks are included as vendor trips for construction modeling.

^b Dump trucks were accounted for in haul trips.

Table 5. Representative O&M Activities Summary

Representative Activity	O&M Activity Code No.	O&M Activity Category	Selected Representative Activity
A	1	Patrol Road Grading	Three levels of patrol road grading and maintenance were assessed: high, moderate, and low.
B	6	Erosion Control	Upper Feeder Station 728+50
C	11	Structure Maintenance, Repair, and Replacement	Inland Feeder Station 573+94
D	15	Patrol Road Structural Repairs	Inland Feeder Station 3571+01

Source: Metropolitan 2016.

Note: This table corresponds with Table 4.2-10 presented in Section 4.2, Air Quality, of the PEIR.

Table 6. Representative O&M Activity A – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
High Maintenance (1 mile/day)						
Grading	1	8	6	6 ^a	Motor graders (graders)	1
					Tractors/loaders/backhoes	1
Moderate Maintenance (2 miles/day)						
Grading	1	8	4	6 ^a	Motor graders (graders)	1
					Tractors/loaders/backhoes	1
Low Maintenance (4.5 miles/day)						
Grading	1	4	4	0	Motor graders (graders)	1
					Tractors/loaders/backhoes	1

Source: Metropolitan 2016.

Notes: This table corresponds with Table 4.2-11 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

^a Dump trucks were accounted for in haul trips.

Table 7. Representative O&M Activity B– Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks Per Day	Equipment	
					Equipment Type	Quantity
Site preparation – clear and grub	3	4	6	6	Motor graders (graders)	1
Grading – earthwork	3	6	8	12	Skid steer loaders	1
					Tractors/loaders/backhoes	1

Table 7. Representative O&M Activity B– Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks Per Day	Equipment	
					Equipment Type	Quantity
Building construction 1 – concrete masonry curb and ditch	2	8	2	4	Pumps	1
Building construction 2 – finish work	2	4	2	8	Skid steer loaders	1
					Tractors/loaders/backhoes	1

Source: Metropolitan 2016.

Notes: This table corresponds with Table 4.2-12 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

Table 8. Representative O&M Activity C – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
Site preparation/clean-up	2	6	2	8	Motor graders (graders)	1
					Tractors/loaders/backhoes	1
Gate installation	1	4	0	0	N/A	N/A

Source: Metropolitan 2016.

Notes: N/A = not applicable (no equipment associated with the proposed construction phase).

This table corresponds with Table 4.2-13 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

Table 9. Representative O&M Activity D – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
Site preparation	4	4	0	0	Motor graders (graders)	1
Grading	4	4	0	0	Motor graders (graders)	1
					Rubber-tired loaders	1
					Tractors/loaders/backhoes	1
Building construction 1 – install riprap	8	6	6	0	Tractors/loaders/backhoes	1
Building construction 2 – concrete grout	4	12	2	0	N/A	N/A

Table 9. Representative O&M Activity D – Construction Scenario

Construction Phase	Days	One-Way Worker Trips Per Day	One-Way Vendor Trips Per Day	Total Haul Trucks	Equipment	
					Equipment Type	Quantity
Building construction 3 – finish work	4	4	2	0	Motor graders (graders)	1

Source: Metropolitan 2016.

Notes: N/A = not applicable (no equipment proposed during this activity).

This table corresponds with Table 4.2-14 presented in Section 4.2, Air Quality, of the PEIR.

Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

References

Metropolitan (The Metropolitan Water District of Southern California). 2016. Construction data provision from Metropolitan to Dudek air quality staff.



Attachment C

Minimum and Maximum Trip Generation
Scenario Worksheets

MINIMUM PROJECT TRIP GENERATION AND VMT ESTIMATES

Activity	Duration In	Workers	Worker Truck Trips					Vendor Truck Trips					Haul Truck Trips					Total Passenger Car Equivalent Trips				Total		Minimum	Morning Peak Hour %s			Evening Peak Hour %s			Morning Peak Hour			Evening Peak Hour			Daily
	Days		Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	VMT	Trips	VMT		Trips	Daily	Inbound	Outbound	Daily	Inbound	Outbound	Total	Inbound	Outbound	Total		
O&M Activity A (O&M Activity Code No. 1) - 1	1	4	6	6	12	1.5	14.7	3	3	6	2.5	16.0	3	3	6	3.0	20.0	25.5	25.5	51.0	392.4	51	392	51.0	35%	90%	10%	10%	10%	90%	16	2	18	1	5	5	51
O&M Activity A (O&M Activity Code No. 1) - 2	1	4	6	6	12	1.5	14.7	2	2	4	2.5	16.0	3	3	6	3.0	20.0	23.0	23.0	46.0	360.4	46	360	46.0	35%	90%	10%	10%	10%	90%	14	2	16	0	4	5	46
O&M Activity A (O&M Activity Code No. 1) - 4.5	1	2	3	3	6	1.5	14.7	2	2	4	2.5	16.0	0	0	0	3.0	20.0	9.5	9.5	19.0	152.2	19	152	19.0	35%	90%	10%	10%	10%	90%	6	1	7	0	2	2	19
O&M Activity B (O&M Activity Code No. 6)	3	2	3	3	6	1.5	14.7	3	3	6	2.5	16.0	1	1	2	3.0	20.0	15.0	15.0	30.0	224.2	337	2,591	26.0	35%	90%	10%	10%	10%	90%	8	1	9	0	2	3	26
	3	3	4.5	4.5	9	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	22.8	22.8	45.5	340.3																
	2	4	6	6	12	1.5	14.7	1	1	2	2.5	16.0	1	1	2	3.0	20.0	14.5	14.5	29.0	248.4																
O&M Activity C (O&M Activity Code No. 11)	2	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	13.0	13.0	26.0	200.2	70	577	9.0	35%	90%	10%	10%	10%	90%	3	0	3	0	1	1	9
	2	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	15.3	15.3	30.5	244.3																
	1	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
O&M Activity D (O&M Activity Code No. 15)	4	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2	484	4,199	9.0	35%	90%	10%	10%	10%	90%	3	0	3	0	1	1	9
	4	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
	8	3	4.5	4.5	9	1.5	14.7	3	3	6	2.5	16.0	0	0	0	3.0	20.0	14.3	14.3	28.5	228.3																
	4	6	9	9	18	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	16.0	16.0	32.0	296.6																
CIP Project A (CIP Activity Code No. 1)	4	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	7.0	7.0	14.0	120.2	357	2,763	9.0	35%	90%	10%	10%	10%	90%	3	0	3	0	1	1	9
	2	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	13.0	13.0	26.0	200.2																
	3	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	9.3	9.3	18.5	164.3																
	3	3	4.5	4.5	9	1.5	14.7	7	7	14	2.5	16.0	2	2	4	3.0	20.0	30.3	30.3	60.5	436.3																
CIP Project B (CIP Activity Code No. 2)	1	6	9	9	18	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	29.5	29.5	59.0	472.6	674	5,286	31.5	35%	90%	10%	10%	10%	90%	10	1	11	0	3	3	32
	1	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
	4	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	3	3	6	3.0	20.0	18.3	18.3	36.5	284.3																
	2	3	4.5	4.5	9	1.5	14.7	4	4	8	2.5	16.0	0	0	0	3.0	20.0	16.8	16.8	33.5	260.3																
	4	4	6	6	12	1.5	14.7	6	6	12	2.5	16.0	0	0	0	3.0	20.0	24.0	24.0	48.0	368.4																
	2	5	7.5	7.5	15	1.5	14.7	5	5	10	2.5	16.0	0	0	0	3.0	20.0	23.8	23.8	47.5	380.5																
CIP Project C (CIP Activity Code No. 3)	3	5	7.5	7.5	15	1.5	14.7	5	5	10	2.5	16.0	0	0	0	3.0	20.0	23.8	23.8	47.5	380.5	2,344	17,278	44.0	35%	90%	10%	10%	10%	90%	14	2	15	0	4	4	44
	1	3	4.5	4.5	9	1.5	14.7	0	0	0	2.5	16.0	3	3	6	3.0	20.0	15.8	15.8	31.5	252.3																
	10	4	6	6	12	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	25.0	25.0	50.0	384.4																
	6	4	6	6	12	1.5	14.7	4	4	8	2.5	16.0	1	1	2	3.0	20.0	22.0	22.0	44.0	344.4																
	20	4	6	6	12	1.5	14.7	11	11	22	2.5	16.0	1	1	2	3.0	20.0	39.5	39.5	79.0	568.4																

MAXIMUM PROJECT TRIP GENERATION AND VMT ESTIMATES

Activity	Duration In		Worker Truck Trips					Vendor Truck Trips					Haul Truck Trips					Total Passenger Car Equivalent Trips				Total		Maximum Trips	Morning Peak Hour %s			Evening Peak Hour %s			Morning Peak Hour			Evening Peak Hour			Daily
	Days	Workers	Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	PCE	VMT	Inbound	Outbound	Total	VMT	Trips	VMT		Daily	Inbound	Outbound	Daily	Inbound	Outbound	Total	Inbound	Outbound	Total			
O&M Activity A (O&M Activity Code No. 1) - 1	1	4	6	6	12	1.5	14.7	3	3	6	2.5	16.0	3	3	6	3.0	20.0	25.5	25.5	51.0	392.4	51	392	51.0	35%	90%	10%	10%	10%	90%	16	2	18	1	5	5	51
O&M Activity A (O&M Activity Code No. 1) - 2	1	4	6	6	12	1.5	14.7	2	2	4	2.5	16.0	3	3	6	3.0	20.0	23.0	23.0	46.0	360.4	46	360	46.0	35%	90%	10%	10%	10%	90%	14	2	16	0	4	5	46
O&M Activity A (O&M Activity Code No. 1) - 4.5	1	2	3	3	6	1.5	14.7	2	2	4	2.5	16.0	0	0	0	3.0	20.0	9.5	9.5	19.0	152.2	19	152	19.0	35%	90%	10%	10%	10%	90%	6	1	7	0	2	2	19
O&M Activity B (O&M Activity Code No. 6)	3	2	3	3	6	1.5	14.7	3	3	6	2.5	16.0	1	1	2	3.0	20.0	15.0	15.0	30.0	224.2	337	2,591	45.5	35%	90%	10%	10%	10%	90%	14	2	16	0	4	5	46
	3	3	4.5	4.5	9	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	22.8	22.8	45.5	340.3																
	2	4	6	6	12	1.5	14.7	1	1	2	2.5	16.0	1	1	2	3.0	20.0	14.5	14.5	29.0	248.4																
O&M Activity C (O&M Activity Code No. 11)	2	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	13.0	13.0	26.0	200.2	70	577	30.5	35%	90%	10%	10%	10%	90%	10	1	11	0	3	3	31
	2	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	15.3	15.3	30.5	244.3																
	1	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
O&M Activity D (O&M Activity Code No. 15)	4	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2	484	4,199	32.0	35%	90%	10%	10%	10%	90%	10	1	11	0	3	3	32
	4	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
	8	3	4.5	4.5	9	1.5	14.7	3	3	6	2.5	16.0	0	0	0	3.0	20.0	14.3	14.3	28.5	228.3																
	4	6	9	9	18	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	16.0	16.0	32.0	296.6																
	4	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	7.0	7.0	14.0	120.2																
CIP Project A (CIP Activity Code No. 1)	2	2	3	3	6	1.5	14.7	1	1	2	2.5	16.0	2	2	4	3.0	20.0	13.0	13.0	26.0	200.2	357	2,763	60.5	35%	90%	10%	10%	90%	19	2	21	1	5	6	61	
	3	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	0	0	0	3.0	20.0	9.3	9.3	18.5	164.3																
	3	3	4.5	4.5	9	1.5	14.7	7	7	14	2.5	16.0	2	2	4	3.0	20.0	30.3	30.3	60.5	436.3																
	1	6	9	9	18	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	29.5	29.5	59.0	472.6																
	1	2	3	3	6	1.5	14.7	0	0	0	2.5	16.0	0	0	0	3.0	20.0	4.5	4.5	9.0	88.2																
CIP Project B (CIP Activity Code No. 2)	4	3	4.5	4.5	9	1.5	14.7	1	1	2	2.5	16.0	3	3	6	3.0	20.0	18.3	18.3	36.5	284.3	674	5,286	48.0	35%	90%	10%	10%	10%	90%	15	2	17	0	4	5	48
	2	3	4.5	4.5	9	1.5	14.7	4	4	8	2.5	16.0	0	0	0	3.0	20.0	16.8	16.8	33.5	260.3																
	4	4	6	6	12	1.5	14.7	6	6	12	2.5	16.0	0	0	0	3.0	20.0	24.0	24.0	48.0	368.4																
	2	5	7.5	7.5	15	1.5	14.7	5	5	10	2.5	16.0	0	0	0	3.0	20.0	23.8	23.8	47.5	380.5																
	3	5	7.5	7.5	15	1.5	14.7	5	5	10	2.5	16.0	0	0	0	3.0	20.0	23.8	23.8	47.5	380.5																
	1	3	4.5	4.5	9	1.5	14.7	0	0	0	2.5	16.0	3	3	6	3.0	20.0	15.8	15.8	31.5	252.3																
CIP Project C (CIP Activity Code No. 3)	10	4	6	6	12	1.5	14.7	4	4	8	2.5	16.0	2	2	4	3.0	20.0	25.0	25.0	50.0	384.4	2,344	17,278	79.0	35%	90%	10%	10%	10%	90%	25	3	28	1	7	8	79
	6	4	6	6	12	1.5	14.7	4	4	8	2.5	16.0	1	1	2	3.0	20.0	22.0	22.0	44.0	344.4																
	20	4	6	6	12	1.5	14.7	11	11	22	2.5	16.0	1	1	2	3.0	20.0	39.5	39.5	79.0	568.4																

