APPENDIX C-1: PALMDALE DITCH CONVERSION PROJECT BIOLOGICAL RESOURCES ASSESSMENT

Palmdale Ditch Conversion Project

Biological Resources Assessment

prepared for

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Acronyms and Abbreviations

amsl	above mean sea level
ANF	Angeles National Forest
BLM	Bureau of Land Management
BMPs	Best Management Practices
BRA	Biological Resources Assessment
BSA	Biological Study Area
California Aqueduct	Governor Edmund G. Brown California Aqueduct
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEHC	California Essential Habitat Connectivity
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
cfs	cubic feet per second
City	City of Palmdale
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Los Angeles County
CRPR	California Rare Plant Rank
CWA	Federal Clean Water Act
Ditch	Palmdale Ditch
DRECP	Desert Renewable Energy Conservation Plan
DWR	California Department of Water Resources
ESA	Federal Endangered Species Act
FCS	Federal Candidate Species
FE	federally endangered
FEMA	Federal Emergency Management Agency
FP	Fully Protected
FPT	Federally Proposed Threatened
FSS	Forest Service Sensitive

FT	Federally Threatened
G	Global
GIS	Geographic Information System
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HUC	Hydrologic Unit Code
L1UBHh	lacustrine limnetic diked/impounded lake, unconsolidated bottom
MBTA	Migratory Bird Treaty Act
MCV2	A Manual of California Vegetation, Second Edition (Sawyer et al. 2009)
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWS	National Weather Service
OHV	off-highway vehicle
OHWM	Ordinary High Water Mark
PFOA	palustrine freshwater forested/shrub wetland
Project	Palmdale Ditch Conversion Project
PWD	Palmdale Water District
R2UBHx	riverine lower perennial excavated drainage, unconsolidated bottom
RCA	Riparian Conservation Area
Rincon	Rincon Consultants., Inc
RPW	Relatively Permanent Water
RS4BC	riverine intermittent streambed
RS4BCx	riverine intermittent streambed, seasonally flooded, excavated
RWQCB	Regional Water Quality Control Board
S	Subnational/State
SCE	State Candidate Endangered
SCT	State Candidate Threatened

SEA	Significant Ecological Area
SR	State Rare
SSC	Species of Special Concern
ST	State Threatened
TNW	Traditional Navigable Water
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USDoI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Program
WJTCA	Western Joshua Tree Conservation Act
WL	Watch List
Woodland Guide	Los Angeles County Oak Woodlands Conservation Management Plan Guide
Woodland Plan	Los Angeles County Oak Woodlands Conservation Management Plan

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Executive Summary

Hazen and Sawyer (Hazen), on behalf of Palmdale Water District (PWD), retained Rincon Consultants, Inc. (Rincon) to conduct a biological resources technical study for the Palmdale Ditch Conversion Project (Project) located partially within the city of Palmdale and partially within unincorporated Los Angeles County, California. The Project will convert 7.2 miles of the predominantly unlined, open earthen Palmdale Ditch (Ditch) to a buried 48-inch reinforced concrete or high-density polyethylene pipeline. The pipeline conversion would span from a point approximately 0.3 mile downstream of Littlerock Reservoir to a point near the intersection of Sierra Highway and Sierra Hills Lane and from a point approximately 0.1 mile south of Lake Palmdale to Lake Palmdale.

It is anticipated the Project would be funded in part by the United States Bureau of Reclamation (USBR) and the California Department of Water Resources (DWR). Additionally, a portion of the Biological Study Area (BSA), which includes the Project's proposed impact footprint and a 50-foot buffer, is located on lands managed by the United States Forest Services (USFS) Angeles National Forest (ANF). Given that the Project is both funded by a federal agency and overlaps federal lands, the Project is subject to the National Environmental Policy Act (NEPA). As of March 14, 2024, ANF has officially deferred lead federal agency responsibilities to USBR for this Project. The Project is also subject to the California Environmental Quality Act (CEQA) with PWD acting as the lead agency under CEQA. This Biological Resources Assessment (BRA) has been prepared to support compliance with both CEQA and NEPA.

This BRA provides relevant information about the biological conditions of the BSA including the results of a biological resources database and literature review, reconnaissance survey, western Joshua tree (*Yucca brevifolia*) census survey, jurisdictional delineation survey, and an analysis of potential impacts to regulated biological resources, including the required federal cross-cutters to satisfy NEPA requirements and support the required biological resources permitting processes.

Eight special status plant species are known to occur or have moderate or high potential to occur in the BSA. A total of 3,469 western Joshua trees (*Yucca brevifolia*; State Candidate Threatened [SCT] and protected in California under the Western Joshua Tree Conservation Act [WJTCA]) were identified and mapped in the BSA. The remaining seven species have moderate or high potential to occur in the BSA: Horn's milk-vetch (*Astragalus hornii* var. *hornii*; California Rare Plant Rank [CRPR] 1B.1), Palmer's mariposa-lily (*Calochortus palmeri* var. *palmeri*; USFS Sensitive [FSS], CRPR 1B.2), alkali mariposa-lily (*Calochortus striatus*; FSS, CRPR 1B.2), white pygmy-poppy (*Canbya candida*; FSS, CRPR 4.2), Mojave paintbrush (*Castilleja plagiotoma*; FSS, CRPR 4.3), short-joint beavertail (*Opuntia basilaris* var. *brachyclada*; FSS, CRPR 1B.2), and Greata's aster (*Symphyotrichum greatae*; CRPR 1B.3). Potential Project impacts to these species or their habitat would be less than significant or proposed Project Mitigation Measures would reduce potential impacts to less than significant.

Twenty-seven special status wildlife species are known to occur or have moderate or high potential to occur in the BSA. Monarch butterflies (*Danaus plexippus plexippus pop. 1*; Federal Candidate Species [FCS], FSS) were observed foraging on rubber rabbitbrush, but are not expected to overwinter in the BSA. Cooper's hawk (*Accipiter cooperii*; CDFW Watch List [WL]), sharp-shinned hawk (*Accipiter striatus*; CDFW WL), northern harrier (*Circus hudsonius*; CDFW Species of Special Concern [SSC]), and merlin (*Falco columbarius*; CDFW WL) were also observed foraging near or flying over the BSA; of these, Cooper's hawk and northern harrier have potential to nest in the BSA,

while sharp-shinned hawk and merlin only have foraging potential. The remaining species have moderate or high potential to occur based on the presence of potentially suitable habitat in the BSA: Crotch's bumble bee (*Bombus crotchii*; State Candidate Endangered [SCE]), Soledad shoulderband (*Helminthoglypta fontiphila*; G1/S1 CDFW Special Animal), southwestern pond turtle (*Actinemys pallida*; Federally Proposed Threatened [FPT], FSS, CDFW SSC), northern California legless lizard (*Anniella pulchra*; FSS, CDFW SSC), California legless lizard (*Anniella* spp.; CDFW SSC), coast horned lizard (*Phrynosoma blainvillii*; CDFW SSC), two-striped gartersnake (*Thamnophis hammondii*; FSS, CDFW SSC), tricolored blackbird (*Agelaius tricolor*; State Threatened [ST], CDFW SSC), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; CDFW WL), golden eagle (*Aquila chrysaetos*; California Fish and Game Code [CFGC] Fully Protected [FP], CDFW WL, protected under the Bald and Golden Eagle Protection Act [BGEPA]), Bell's sparrow (*Artemisiospiza belli belli*; CDFW WL), burrowing owl (*Athene cunicularia*; CDFW SSC), ferruginous hawk (*Buteo regalis*; CDFW WL), Swainson's hawk (*Buteo swainsoni*; ST), southwestern willow flycatcher (*Empidonax traillii extimus*; Federally Endangered [FE], State Endangered [SE]), prairie falcon (*Falco mexicanus*; CDFW WL), loggerhead shrike (*Lanius ludovicianus*; CDFW SSC), least Bell's vireo (*Vireo bellii pusillus*; FE, SE), pallid bat (*Antrozous pallidus*; FSS, CDFW SSC), Townsend's big-eared bat (*Corynorhinus townsendii*; FSS, CDFW SSC), San Diego desert woodrat (*Neotoma lepida intermedia*; CDFW SSC), and Mohave ground squirrel (*Xerospermophilus mohavensis*; ST). No federally designated critical habitat is located within or adjacent to the BSA. Potential Project impacts to these species or their habitat would be less than significant or proposed Project Mitigation Measures would reduce potential impacts to less than significant.

The BSA provides suitable habitat for common nesting birds and raptors as well as raptor foraging habitat. Potential Project impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and CFGC Section 3503 would be reduced to less than significant through implementation of proposed Project Mitigation Measures. Potential Project impacts on foraging habitat of migratory birds and raptors and reproductive capacity of raptors through temporary loss of foraging habitat within the BSA would be less than significant.

Of the vegetation associations documented in the BSA, five are classified as sensitive by the CDFW and encompass approximately 22.79 acres. Four are riparian vegetation communities (arroyo willow thickets shrubland, California sycamore - red willow/arroyo willow - mulefat, Fremont cottonwood woodland, Goodding's willow - red willow riparian woodland) and one is an upland vegetation community (western Joshua tree/ California juniper/ Nevada ephedra woodland). Additional riparian habitat is also present in the BSA in small, isolated areas along the Ditch or other drainages and wetlands, as well as in Little Rock Wash. Potential jurisdictional waters and wetlands coexist with riparian areas and also include the Ditch and other features. Approximately 8.26 acres of waters and wetlands are potentially under United States Army Corps of Engineers jurisdiction, 15.15 acres potentially under Regional Water Quality Control Board jurisdiction, and 25.98 acres potentially under CDFW jurisdiction, with each of these jurisdictional extents overlapping each other in various combinations depending on the specific feature. With implementation of proposed Project Mitigation Measures, potential Project impacts to sensitive vegetation communities, riparian habitats, and jurisdictional waters and wetlands would be reduced to less than significant.

While the BSA likely contributes to supporting wildlife movement across the undeveloped extent of the northern San Gabriel mountain foothills, construction activities would be temporary, short-term, and would primarily occur during the daytime. The Project would be located primarily belowground, with the exception of small footprints of appurtenant structures. As a result, Project construction and operation would not interfere substantially with the movement of 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, and impacts would be less than significant.

The BSA is located in the City of Palmdale and unincorporated Los Angeles County and intersects two County of Los Angeles Significant Ecological Areas (SEAs): San Andreas SEA and Antelope Valley SEA. Under the California Government Code Section 53091, PWD is exempt from compliance with local zoning and building ordinances for projects involving the construction of facilities for the production, generation, storage, treatment, or transmission of water, such as the Ditch. For the purposes of full disclosure of potential impacts on the environment, the BRA evaluates proposed Project compatibility with relevant policies and ordinances of the County and City, including Los Angeles County 2035 General Plan and Significant Ecological Areas, Los Angeles County Oak Trees and Oak Woodland Management Plan, and City of Palmdale Native Desert Vegetation Ordinance. Implementation of proposed Project Mitigation Measures would avoid potential conflicts with local policies and ordinances during Project construction and operation.

The non-ANF portion of the BSA is located within the broader boundaries of the Desert Renewable Energy Conservation Plan (DRECP) and within the planning area of the Bureau of Land Management (BLM) West Mojave Plan. However, the Project is not subject to the DRECP or BLM West Mojave Plan because 1) the portion of the Project alignment within those plan areas is not on federal land and 2) the Project does not propose to develop renewable energy. The Project is not located in other areas subject to an adopted HCP or NCCP. Therefore, the Project would not conflict with an adopted HCP or NCCP, and no impact would occur.

The southernmost 0.78-mile of the BSA is located in the San Gabriel Mountains National Monument on ANF land administered by the USFS and subject to the 2005 ANF Land Management Plan and the San Gabriel Mountains National Monument Plan, which outline program strategies and desired conditions for biological resources in the ANF and San Gabriel Mountains National Monument. With implementation of proposed Project Mitigation Measures, the Project would not conflict with either plan.

The BSA is not located within or adjacent to the Coastal Zone, federally-designated Wild and Scenic Rivers, Essential Fish Habitat, or areas covered by the Coastal Barrier Resources System; as a result, no impacts to these resources would occur. Floodplains regulated by Executive Order 11988 are largely absent from the BSA, as the Ditch was constructed in uplands. As a result, flood risk in the BSA is low. Project construction activities would be temporary in nature, and once complete, Project facilities would be located primarily belowground and would not have the potential to interfere with flood flows.

Invasive species are found throughout the BSA and the Project has the potential to introduce and spread additional invasive species to areas within and adjacent to the BSA through transport of seeds or other plant parts via construction equipment or personnel. Implementation of proposed Project Mitigation Measures to avoid and minimize the spread of invasive species would achieve Project consistency with Executive Orders 13112/13751.

Overall, implementation of recommended avoidance, minimization, and compensation measures would reduce all potential Project-specific direct and indirect impacts to regulated biological resources to less-than-significant levels, and ensure consistency with relevant policies and plans.

1 Introduction

This report documents the findings of a Biological Resources Assessment (BRA) conducted by Rincon Consultants, Inc. (Rincon) for Palmdale Water District's (PWD) Palmdale Ditch Conversion Project (Project). The assessment was completed to document existing site conditions via a desktop analysis and field surveys and to evaluate potential impacts to regulated biological resources based upon current Project plans. This report describes existing biological conditions within the Biological Study Area (BSA) that includes a proposed 309-acre impact footprint along 7.2 miles of the existing Palmdale Ditch (Ditch) plus a 50-foot buffer. The BRA evaluates the potential for the Project to result in impacts to regulated biological resources and recommends (as appropriate) mitigation measures to reduce potential impacts to these regulated biological resources.

1.1 Project Location

The Project site consists of an approximately 7.2-mile-long corridor that overlaps 88 parcels in the city of Palmdale and unincorporated Los Angeles County (Appendix A: Figure 1 and Figure 2a to Figure 2d). The Project footprint encompasses portions of Section 7 of Township 5 North, Range 11 West; Sections 1, 2, 11, and 12 of Township 5 North, Range 12 West; Sections 7, 8, 16, and 17 of Township 5 North, Range 11 West; and Sections 16, 17, 21, 27, and 28 of Township 5 North, Range 11 West on the *Palmdale* and *Pacifico Mountain*, *California* United States Geological Survey (USGS) 7.5-minute topographic quadrangles (USGS 2024a).

The Project site extends generally southeast to northwest from a point approximately 0.3 mile downstream of Littlerock Reservoir in Angeles National Forest (ANF) (managed by the United States Forest Service [USFS]) to Lake Palmdale in unincorporated Los Angeles County. The Project site includes the existing Ditch and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment). The buffer is intended to encapsulate the existing Ditch, areas where the Ditch may be re-aligned as compared to its current alignment, and potential temporary access, staging, and stockpiling areas. In total, the Project site encompasses approximately 309 acres. The Project site has variable topography, ranging from approximately 3,200 feet above mean sea level (amsl) in the ANF to approximately 2,815 feet amsl at Lake Palmdale.

The Project site consists of two discontinuous areas. The largest area covers approximately 7.1 miles of continuous Ditch from Littlerock Reservoir to the Los Angeles County Metropolitan Transportation Authority rail tracks, while the second area covers approximately 0.1 mile of existing Ditch where it outfalls into Lake Palmdale. These two sections of the Ditch are connected by a segment where the water flows through an existing underground pipeline.

The southeastern end of the Project site begins at the terminus of an existing pipeline that currently feeds into the Ditch approximately 0.3 mile downstream of Littlerock Reservoir within the San Gabriel Mountains National Monument in the ANF (Appendix A: Figure 2d). From Littlerock Reservoir, the Project site extends northwest, parallel to Cheseboro Road and within the ANF, for approximately 4,000 linear feet. After exiting the ANF, the Project site continues to proceed north for approximately one mile, then curves to the northwest and proceeds in a northwesterly direction for approximately 4.6 miles, generally parallel to Barrel Springs Road, until the intersection of Sierra Hills Lane and Sierra Highway (Appendix A: Figure 2b to Figure 2c). Along this 4.6-mile stretch, the

Project site crosses the Governor Edmund G. Brown California Aqueduct (California Aqueduct), Pearblossom Highway, and the Los Angeles County Metropolitan Transportation Authority rail tracks. This portion of the Project site terminates at an existing pipeline that proceeds generally northwest for approximately 0.6 mile. This pipeline discharges into the remaining 0.1-mile stretch of the Ditch that proceeds from a point east of existing residences on Rozalee Drive to the northwest where it ends at Lake Palmdale (Appendix A: Figure 2b).

1.2 Project Description

1.2.1 Project Background

The Ditch was constructed in the 1880s and has been owned and operated by PWD since its completion. The Ditch is approximately 8.5 miles long and is used to convey raw water from Littlerock Reservoir to Lake Palmdale for treatment and beneficial use as potable supply within PWD's service area. PWD operates the Ditch intermittently in accordance with seasonal availability and PWD water allocations.

In 1995, approximately 1,900 feet of the Ditch, starting from the debris basin downstream of Littlerock Dam, was converted to a 54-inch diameter pipeline. In 2010, approximately 3,800 feet of the Ditch from Lake Palmdale to Sierra Highway was replaced with a 48-inch diameter pipeline. In total, approximately 30 percent of the Ditch is either lined with concrete or utilizes culverts and tunnels to cross through steep terrain and beneath roadways, while almost 70 percent of its total length remains an unlined, open earthen ditch. There is also one remaining aerial flume supported by a steel trestle located approximately midway between Sierra Highway and Pearblossom Highway.

In 2021, PWD completed a feasibility study evaluating the potential water savings that could be achieved by replacing the remaining open channel segments with a buried pipeline and increasing the design flow from 30 cubic feet per second (cfs) to 60 cfs. The study concluded that water savings of approximately 1,450 acre-feet per year could be achieved.

To date, PWD has received grant funding from both the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (USBR) to support the proposed Project.

1.2.2 Project Components

The proposed Project would involve the conversion of approximately 7.2 miles of the Ditch with a buried 48-inch diameter pipeline made from reinforced concrete or high-density polyethylene. Of the 7.2-mile length, approximately 6.4 miles is currently open-channel with a mixture of concrete-lined and earthen-bottomed segments, which would be converted to pipeline. Approximately 0.5 mile of the Ditch is currently within pipelines, specifically at its overcrossing of the California Aqueduct and below Los Angeles Department of Water and Power electrical lines, or concrete tunnels. These pipelines and tunnels would be inspected and rehabilitated as part of the proposed Project. Approximately 0.1 mile of the Ditch currently feeds through road culvert crossings under various City of Palmdale (City) and County of Los Angeles (County) roads. The proposed Project involves inspection, rehabilitation, and replacement of these crossings, as needed. Along open-channel segments of the Ditch where the proposed pipeline is placed directly in the existing Ditch alignment, the Ditch would be backfilled following pipeline installation. Along open-channel segments of the Ditch where the proposed pipeline is placed outside the existing alignment, the Ditch would either be left in its current condition or filled in depending on the results of ongoing discussions with interested parties and regulatory agencies.

The proposed Project would increase the hydraulic capacity of the Ditch from 20 cfs to approximately 60 cfs. In addition, any buried pipelines or tunnels expected to remain in service as part of the completed Project would also be inspected and rehabilitated, as necessary, to ensure a fully functioning system upon Project completion. Project components would be located primarily underground. Minor aboveground facilities, such as blow-off and air release assemblies approximately two to three feet in height, may be installed for proper pipeline operation. To the extent feasible, these facilities would be sited outside of the public's line of sight. No new permanent sources of lighting would be installed as part of the proposed Project.

The proposed Project would also include installation of a new turnout[1] to the California Aqueduct, which would be located within the Project site on the north side of the California Aqueduct and west of the Ditch's overcrossing of the aqueduct. The turnout would be sized to convey approximately 20 to 30 cfs of water from the California Aqueduct to the proposed pipeline. The turnout would include a connection to the proposed pipeline, a new headwall[2], a trash rack, a meter, an approximately 5 to 10-kilowatt diesel backup generator, and other required appurtenances. The turnout may also include a one-story controls/electrical building that would have a footprint of approximately 100 square feet. The building would likely be constructed with masonry block walls and a sheet metal roof, or equivalent. The turnout and associated components would be designed and implemented in accordance with DWR's Division of Operations and Maintenance's General Components for New Turnouts guidance. The turnout would provide PWD with improved redundancy and reliability in accessing its existing State Water Project allocation and would not result in additional water supplies.

1.2.3 Construction

Construction of the proposed Project would occur over an approximate 10-month period between March 2025 and December 2025 and would involve clearing/grubbing, demolition, excavation, pipeline installation, paving, and site restoration. Construction is expected to proceed linearly along the alignment, beginning with clearing/grubbing, followed by demolition and pipeline installation at a rate of approximately 200 linear feet per day. Asphalt paving at roadway crossings disturbed by construction would be accomplished initially with temporary paving and ultimately with permanent paving once all road crossings have been completed. Depending on schedule constraints, construction may occur simultaneously at multiple locations along the alignment at any given time. Project construction would be scheduled to avoid construction activities within 500 feet of suitable habitat for tricolored blackbird (*Agelaius tricolor*) in the vicinity of Lake Palmdale from mid-March to June. In addition, project construction would be scheduled to avoid construction activities within 500 feet of suitable habitat for southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*) in the vicinity of Little Rock Wash from mid-March to August. Suitable habitat for these species would not be removed during Project construction.

Construction activities would typically occur on Monday through Friday during work hours allowed by local ordinances (6:30 a.m. to 8:00 p.m. on Monday through Saturday in Palmdale and 7:00 a.m. to 9:00 p.m. on weekdays/8:00 a.m. to 6:00 p.m. on Saturday in unincorporated Los Angeles County). Nighttime construction is unlikely to be required; however, portions of the pipeline requiring road crossings within City and/or County rights-of-way constructed via open-cut methods may require nighttime construction to minimize traffic impacts.

[1] A turnout refers to a structure that allows water to be conveyed from the California Aqueduct.

[2] A headwall is a wall that is placed at the entrance or outlet of a drainage pipe to prevent erosion.

Demolition of some existing infrastructure would be required to accommodate the proposed Project. Some of the existing 48-inch diameter culverts within City and County roadways, ranging in length from 125 to 350 feet, would be removed and replaced. Portions of headwalls at culverts, bridges and tunnels along the proposed alignment may also need to be demolished or modified to allow for the construction of new manhole structures and the associated tie-ins. Stormwater overcrossings may be demolished as well to allow for pipeline installation. In addition, some portions of the existing Ditch may require demolition, such as an existing flume supported by a trestle located approximately 0.6 mile west of the intersection of Pearblossom Highway and Barrel Springs Road.

Open-cut excavation would be utilized to install approximately 30,000 linear feet of the new pipeline and potential turnout. For certain segments of the pipeline (approximately 6,800 linear feet), the new pipeline would be placed in the same alignment as the existing Ditch or nearby. For sections of the alignment beneath existing bridges and through tunnels (approximately 1,400 linear feet), the pipeline would be installed by sliplining, a process that involves installing a smaller carrier pipeline into a larger host pipeline (or existing tunnel), which avoids disturbance of the surrounding structures. The existing pipeline over the California Aqueduct that is part of the existing Ditch system would be rehabilitated either via cured-in-place pipeline or other slip-lining method. Trenchless methods (e.g., auger bore/jack) would be used to install the new pipeline below the alignment's crossing of Pearblossom Highway (approximately 150 linear feet). Where existing culverts or tunnels exist, the new pipeline would connect to these existing facilities, provided they are sized to convey the anticipated increased flow rate and are in good condition. A minor amount of groundwater dewatering during construction may be necessary in two locations where the groundwater table was found to be near the planned depth of excavations during the geotechnical field investigation. The exact method of disposal for groundwater produced during dewatering would be determined by the construction contractor and may include methods such as land application or discharge to the existing Ditch. However, disposal to other surface water bodies, such as Little Rock Wash, would not be allowed. The contractor would be required to comply with applicable National Pollutant Discharge Elimination System (NPDES) permit and/or Waste Discharge Requirements for the selected method(s) of disposal, including any water quality standards that may require pre-treatment prior to discharge.

Construction equipment and materials staging, stockpile areas, and construction worker parking areas would occur within the Project site. To provide a conservative estimate of Project impacts, this BRA evaluates potential Project impacts from staging, stockpiling, and parking within the entirety of the Project site.

1.3 Biological Study Area

The Project's BSA generally depicts all areas expected to be affected by the proposed Project, including construction staging areas. The Project disturbance footprint was developed by Hazen and Sawyer to include the areas anticipated to be affected during conversion of the Ditch to underground pipeline and associated infrastructure. The Project disturbance footprint includes the existing 7.2-mile-long Ditch and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment), for a total of approximately 309 acres. The BSA includes this potential disturbance footprint and a 50-foot buffer to address potential indirect Project effects, such as noise and dust.

2 Methodology

2.1 Regulatory Overview

Regulated biological resources studied and analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive plant communities, United States Fish and Wildlife Service (USFWS)-designated critical habitat, jurisdictional waters and wetlands, Coastal Zone, federally designated Wild and Scenic Rivers, Essential Fish Habitat, lands covered by the Coastal Barrier Resources System, invasive species, wildlife movement, and locally protected resources, such as protected trees. Regulated biological resources also include regionally protected resources (e.g., from Habitat Conservation Plans [HCPs] and Natural Community Conservation Plans [NCCPs]). Regulatory authority over biological resources is shared by federal, State, and local authorities. Primary authority for regulation of general biological resources lies within the land use control and planning authority of local jurisdictions (i.e., City of Palmdale and County of Los Angeles).

2.1.1 Definition of Special Status Species and Sensitive Natural Communities

For the purposes of this report, special status species include:

- Species listed as threatened or endangered under the federal Endangered Species Act (ESA); including proposed and candidate species
- Species listed as candidate, threatened, or endangered under the California Endangered Species Act (CESA)
- Species designated as Fully Protected (FP) by the California Fish and Game Code (CFGC), and Species of Special Concern (SSC) or Watch List (WL) by the California Department of Fish and Wildlife (CDFW)
- Native Plant Protection Act (NPPA) – State Rare (SR)
- California Native Plant Society (CNPS) California Rare Plant Ranks (CRPR) 1A, 1B, 2A, 2B, 3, and 4
- Species ranked globally (G) and subnationally (S) 1 through 3 based on NatureServe's (2024) methodologies:
    - G1 or S1 - critically imperiled globally or statewide
    - G2 or S2 - imperiled globally or statewide
    - G3 or S3 - vulnerable to extirpation or extinction globally or statewide
- Species designated as USFS Sensitive (FSS) by the USFS for Project activities that occur on lands administered by ANF
- Species designated as locally important by the City and County and/or otherwise protected through ordinance, local policy, or HCPs/NCCPs

Sensitive vegetation communities were identified in accordance with the CDFW *California Natural Community List,* which ranks vegetation communities occurring throughout California, and is based in part on global (G) and state (S) rarity ranks (CDFW 2023a). Vegetation communities ranked S1 to S3 are generally considered sensitive, although some communities with other ranks may also be

considered sensitive. Communities dominated by non-native species are considered semi-natural alliances and have no global and state rankings (ranking denoted as GNASNA).

2.1.2 Environmental Regulatory Framework

For the purpose of this report, potential Project-related impacts to biological resources were analyzed based on the following regulatory framework and guiding documents. Additional information on the regulatory framework is provided in Appendix B.

Federal

- ESA
- Federal Clean Water Act (CWA)
- Migratory Bird Treaty Act (MBTA)
- National Environmental Policy Act (NEPA)
- Bald and Golden Eagle Protection Act
- Coastal Zone Management Act
- Executive Order 11990 (Protection of Wetlands)
- Executive Order 11988 (Floodplain Management)
- Executive Orders 13112/13751 (Invasive Species/Safeguarding the Nation from Impacts of Invasive Species)
- Wild and Scenic Rivers Act
- Magnuson-Stevens Fishery Conservation and Management Act
- Coastal Barrier Resources Act
- Fish and Wildlife Coordination Act

State

- CEQA
- CESA
- CFGC
- Porter-Cologne Water Quality Control Act
- Western Joshua Tree Conservation Act (WJTCA)

Local

- City of Palmdale 2045 General Plan
- City of Palmdale Joshua Tree and Native Desert Vegetation Preservation Ordinance
- County of Los Angeles 2035 General Plan
- Los Angeles County Significant Ecological Areas (SEA) Program
- Los Angeles County Oak Tree Management Guidelines

2.1.3 Guidelines for Determining CEQA Significance

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

a) Have substantial adverse effects, 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 CDFW or USFWS.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS.

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

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

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

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

2.2 Database and Literature Review

Rincon conducted a literature review and database queries to characterize the nature and extent of biological resources within and adjacent to the BSA. The literature review included an evaluation of current and historical aerial photographs of the site (Google Earth Pro 2023), regional and site-specific topographic maps, and climatic data.

Queries of the USFWS Information for Planning and Consultation system (UFWS 2024a; Appendix C), CDFW California Natural Diversity Database (CNDDB; 2024a), CNPS online *Inventory of Rare and Endangered Plants of California* (CNPS 2024a), and USFS Sensitive Species lists were conducted to obtain comprehensive information regarding State and federally listed species and other special status species considered to have potential to occur within the *Palmdale* and *Pacifico Mountain* USGS 7.5-minute topographic quadrangles and the surrounding seven quadrangles (*Lancaster West, Lancaster East, Alpine Butte, Ritter Ridge, Little Rock, Acton,* and *Juniper Hills*).

The following resources were reviewed for additional information on existing conditions relating to biological resources within the BSA:

- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (2024a)
- USFWS Critical Habitat Portal (2024b)
- CDFW Biogeographic Information and Observation System (CDFW 2024b)
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (2024c)
- CDFW Special Animals List (2024d)

Results of the database queries and special status species list were compiled and analyzed to determine which species have potential to occur within the BSA. The habitat requirements for each regionally occurring special status species and sensitive natural communities were assessed and compared to the type and quality of habitats observed in the BSA during the field reconnaissance surveys. Conclusions regarding which special status species and sensitive natural communities are present or have the potential to occur were based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the survey area, previous reports for the Project site, and the data collected during the field reconnaissance surveys described in Section 2.3, *Field Reconnaissance Surveys*. The potential for each special status species to occur in the BSA was evaluated according to the following criteria:

- **Not Expected.** Habitat on and adjacent to the BSA is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identifiable in the BSA if present (e.g., oak trees). Protocol surveys (if conducted) did not detect species.
- **Low Potential.** Few of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or the majority of habitat on and adjacent to the BSA is unsuitable or of very poor quality. The species is not likely to be found in the BSA. Protocol surveys (if conducted) did not detect species.
- **Moderate Potential**. Some of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or only some of the habitat on or adjacent to the BSA is unsuitable. The species has a moderate probability of being found in the BSA.
- **High Potential.** All the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present and/or most of the habitat on or adjacent to the BSA is highly suitable. The species has a high probability of being found in the BSA.
- **Present.** Species is observed or has been recorded (e.g., CNDDB, other reports) in the BSA recently (within the last five years).

Several regionally-occurring special status species were determined to have no potential to occur due to lack of suitable habitat within the BSA, range in elevation, and/or geographic distribution. Special status species determined to have the potential to occur within the BSA are discussed in Section 4, *Regulated Biological Resources*. Special status species determined not to have potential to occur within the BSA are not discussed further in this report.

The potential for wildlife movement corridors was evaluated based on the California Essential Habitat Connectivity (CEHC) Project commissioned by the California Department of Transportation and CDFW (Spencer et al. 2010).

2.3 Field Reconnaissance Surveys

The field reconnaissance surveys were limited to providing an overview of biological constraints and the potential presence of regulated biological resources within the BSA. Field reconnaissance surveys were conducted over the course of 11 days from November 13 through November 17 and December 11 through December 15 and December 19, 2023. Rincon Biologist Jacob Hargis led the

field surveys with assistance from Rincon Biologists Bryant Reynolds and Justin Purnell. The surveys were performed by walking the BSA, where accessible, to characterize the existing biological resources present (e.g., vegetation communities, potential presence of special status species and/or habitats, and presence of potentially jurisdictional waters). Inaccessible areas were surveyed using binoculars. Survey information is provided in Table 1.

Table 1 Field Reconnaissance Surveys

Date	Personnel	Time	Weather Conditions
11/13/2023	J. Hargis, B. Reynolds	9:00 a.m. – 4:30 p.m.	Winds 0-6 miles per hour, clear skies, no precipitation
11/14/2023	J. Hargis, B. Reynolds	8:00 a.m. – 12:00 p.m.	Winds 0-7 miles per hour, clear skies, no precipitation
11/15/2023	J. Hargis, B. Reynolds	8:00 a.m. – 4:00 p.m.	Winds 0-8 miles per hour, clear skies, no precipitation
11/16/2023	J. Hargis, B. Reynolds	8:30 a.m. – 1:30 p.m.	Winds 0-7 miles per hour, cloudy, no precipitation
11/17/2023	J. Hargis, B. Reynolds	8:00 a.m. – 4:00 p.m.	Winds 0-3 miles per hour, partly cloudy, no precipitation
12/11/2023	J. Hargis, J. Purnell	8:00 a.m. – 12:00 p.m.	Winds 0-3 miles per hour, clear skies, no precipitation
12/12/2023	J. Hargis, J. Purnell	8:30 a.m. – 4:00 p.m.	Winds 0-3 miles per hour, clear skies, no precipitation
12/13/2023	J. Hargis, J. Purnell	8:00 a.m. – 4:00 p.m.	Winds 0-12 miles per hour, clear skies, no precipitation
12/14/2023	J. Hargis, J. Purnell	8:00 a.m. – 4:00 p.m.	Winds 0-8 miles per hour, clear skies, no precipitation
12/15/2023	J. Hargis, J. Purnell	7:30 a.m. – 4:30 p.m.	Winds 0-12 miles per hour, clear skies, no precipitation
12/19/2023	J. Hargis, J. Purnell	8:00 a.m. – 4:30 p.m.	Winds 0-8 miles per hour, overcast, trace of precipitation

Extents of vegetation communities, land cover types, sensitive vegetation communities, and regulated biological resources were mapped using a Geode Geographic Positioning System (GPS) capable of sub-meter accuracy and plotted on aerial imagery. Vegetation community classification was conducted using the systems provided in *A Manual of California Vegetation, Second Edition* (MCV2) (Sawyer et al. 2009), in conjunction with the CDFW *California Natural Community List* (CDFW 2023a). Updates to the MCV2 provided in the online database (CNPS 2023b) were taken into account. Vegetation communities or land cover types not described in the MCV2 were classified using conventional naming practices (i.e., developed) or were defined by the dominant species. Land covers were characterized in areas that are unvegetated or dominated by ornamental vegetation (e.g., disturbed/developed). The data collected in the field were subsequently transferred to Rincon's geographic information system (GIS) to produce report figures. The purpose of the field surveys was to document the existing biological conditions, including all plant and wildlife species, vegetation communities, land cover types, potentially suitable habitat for regionally occurring wildlife, and aquatic resources. A summary of the existing conditions of the BSA, as determined by the results of the desktop/database review and field surveys, is provided in this report.

Wildlife species were identified by direct observation, vocalization, or by sign (e.g., tracks, scat, burrows, etc.). The detection of plant and wildlife species was limited by seasonal and temporal factors. A list of species observed during the field reconnaissance survey is provided in Appendix D. Site photographs from the field reconnaissance surveys are provided in Appendix E.

2.4 Focused Surveys

2.4.1 Western Joshua Tree Census Survey

A western Joshua tree census survey was conducted by International Society of Arboriculture Certified Arborist and Rincon Biologist Kaitlyn Weaver (#WE-14623A) and Rincon Biologists Bryant Reynolds, Jacob Hargis, and Justin Purnell between November 13 to 17 and December 11 to 19, 2023 (Table 2). The census was conducted in accordance with CDFW's Western Joshua Tree Census Instructions (CDFW 2023b), in compliance with CFGC Section 1927.3, which requires a census of all western Joshua trees within the Project site and a 50-foot buffer, which equates to the BSA. All western Joshua trees within the BSA were recorded using a Geode GPS device capable of sub-meter accuracy. Trees were recorded by uniformly walking parallel survey transects across the BSA and routinely checking underneath shrubs and/or at the base of any burned trees, where applicable. Data collected for each individual tree included height class, health status (live or dead), maturity, phenophase (flowers/fruits), and representative photographs.

Table 2 Western Joshua Tree Census Surveys

Date	Personnel	Time	Weather Conditions
11/13/2023	B. Reynolds	9:00 a.m. – 4:00 p.m.	Winds 0-6 miles per hour, clear skies, no precipitation
11/14/2023	B. Reynolds	8:00 a.m. – 12:00 p.m.	Winds 0-7 miles per hour, clear skies, no precipitation
11/15/2023	B. Reynolds	8:00 a.m. – 4:00 p.m.	Winds 0-8 miles per hour, clear skies, no precipitation
11/16/2023	B. Reynolds	8:30 a.m. – 1:30 p.m.	Winds 0-7 miles per hour, cloudy, no precipitation
11/17/2023	B. Reynolds	8:00 a.m. – 4:00 p.m.	Winds 0-3 miles per hour, partly cloudy, no precipitation
12/11/2023	B. Reynolds, K. Weaver	8:00 a.m. – 12:00 p.m.	Winds 0-3 miles per hour, clear skies, no precipitation
12/12/2023	B. Reynolds, K. Weaver	8:30 a.m. – 4:00 p.m.	Winds 0-3 miles per hour, clear skies, no precipitation
12/13/2023	B. Reynolds, K. Weaver	8:00 a.m. – 4:00 p.m.	Winds 0-12 miles per hour, clear skies, no precipitation
12/14/2023	B. Reynolds, K. Weaver	8:00 a.m. – 4:00 p.m.	Winds 0-8 miles per hour, clear skies, no precipitation
12/15/2023	B. Reynolds, K. Weaver, J. Hargis, J. Purnell	7:30 a.m. – 4:30 p.m.	Winds 0-12 miles per hour, clear skies, no precipitation
12/19/2023	B. Reynolds, J. Hargis, J. Purnell	8:00 a.m. – 4:30 p.m.	Winds 0-8 miles per hour, overcast, trace of precipitation

2.4.2 Jurisdictional Delineation Survey

Rincon Biologists Kyle Gern and Casey Clark performed a field delineation between December 18, 2023 and January 2, 2024, and on May 2, 2024, as summarized in Table 3. Each section of the BSA was surveyed on foot where access was granted. A majority of the BSA was accessible on foot, with the exception of fenced private property immediately north of the California Aqueduct. For this area, biologists utilized binoculars, aerial interpretation, and the results of the literature review to characterize and map potentially jurisdictional waters. The BSA was surveyed for potential wetlands and non-wetland aquatic resources including streams and ephemeral drainages that might exhibit an ordinary high water mark (OHWM) and that might constitute waters of the U.S. and/or State. General site characteristics and vegetation, soils, and hydrology present on-site were noted. Current federal and State policies, methods, and guidelines were used to identify and delineate potential jurisdictional waters and are described in the Jurisdictional Delineation Report prepared for the Project (Rincon 2024). For a more detailed description of the applicable jurisdictional waters regulations, refer to Appendix B and the Jurisdictional Delineation Report (Rincon 2024). Representative site photographs were taken throughout the BSA and are included in the Jurisdictional Delineation Report (Rincon 2024).

Table 3 Field Delineation Surveys

Survey Date	Personnel	Location
12/18/2023	C. Clark, K. Gern	Southern Extent of BSA
12/19/2023	C. Clark, K. Gern	Southern/Central Extent of BSA
12/20/2023	C. Clark, K. Gern	Central Extent of BSA
12/21/2023	C. Clark, K. Gern	Northern Extent of BSA
01/02/2024	C. Clark, K. Gern	Northern Extent of BSA
05/02/2024	K. Gern	Central Extent of BSA

2.5 Impact Evaluation

Direct impacts are generally those that occur during implementation of a project and at the same time and location as the cause of the impact. Direct impacts can include injury, death, and/or harassment of special status wildlife species, if present in the work areas or vicinity. Direct impacts can also include the destruction of vegetation communities necessary for special status species breeding, feeding, or sheltering. Direct impacts to plants can include crushing of plants, bulbs, or seeds where present in the impact areas.

Indirect impacts are those that are reasonably foreseeable and caused by a project but occur later in time and/or potentially at locations of some distance from the source of the impact. If a direct physical change in the environment in turn causes another change in the environment, then the subsequent change is considered an indirect impact. Examples of indirect impacts include soil compaction that prevents wildlife from digging burrows or allows weedy plant species to thrive following project completion; dust that drifts outside of project disturbance areas and covers native plants, thereby decreasing their photosynthetic capacity; and unintentional introduction of invasive species (particularly weedy plant species that outcompete native plant species) that over time negatively affect the local ecology.

Permanent impacts are those that result in the long-term or irreversible loss of biological resources. For example, construction of a new electrical substation that would result in a large, developed, and fenced property where native vegetation may have existed before would be a permanent impact.

Temporary impacts to biological resources are those that are reversible over time, with or without implementation of mitigation measures. Examples include the generation of fugitive dust and noise during project implementation, trimming or crushing vegetation that will regrow following project completion, and the removal of vegetation that will be actively restored. These temporary impacts are anticipated to last during project implementation and shortly thereafter. However, the biological resources are anticipated to return to baseline after project completion.

3 Existing Conditions

3.1 Topography, Land Use, and Climate

The BSA is comprised of a combination of undulating and hilly landscape in the southern portion (south of Mt. Emma Road) and a relatively flat landscape in the northern portion. The San Gabriel Mountains lie to the south of the BSA, and the southern portion of the BSA is located in the foothills of this mountain range. Elevations range from approximately 3,100 to 3,200 feet (945 to 975 meters) amsl in the southern portion of the BSA and gradually decline to 2,815 feet (858 meters) amsl as the Ditch meanders northwest to Lake Palmdale. Land use within the BSA is predominantly open space; land uses in the surrounding vicinity of the BSA include rural residential, recreational areas, open space, and water infrastructure such as the California Aqueduct and Lake Palmdale. Weather during the field surveys was typical for the time of year (USDA, NRCS 2024c). According to the National Oceanic Atmospheric Administration's (NOAA) National Weather Service (NWS), average annual temperatures in the Palmdale area in 2023 ranged between 44 and 86 degrees Fahrenheit, with the warmest temperatures occurring between July and August and the coldest temperatures occurring between January and February (NOAA, NWS 2024). Palmdale receives an average rainfall of approximately 5.27 inches, with the most rain occurring between December and March (NOAA, NWS 2024).

3.2 Watersheds and Drainages

The southern portion of the BSA near Little Rock Wash is located within the Little Rock Wash watershed (Hydrologic Unit Code [HUC] 1809020611), and the northern portion of the BSA near the California Aqueduct and Lake Palmdale is within the Lake Palmdale-Piute Ponds watershed (HUC 1809020615) (USGS 2024b). Littlerock Creek originates in the upper slopes of the San Gabriel Mountains to the southeast of the BSA and flows into Littlerock Reservoir where the creek is dammed. South of the Littlerock Reservoir, Littlerock Creek turns into Little Rock Wash, which flows adjacent to the Ditch in the BSA near Cheseboro Road. The USGS National Hydrography Dataset (NHD) maps Little Rock Wash as an intermittent stream in the BSA (USGS 2024b), and the USFWS National Wetlands Inventory (NWI) maps Little Rock Wash as a palustrine freshwater forested/shrub wetland (PFOA) and riverine intermittent streambed (RS4BC) in the BSA (USFWS 2024c).

The above-ground portion of the Ditch, which is the main subject of this report, begins approximately 0.3 mile north of the Littlerock Reservoir where surface flows are supplied and meanders in a northwesterly direction to its terminus at Lake Palmdale. The Ditch is mapped as a canal/ditch by the NHD (USGS 2024b) and as a riverine, intermittent streambed that is seasonally flooded and excavated (RS4BCx) by the NWI (USFWS 2024c). Lake Palmdale is mapped as a lake/pond by the NHD (USGS 2024b) and as a lacustrine, limnetic, diked/impounded lake with an unconsolidated bottom (L1UBHh) by the NWI (USFWS 2024c).

Lake Palmdale covers approximately 234 acres and receives a majority of its water input from the Ditch (USFWS 2024c; USGS 2024b). Lake Palmdale is a manmade lake originally constructed for water supply and storage and currently also receives water deliveries from the California State Water Project operated by DWR. Although Lake Palmdale does not have a downstream surface connection with the lower Antelope Valley watershed (i.e., isolated), past approved jurisdictional determinations (SPL-2004-00063-AOA, SPL-2004-00073-KW, 2009-00634-PHT) have demonstrated a

potential nexus to commerce (i.e., water) through navigation and surface water-related recreation (i.e., boating) (United States Army Corps of Engineers [USACE] 2013); therefore, Lake Palmdale is considered to be a Traditional Navigable Water (TNW).

The California Aqueduct, which crosses the central portion of the BSA, is mapped as a canal/ditch by the NHD (USGS 2024b), and as a riverine, lower perennial, excavated drainage with an unconsolidated bottom (R2UBHx) by the NWI (USFWS 2024c).

In addition to the Ditch, Lake Palmdale, Little Rock Wash, and the California Aqueduct, multiple unnamed ephemeral drainages are mapped by the NWI and NHD in the BSA, and multiple freshwater emergent wetlands are mapped by the NWI in the BSA (USGS 2024b, USFWS 2024c). The mapping presented in the NHD and NWI provide useful context but are not a completely accurate depiction of current conditions or extent of aquatic features in the BSA (Rincon 2024).

3.3 Soils

According to the USDA, NRCS Web Soil Survey of the ANF Area and Antelope Valley Area, California, 16 soil map units are mapped within the BSA, which are summarized in Table 4 and presented in Figure 3a through Figure 3i in Appendix A (USDA, NRCS 2024a). Eight soil map units are included on the National Hydric Soils List (USDA, NRCS 2024b), as indicated in Table 4.

Table 4 Soils Mapped in the BSA

Soil Map Units	Hydric Soil?[1]	Acres
Amargosa rocky coarse sandy loam, 9 to 55 percent slopes, eroded	No	12.75
Chino loam	Yes	20.68
Gaviota rocky sandy loam, 15 to 30 percent slopes, eroded	Yes	8.96
Gaviota rocky sandy loam, 30 to 50 percent slopes, eroded	Yes	5.05
Greenfield sandy loam, 2 to 9 percent slopes	Yes	18.51
Greenfield sandy loam, 9 to 15 percent slopes, eroded	Yes	24.82
Hanford coarse sandy loam, 2 to 9 percent slopes	No	39.57
Hanford sandy loam, 2 to 9 percent slopes	No	33.13
Las Posas-Toomes rocky loams, 30 to 50 percent slopes	Yes	1.86
Ramona gravelly sandy loam, 2 to 9 percent slopes	No	11.80
Ramona gravelly sandy loam, 9 to 30 percent slopes	Yes	168.16
Riverwash	Yes	27.74
Terrace escarpments	No	3.53
Trigo family, dry-Lithic Xerorthents, warm complex, 50 to 80 percent slopes	No	12.47
Water	No	0.09
Wyman gravelly loam, 2 to 9 percent slopes	No	10.35

[1] Soils listed on the National Hydric Soils List (USDA, NRCS 2024b).

3.4 Vegetation Communities and Other Land Cover

Rincon biologists mapped 23 natural vegetation communities (alliances and associations), two semi-natural communities, and five land cover types within the BSA, as summarized in Table 5 and presented in Figure 4a to Figure 4l in Appendix A. Descriptions of vegetation communities and other land cover types are provided below. Included in the description of each association is the Global and State conservation status ranking. Communities dominated by non-native species are considered semi-natural alliances and have no Global and State rankings (ranking denoted as GNA SNA). A list of all plant species observed during the November to December 2023 field surveys is provided in Appendix D.

Table 5 Summary of Vegetation and Land Cover Types in the BSA[1]

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank
Natural Communities		
Arroyo Willow Thickets Shrubland Alliance	–	G4S4
Arroyo Willow Thickets Shrubland Association	**<0.01**	**G4S4**
Baltic and Mexican Rush Marshes Herbaceous Alliance	–	G5S4
Baltic Rush Marshes Herbaceous Association	1.81	Unranked
Big Sagebrush Scrub Shrubland Alliance	–	G5S5
Big Sagebrush Scrub Shrubland Association	50.79	G5S5
Big Sagebrush – California Buckwheat Scrub Shrubland Association	0.47	Unranked
Big Sagebrush – Rubber Rabbitbrush Scrub Shrubland Association	33.74	Unranked
Brittle Bush Scrub Shrubland Alliance	–	G5S4
Brittle Bush Scrub Shrubland Association	8.20	G5S4
California Buckwheat Scrub Shrubland Alliance	–	G5S5
California Buckwheat Scrub Shrubland Association	27.70	G5S5
California Buckwheat – Brittle Bush Scrub Shrubland Association	11.95	Unranked
California Juniper Woodland Alliance	–	G4S4
California Juniper Woodland/California Buckwheat – California Sage Scrub Association	139.34	Unranked
California Juniper Woodland/California Buckwheat – California Sage Scrub Association (Disturbed)	1.77	Unranked
California Sycamore Woodland Alliance	–	**G3S3**
California Sycamore – Red Willow/Arroyo Willow – Mulefat Scrub Association	**6.10**	**G3S3**
Cattail Marshes Herbaceous Alliance	–	G5S5
Cattail Marshes Herbaceous Association	0.22	Unranked
Creosote Bush Scrub Shrubland Alliance	–	G5S5
Creosote Bush Scrub Shrubland Association	2.51	G5S5
Fiddleneck – Phacelia Fields Herbaceous Alliance	–	G5S5
Fiddleneck Fields Herbaceous Association	0.25	G4S4
Fourwing Saltbush Scrub Shrubland Alliance	–	G5S4
Fourwing Saltbush Scrub Shrubland Association	1.40	G5

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank
Fremont Cottonwood Forest and Woodland Alliance	–	**G4S3**
Fremont Cottonwood Woodland Association	**7.87**	**G2Q**
Goodding's Willow – Red Willow Riparian Woodland and Forest Alliance	–	**G4S3**
Goodding's Willow – Red Willow Riparian Woodland Association	**1.61**	**GNR**
Joshua Tree Woodland Alliance	–	**G4S3**
Western Joshua Tree/California Juniper/Nevada Ephedra Woodland Association	**7.20**	**G3S3**
Mulefat Thickets Shrubland Alliance	–	G5S4
Mulefat Thickets Shrubland Association	0.23	G5S5
Nevada Joint-Fir – Anderson's Boxthorn – Spiny Hop Sage Scrub Shrubland Alliance	–	G5S3S4
Nevada Joint-Fir – Anderson Boxthorn Shrubland Association	0.44	Unranked
Rubber Rabbitbrush Scrub Shrubland Alliance	–	G5S5
Rubber Rabbitbrush Scrub Shrubland Association	34.51	G5S5
Sandbar Willow Thickets Shrubland Alliance	–	G5S4
Sandbar Willow/Mesic Graminoids Thickets Shrubland Association	0.12	Unranked
Tucker Oak Chaparral Shrubland Alliance	–	G4S4
Tucker Oak Chaparral Shrubland Association	0.26	G4S4
Semi-Natural Communities		
Red Brome or Mediterranean Grass Grasslands Herbaceous Semi-Natural Alliance	–	GNASNA
Red Brome Grassland Herbaceous Semi-Natural Association	0.04	GNASNA
Tournefort's Mustard and Other Ruderal Desert Forb Patches Provisional Herbaceous Semi-Natural Alliance	–	GNR
Tournefort's Mustard Patches Herbaceous Semi-Natural Association	0.04	GNASNA
Other Land Cover		
Developed/Disturbed	52.46	N/A
Non-Native Woodland	0.25	N/A
Open Water	2.99	N/A
Palmdale Ditch	5.10	N/A
Riverwash	0.11	N/A
Total	**399.49**	**N/A**

[1] Vegetation community ranks are sourced from CDFW (2023a). Associations are indicated in *italics*. CDFW sensitive natural communities are indicated in **bold**.

[2] Acreages are rounded from GIS calculations

G2 – Imperiled. At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

G3 – Vulnerable. At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

G4 – Apparently Secure. At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

G5 – Secure. At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.

Q – Questionable taxonomy that may reduce conservation priority.

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank

GNA SNA – Not applicable; community is not a suitable target for conservation.

GNR -- Unranked — Global rank not yet assessed.

S3 – Vulnerable. At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 – Apparently Secure. At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 – Secure. At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

N/A – Not a vegetation community

3.4.1 Natural Vegetation Communities

Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance)

Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance) commonly occur along stream banks and benches, slope seeps, and drainages between sea level and 7,120 feet (2,170 meters) amsl (Sawyer et al. 2009). This native vegetation community is characterized by arroyo willow (*Salix lasiolepis*) dominant in the shrub canopy (greater than 50 percent relative cover). In the BSA, the alliance is represented by a single association, described below.

Arroyo Willow Thickets (Salix lasiolepis Shrubland Association)

In the BSA, this community covers less than 0.01 acre. The community occurs in a small cluster along the Ditch near an underground culvert, east of Cheseboro Road in the southern extent of the BSA. This area is surrounded by rubber rabbitbrush scrub (*Ericameria nauseosa* Shrubland Alliance) and adjacent mulefat (*Baccharis salicifolia*) thickets. This vegetation community (ranked G4S4) is a CDFW sensitive natural community (CDFW 2023a).

Baltic and Mexican Rush Marshes (*Juncus balticus, mexicanus* Herbaceous Alliance)

This alliance is defined by the dominance of Baltic rush (*Juncus balticus*) or Mexican rush (*Juncus mexicanus*) in the herbaceous layer. It is typically found in seasonally saturated soils on flats, depressions, or gentle slopes including in stock ponds, minor depressions, wet meadows, and seeps near the coast or farther inland, between sea level and 5,249 feet (1,600 meters), where soils are clayey or silty alluvium. Emergent shrubs, including mulefat and California blackberry (*Rubus ursinus*), may be present at low cover.

Baltic Rush Marshes (Juncus balticus Herbaceous Association)

In the BSA, this association covers approximately 1.81 acres. The association was observed within small wetland seep areas, drainages adjacent to the Ditch, and in habitat occurring between the California Aqueduct and Sierra Highway. Baltic rush was dominant in the herbaceous layer, with clustered field sedge (*Carex praegracilis*), other emergent facultative vegetation, and willow (*Salix* spp.) trees at low cover. The association is surrounded by rubber rabbitbrush (*Ericameria nauseosa*), big sagebrush scrub (*Artemisia tridentata* Shrubland Alliance), and California juniper woodland (*Juniperus californica* Woodland Alliance). This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Big Sagebrush Scrub (*Artemisia tridentata* Shrubland Alliance)

Big sagebrush scrub (*Artemisia tridentata* Shrubland Alliance) is typically found within plains, alluvial fans, bajadas, pediments, lower slopes, valley bottoms, hills, ridges, seasonal and perennial stream channels, and dry washes between 984 and 9,840 feet (30 to 3,000 meters) amsl. Big sagebrush (*Artemisia tridentata*) constitutes at least two percent absolute cover in the shrub layer with no other single species with greater cover. Vegetation reaches approximately 6.5 feet (two meters) in height. The alliance forms large, continuous stands on mid-elevation mountain slopes and foothills. Locations are variable and range from flats to steep slopes to ridgetops with deep to shallow rocky soil (Sawyer et al. 2009). In the BSA, the alliance is represented by three associations, described below.

Big Sagebrush Scrub (Artemisia tridentata Shrubland Association)

In the BSA, this is a common association covering approximately 50.79 acres. It is found along the edges of the Ditch throughout the BSA , but increasingly evident from Pearblossom Highway towards Littlerock Reservoir.

Big sagebrush was dominant in the shrub layer, with a diverse array of upland scrub species comprised of rubber rabbitbrush, California buckwheat (*Erioginum fasciculatum*), hairy yerba santa (*Eriodictyon trichocalyx*), brittle bush (*Encelia farinosa),* wild tarragon (*Artemisia dracunculus)*, Nevada ephedra (*Ephedra nevadensis*) and chaparral yucca (*Hesperoyucca whipplei*), with emergent California junipers (*Juniperus californica*) and western Joshua trees and understories of herbaceous species such as fiddlenecks (*Amsinckia* spp*.)* and nonnative annual grasses and forbs such as bromes (*Bromus* spp.) and mustards *(Brassica* spp.). Approximately 0.13 acre of disturbed big sagebrush scrub occurs within the BSA along the east edge of the southernmost extent of the Ditch.

Throughout the BSA, the big sagebrush scrub shrubland association is crossed by several unpaved off-highway vehicle (OHV) and dirt bike trails. This vegetation community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023a).

Big Sagebrush – California Buckwheat Scrub (Artemisia tridentata - Eriogonum fasciculatum Shrubland Association)

In the BSA, this association covers approximately 0.47 acre. It is located along the Ditch and surrounded by dense California juniper woodland between Mt. Emma Road and 47th Street East. Big sagebrush and California buckwheat are dominant in the shrub layer with emergent western Joshua trees and chapparal yucca. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Big Sagebrush – Rubber Rabbitbrush Scrub (Artemisia tridentata – Ericameria nauseosa Shrubland Association)

In the BSA, this association covers approximately 33.74 acres. Big sagebrush and rubber rabbitbrush were co-dominant in the shrub layer with associative species including California buckwheat, saltbush (*Atriplex* spp.), and prince's plume (*Stanleya pinnata*). Emergent western Joshua trees and California junipers occurred throughout this association. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Brittle Bush Scrub (*Encelia farinosa* Shrubland Alliance)

Brittle bush scrub (*Encelia farinosa* Shrubland Alliance) is typically found on alluvial fans, bajadas, colluvium, rocky hillsides, and slopes of small washes and rills. Soils are well drained, rocky, and may be covered by desert pavement. This alliance is generally found between 246 and 4,594 feet (74 to 1,400 meters) amsl. Brittle bush scrub is characterized by an open to intermittent shrub canopy and a seasonal herbaceous layer. Brittle bush (*Encelia farinosa*) has over one percent absolute cover and 30 percent relative cover in the shrub layer (Sawyer et al. 2009). In the BSA, the alliance is represented by a single association, described below.

Brittle Bush Scrub (Encelia farinosa Shrubland Association)

In the BSA, this association covers approximately 8.20 acres and was identified in seven locations, occurring primarily on north-facing foothill slopes in the southern extent of the BSA. Brittle bush was dominant in the shrub layer, with Nevada ephedra and California buckwheat present in the shrub layer at lower cover. Patches of Acton brittlebush (*Encelia actonii*) were also present. The dense herbaceous layer consisted of fiddlenecks, bromes, and mustards. This vegetation community is ranked G5S4 and is not a CDFW sensitive natural community (CDFW 2023a).

California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)

California buckwheat scrub (*Eriogonum fasciculatum* Shrubland Alliance) is characterized by dominant or codominant California buckwheat in cismontane stands. California buckwheat scrub is found in upland slopes; intermittently-flooded arroyos, channels and washes; and rarely-flooded low-gradient deposits. Elevations range from sea level to 3,937 feet (1,200 meters) amsl. Soils are typically coarse, well-drained, and moderately acidic to slightly saline. California buckwheat contributes to at least 50 percent relative cover in the shrub layer (Sawyer et al. 2009). This alliance is represented by two associations in the BSA, described below.

California Buckwheat Scrub (Eriogonum fasciculatum Shrubland Association)

In the BSA, this association covers approximately 27.70 acres. It is mainly found along the north-facing slopes of the foothills in the southern extent of the BSA from Littlerock Reservoir and Cheseboro Road to Mt. Emma Road, but is distributed throughout the mosaic of upland shrubland communities and associations. California buckwheat scrub was dominant in the shrub layer with Nevada ephedra, brittle bush, narrow leaf goldenbush (*Ericameria linearifolia*), and paperbag bush (*Scutellaria mexicana*; also known as bladder sage) with emergent Stansbury cliffrose (*Purshia mexicana*), California juniper, chollas (*Cholla* spp.), chapparal yucca, and western Joshua trees present at low cover. Non-native grasses and bromes were observed within the herbaceous cover. This community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023a).

California Buckwheat – Brittle Bush Scrub (Eriogonum fasciculatum – Encelia farinosa Shrubland Association)

In the BSA, this association covers approximately 11.95 acres. This community is found in dense stands occurring along the north-facing slopes of the foothills in the southern extent of the BSA as it transitions to a more California buckwheat-dominant community leading up to Mt. Emma Road. California buckwheat and brittle bush were codominant in the shrub layer, with common species such as Nevada ephedra, paperbag bush (also known as bladder sage), and snakeweed (*Gutierrezia sarothraei*), and emergent chapparal yucca, California juniper, and western Joshua trees. California aster (*Corethrogyne filaginifolia*), wild chia (*Salvia columbariae*), fiddlenecks, and cheatgrass

(*Bromus tectorum)* were found within the herbaceous cover. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

California Juniper Woodland (*Juniperus californica* Woodland Alliance)

California juniper woodland is characterized by dominant or codominant California juniper in the tree canopy with greater than one percent absolute cover and no other tree species with equal or exceeding cover. California juniper woodland is found on ridges, slopes, valleys, alluvial fans, and valley bottoms. Soils are porous, rocky, coarse, sandy, or silty, and are often very shallow and at elevations from 1,969 to 8,038 feet (600 to 2,450 meters) amsl (Sawyer et al. 2009). This alliance is represented by two associations in the BSA, described below.

California Juniper Woodland/California Buckwheat – California Sage Scrub (Juniperus californica/Eriogonum fasciculatum – Artemisia californica Woodland Association)

In the BSA, this association is the most common, covering approximately 139.34 acres. It is located throughout the BSA, primarily from Mt. Emma Road to the community of Alpine. California juniper, California buckwheat, and big sagebrush were commonly found within the woodland community. Additional upland scrub communities such as rubber rabbitbrush scrub, big sagebrush scrub, and California buckwheat scrub as well as emergent western Joshua trees integrate within this community. A diverse suite of additional associated scrub and chaparral species occur within dense patches of woodland or along the Ditch: chapparal yucca, silver cholla (*Cylindropuntia echinocarpa*), buckwheats (including flat topped buckwheat [*Eriogonum deflexum*] and Wright's buckwheat [*Eriogonum wrightii*]), narrow leaf goldenbush, Stansbury's cliffrose (*Purshia mexicana*), paperbag bush (also known as bladder sage), Nevada ephedra, deerweed (*Acmispon glaber*), boxthorn (*Lycium* spp.), and beavertail cactus (*Opuntia basilaris)*. Emergent western Joshua trees occur throughout this association. Homogeneous patches of narrow leaf goldenbush, yucca spp., and California buckwheat were observed within the north-facing slopes of dense stands of California juniper woodland that occur from Pearblossom Highway to Sierra Highway. This community contained small patches of homogenous narrow leaf goldenbush, which was also a common understory shrub found within the community.

Washy areas with adjacent drainages within the association provide habitat and soil conditions for species such as panicled willowherb (*Epilobium brachycarpum*), California aster (*Symphyotrichum chilense*), and red triangle (*Centrostegia thurberi*), among many others. Bromes, mustards, and fiddlenecks are present within the variable herbaceous layer. Throughout the BSA, California juniper woodland is crossed by several unpaved OHV and dirt bike trails and has illegal dumping and trash piles near public access roads and where OHV roads intersect the association. This community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Disturbed California Juniper Woodland/California Buckwheat – California Sage Scrub (Juniperus californica/Eriogonum fasciculatum – Artemisia californica Woodland Association)

In the BSA, this association covers approximately 1.77 acres. It is located in two isolated areas, one north of Barrel Springs Road near a residential area and one approximately 1,500 feet north of Mt. Emma Road and approximately 800 feet west of Cheseboro Road. Evidence of previous fires, trash dumping, and illegal settlements were evident and contributed to the disturbed nature of this

community. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

California Sycamore Woodland (*Platanus racemosa* Woodland Alliance)

California sycamore woodland alliance is typically found in gullies, intermittent and low-elevation streams, springs, seeps, stream banks, and terraces adjacent to floodplains that are subject to high-intensity flooding and consist of rocky or cobbly alluvium with permanent moisture at depth. Elevations range between 2 and 7,874 feet (1 to 2,400 meters) amsl. California sycamores (*Platanus racemosa*) are dominant or codominant in the tree layer with greater than 30 percent relative cover with coast live oak (*Quercus agrifolia*), willows, or cottonwoods (*Populus* spp.) in a riparian woodland setting. The shrub layer is open to intermittent with the herbaceous layer sparse or grassy (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

California Sycamore – Red Willow/Arroyo Willow – Mulefat Scrub (Platanus racemosa – Salix laevigata/Salix lasiolepis – Baccharis salicifolia Association)

In the BSA, this association covers approximately 6.10 acres. It is located in the southeastern portion of the BSA, west of Littlerock Reservoir and east of the southern terminus of the Ditch. Dense canopies of California sycamore, willows, mulefat thickets, and Fremont cottonwood (*Populus fremontii*) occur within the riparian corridor. Upland scrub communities dominated by rubber rabbitbrush, big sagebrush, and California buckwheat occur in the understory along the rocky and cobbly creek bed riparian woodland community. This vegetation community is ranked G3S3 and is a CDFW sensitive natural community (CDFW 2023a).

Cattail Marshes (*Typha* [*angustifolia, domingensis, latifolia*] Herbaceous Alliance)

This herbaceous alliance is found in semi-permanently flooded freshwater or brackish marshes with clayey or silty soils from sea level to 1,150 feet (350 meters) amsl. The community is dominated by cattails (*Typha* spp*.),* with one or more cattail species having over 50 percent cover in the herbaceous layer (Sawyer et al. 2009). This community is represented by a single association, described below.

Cattail Marshes (Typha [latifolia, angustifolia] Herbaceous Association)

This association covers approximately 0.22 acre and occurs in dispersed areas throughout the BSA within the California sycamore woodland habitat along the eastern side of the southernmost extent of the Ditch and along the outfall of the Ditch along the banks of Lake Palmdale. The dominant species in this area was narrowleaf cattail (*Typha domingensis*). This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance)

This alliance is typically found in alluvial fans, bajadas, upland slopes, and minor intermittent washes between -250 and 4,265 feet (-76 to 1300 meters) amsl. Soils are well-drained, sometimes with desert pavement. This vegetation community contains an intermittent to open shrub canopy dominated by creosote bush (*Larrea tridentata*) with an open to intermittent herbaceous layer with seasonal annuals or perennial grasses (Sawyer et al. 2009). This alliance type is represented by a single association in the BSA, described below.

Creosote Bush Scrub (Larrea tridentata Shrubland Association)

In the BSA, creosote bush scrub association covers approximately 2.51 acres. It is located north along Barrel Springs Road between 42nd Street East and 40th Street East. Disturbed creosote bush scrub was observed in a single location in the BSA and covers approximately 0.29 acre. This disturbed community is located north along Barrel Springs Road between disturbed and developed housing areas. Creosote bush scrub is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023a).

Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii, tessellata*] – *Phacelia* spp. Herbaceous Alliance)

This alliance is found on upland slopes, broad valleys, ocean bluffs, grazed or recently burned hills, and fallow fields, between sea level and 4,921 feet (1,500 meters) amsl, where soils are well drained and loamy, and they are often subject to high levels of bioturbation. It is defined by the dominance or co-dominance of fiddleneck or phacelia species (*Phacelia* spp.) with other grassland or forb species and low emergent shrub cover. This alliance is represented by a single association in the BSA, described below.

Fiddleneck Fields (Amsinckia [menziesii, tessellata] Herbaceous Association)

In the BSA, this association covers approximately 0.25 acre within an open, previously disturbed or cleared parcel, located north of Edison Road. It is comprised of fiddleneck, California buckwheat, and an herbaceous cover of non-native grasses. This association is ranked G4S4 and is not a CDFW sensitive natural community (CDFW 2023a).

Fourwing Saltbush Scrub (*Atriplex canescens* Shrubland Alliance)

Fourwing saltbush scrub (*Atriplex canescens* Shrubland Alliance) is typically found on playas, old beaches and shores, lake deposits, dissected alluvial fans, rolling hills or channel beds at elevations between -246 and 4,921 feet (-75 to 1,500 meters) amsl. Soils are generally carbonate rich, alkaline, sandy, or sandy clay loams. Fourwing saltbush scrub is characterized by an open to intermittent shrub canopy and a variable herbaceous layer composed of seasonal herbs and non-native grasses. Fourwing saltbush (*Atriplex canescens*) has over two percent absolute cover and over 50 percent relative cover in the shrub layer (Sawyer et al 2009).

Fourwing Saltbush Scrub (Atriplex canescens Shrubland Association)

In the BSA, this association covers approximately 1.40 acres. It is located just south of Mt. Emma Road where the Ditch undergrounds. Fourwing saltbush is dominant in the shrub layer with big sagebrush, rubber rabbitbrush, with the invasive grass cheatgrass present in the herbaceous layer. Disturbed fourwing saltbush scrub covers approximately 0.81 acre; it occurs between residential development and appears to have been disturbed from development and maintenance associated with Barrel Springs Road. This community is adjacent to off-road activity and disturbances associated with OHV travel just south of Mt. Emma Road where the Ditch undergrounds. This association is ranked G5 and is not a CDFW sensitive natural community (CDFW 2023a).

Fremont Cottonwood Forest and Woodland (*Populus fremontii* Forest and Woodland Alliance)

This alliance can be found on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, springs, in canyons, alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year. It may be found between sea level and 7,974 feet (2,400 meters) amsl in elevation. The tree canopy is typically continuous to open, the shrub layer intermittent to open, and the herbaceous layer variable. This community is characterized by Fremont cottonwood with at least five percent absolute cover or at least 50 percent relative cover in the tree canopy. Fremont cottonwood may have as low as 30 percent relative cover in the tree canopy when other riparian trees such as willows, walnuts (*Juglans* spp.) or box elder (*Acer negundo*) are present. This alliance is represented by a single association in the BSA, described below.

Fremont Cottonwood Woodland (Populus fremontii Woodland Association)

In the BSA, this association covers approximately 7.87 acres. Dominated by Fremont cottonwood trees, this community consists of groves or clusters of large trees along or adjacent to the Ditch, with some occurring in small drainages or in larger, seasonally-flooded or ponded areas such as the community that occurs south of Barrel Springs Road, between 40th Street East and 42nd Street East, and at the Ditch outfall near Lake Palmdale. These communities are surrounded by upland scrub and shrub vegetation, including California juniper woodlands occurring along the Ditch. Individual trees, including both young and mature cottonwoods, occur along the Ditch. Individual trees were not mapped as part of the reconnaissance survey. This association is ranked G2Q and is a CDFW sensitive natural community (CDFW 2023a).

Goodding's Willow – Red Willow Riparian Woodland and Forest (*Salix gooddingii – Salix laevigata* Woodland and Forest Alliance)

The Goodding's willow – red willow riparian woodland and forest community is typically found on terraces along large rivers, in canyons, or along the floodplains of streams, seeps, springs, ditches, lakes, or low-gradient depositions between sea level and 6,562 feet (2,000 meters) amsl in elevation. This alliance is characterized by an open to continuous tree canopy, a sparse to continuous shrub layer, and a variable herbaceous layer. Goodding's willow (*Salix gooddingii*) and/or red willow (*Salix laevigata*) are dominant in the tree canopy with over 50 percent relative cover in the tree canopy, or with over 30 percent relative cover when other willows are present. This alliance is represented by a single association in the BSA, described below.

Goodding's Willow – Red Willow Riparian Woodland (Salix gooddingii – Salix laevigata Woodland Association)

In the BSA, this association covers 1.61 acres. The community is found in four locations associated with adjacent small drainages and wetland meadows or seasonally-flooded areas within California juniper woodland and big sagebrush habitats. Goodding's willow and red willow are co-dominant in small thickets or large, canopied trees consisting of mostly mature Goodding's willow. A relatively small, isolated willow thicket occurs along a saturated drainage surrounded by dense California juniper woodland. This small stand was comprised of both red and Goodding's willows with sedges, rushes (*Juncus* spp.) and stinging nettle (*Urtica dioica*). These stands occur between Mt. Emma Road and 47th Street East, between Barrel Springs Road and the California Aqueduct, and between Pearblossom Highway and Sierra Highway. The stands were not immediately adjacent to the Ditch.

This vegetation community is ranked GNR and is a CDFW sensitive natural community (CDFW 2023a).

Joshua Tree Woodland (*Yucca brevifolia* Woodland Alliance)

Joshua tree woodlands (*Yucca brevifolia* Woodland Alliance) are found on sandy, well-drained soils on desert mesas and slopes from the southern part of the Owens Valley to the Little San Bernardino Mountains and are also scattered in the Antelope Valley north of the San Gabriel and San Bernardino Mountains. These woodlands mostly occur at elevations between 2,460 and 5,906 feet (750 and 1600 meters) amsl (Sawyer et al. 2009). Joshua tree woodlands are defined by the presence of western Joshua tree evenly distributed at cover greater than or equal to one percent. The understory of Joshua tree woodland may be comprised of many types of desert scrub communities: Great Basin sagebrush communities, blackbrush scrub communities, saltbush scrub communities, and creosote bush scrub communities. In some areas, western Joshua trees are found to grow with chaparral species. Western Joshua trees are less than one percent cover on average across the entire BSA; however, one area within the BSA has a western Joshua tree density that exceeds one percent cover. The boundaries of the Joshua tree woodland in the BSA were approximated based on the greater-than-one-percent cover that defines the vegetation community. This alliance is represented by a single association in the BSA, described below.

Western Joshua Tree/California Juniper/Nevada Ephedra Woodland (Yucca brevifolia/Juniperus californica/Ephedra nevadensis Woodland Association)

In the BSA, this association covers approximately 7.20 acres and is found in one location along the Ditch, near the intersection of 47th Street East and Barrel Springs Road. Western Joshua tree was dominant in the tree stratum with mixed California junipers and a shrubby understory of big sagebrush, Nevada ephedra, narrow leaf goldenbush, and a suite of other shrub species that included sugarbush (*Rhus ovata*), buckwheat spp., rubber rabbitbrush, Anderson's boxthorn (*Lycium andersonii*), silver cholla, creosote bush, and Dorr's sage (*Salvia dorrii*). Herbaceous covers included bromes, mustards, cheatgrass, fiddlenecks, and redstem filaree (*Erodium cicutarium*). A washy area and a small natural drainage were noted in the western portion of this community, south of the Ditch along 47th Street East. This vegetation community is ranked G3S3 and is a CDFW sensitive natural community (CDFW 2023a).

Mulefat Thickets (*Baccharis salicifolia* Shrubland Alliance)

Mulefat thickets (*Baccharis salicifolia* Shrubland Alliance) are characterized by a moderately open shrub layer, dominated by mulefat where it contributes at least 50 percent relative cover in the shrub layer, or at least 30 percent relative cover in the shrub layer with blue elderberry (*Sambucus mexicana*). Mulefat thickets are typically found in canyon bottoms, floodplains, irrigation ditches, lake margins, and stream channels within mixed alluvial soils between sea level to 4,101 feet (1,250 meters) amsl in elevation (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

Mulefat Thickets (Baccharis salicifolia Shrubland Association)

In the BSA, this association covers approximately 0.23 acre and is found in four locations: two at the southern portion, north of Littlerock Reservoir, and two within a wetland area north of Mt. Emma Road and west of Cheseboro Road. Specifically, clusters of mulefat thickets were found within the California sycamore woodland habitat near Littlerock Reservoir, along an underground culvert off

Cheseboro Road, and within off-shooting wetland drainages within California juniper woodland habitat north of Edison Road. This association is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023a).

Nevada Joint-Fir – Anderson's boxthorn – Spiny Hop Sage Scrub (*Ephedra nevadensis – Lycium andersonii – Grayia spinosa* Shrubland Alliance)

Nevada ephedra may be found on dry, open slopes, on ridges, or on breaks with southern-exposed canyons, floodplains, and washes between 3,281 and 5,906 feet (1,000 to 1,800 meters) amsl in elevation. This alliance tends to prefer shallower alluvial soils that are well-drained, gravelly, or rocky. The alliance is characterized by shrubs less than six feet (two meters), open to intermittent canopy, and herbaceous layers open with seasonal annuals (Sawyer et. al. 2009). Nevada ephedra is dominant or co-dominant with greater than two percent absolute cover in the shrub layer. This alliance is represented by a single association in the BSA, described below.

Nevada Joint-Fir – Anderson's Box Thorn Scrub (Ephedra nevadensis – Lycium andersonii Shrubland Association)

In the BSA, this association occurs on a south-facing slope in the southeastern extent and covers approximately 0.44 acre. The association was dominated by Nevada ephedra, Anderson's boxthorn, buckwheat, and yuccas. Due to limited access in this area of the BSA, this vegetation community was observed from a distance with binoculars. Greater detail pertaining to the species composition or cover was not recorded. This association is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Rubber Rabbitbrush Scrub (*Ericameria nauseosa* Shrubland Alliance)

Rubber rabbitbrush scrub occurs in all topographic settings, and especially in disturbed settings. Soils are typically well-drained sands and gravels. This alliance is generally found between sea level and 10,500 feet (3,200 meters) amsl. Rubber rabbitbrush scrub is characterized by an open to intermittent shrub canopy and a sparse herbaceous layer. Rubber rabbitbrush has over two percent absolute cover or more than 25 percent relative cover in the shrub layer (Sawyer et al. 2009). In the BSA, this alliance is represented by a single association, defined below.

Rubber Rabbitbrush Scrub (Ericameria nauseosa Shrubland Association)

This association covers approximately 34.51 acres and is present throughout the BSA. Rubber rabbitbrush is dominant in the shrub layer with big sagebrush, California buckwheat, hairy yerba santa, brittle bush, wild tarragon, narrow leaf goldenbush, box thorn, and scattered emergent California juniper, Stansbury's cliffrose, and western Joshua trees. Fiddlenecks, cheatgrass, and bromes were present throughout the herbaceous understory. Disturbed rubber rabbitbrush occurs within the BSA and was observed near the outfall of the Ditch into Lake Palmdale. This vegetation community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023a).

Sandbar Willow Thickets (*Salix exigua* Shrubland Alliance)

Sandbar willow thickets are typically found on temporarily-flooded floodplains, deposits along rivers and streams, and at springs between sea level and 8,858 feet (2,700 meters) amsl in elevation. This community is characterized by an intermittent to continuous shrub layer and a variable herbaceous layer. Sandbar willow (*Salix exigua*) has at least 30 percent relative cover in the shrub layer. This alliance is represented by a single association in the BSA, described below.

Sandbar Willow/Mesic Graminoids Thickets (Salix exigua/Mesic graminoids Shrubland Association)

Within the BSA, this association covers approximately 0.12 acre. Scattered sprouts occur along the Ditch in wetland areas and near seeps. A small stand of sandbar willows occurs along the Ditch and is located just north of the California Aqueduct, partially within the Ditch and on DWR property. This association is unranked and is not a CDFW sensitive natural community (CDFW 2023a).

Tucker Oak Chaparral (*Quercus john-tuckeri* Shrubland Alliance)

This alliance is defined by the dominance of Tucker oak (*Quercus john-tuckeri*) in the shrub layer. It is found on upper slopes and ridge tops, between 984 and 4,921 feet (300 and 1,500 meters) amsl where soils are well- to extensively-drained over bedrock or colluvium. This alliance is represented by a single association in the BSA, described below.

Tucker Oak Chaparral (Quercus john-tuckeri Shrubland Association)

In the BSA, this association covers approximately 0.26 acre. A small population of Tucker oaks occurs approximately 0.3 mile west of the Littlerock Reservoir access gate in unincorporated Los Angeles County, south of a private access gate and northwest of the Ditch at the edge of the BSA. The area is sloped and west-facing, and the cluster of oak trees was surrounded by California buckwheat scrub, rubber rabbitbrush scrub, and emergent western Joshua trees. This vegetation community is ranked G4S4 and is not a CDFW sensitive natural community (CDFW 2023a); however, individual trees that meet certain size and spacing thresholds may be regulated by the Los Angeles County Oak Tree Ordinance (Los Angeles County Code of Ordinances Section 22.174 et seq.) and/or the County's Oak Woodlands Conservation Management Plan (County of Los Angeles 2011) and Woodlands Conservation Management Plan Guide (County of Los Angeles 2014), as discussed in Section 4.8.2*, Protected Trees and Vegetation*, below.

3.4.2 Semi-Natural Communities

Red Brome or Mediterranean Grass Grasslands (*Bromus rubens* Herbaceous Semi-Natural Alliance)

Red brome grassland (*Bromus rubens* Herbaceous Semi-Natural Alliance) may be found across various topography settings and soil textures, between sea level and 7,218 feet (2,200 meters) amsl in elevation. This herbaceous community contains open to continuous herbaceous cover with red brome (*Bromus rubens*) making up greater than 80 percent of the herbaceous layer, and emergent shrubs may be present at low cover (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

Red Brome Grasslands (Bromus rubens Herbaceous Semi-Natural Association)

This association covers approximately 0.04 acre along a small portion of the Ditch in the southern extent of the BSA. It is ranked GNASNA due to the predominance of non-native species and is not a CDFW sensitive natural community (CDFW 2023a).

Tournefort's Mustard and Other Ruderal Desert Forb Patches (*Brassica tournefortii – Strigosella [Malcolmia] africana* Provisional Herbaceous Semi-Natural Alliance)

This provisional alliance is dominated by Tournefort's mustard (*Brassica tournefortii*), African mustard (*Strigosella* [*Malcolmia*] *africana*), and/or London rocket (*Sisymbrium irio*). It is typically found in alluvial fans, roadsides, sand dunes, lake shorelines, and washes and in disturbed areas, at elevations between sea level and 3,937 feet (1,200 meters) amsl, where soils are sandy to clay loam. This alliance is represented by a single association in the BSA, described below.

Tournefort's Mustard Patches (Brassica tournefortii Herbaceous Semi-Natural Association)

In the BSA, this association covers approximately 0.04 acre in a disturbed area within a large stand of big sagebrush scrub. Disturbances were likely human-caused (e.g., equipment, offroad activity, dumping). This vegetation community is ranked GNASNA and is not a CDFW sensitive natural community (CDFW 2023a).

3.4.3 Other Land Cover

Developed/Disturbed

Developed areas consist of paved and unpaved substrates including roadways, parking areas, buildings, canals, and cultivated ornamental vegetation. Disturbed areas are largely unvegetated, except for cultivated vegetation irrigated and maintained by people as well as weedy species.

Unpaved roads and parking areas are present at the north end of the BSA near Lake Palmdale and near the intersection of Barrel Springs Road and Pearblossom Highway. All disturbed areas along roadways, OHV trails, and areas surrounding the Ditch that had been previously disturbed were mapped. Additional developed/disturbed areas include railroad tracks in the Alpine Springs community, residential developments in the Alpine Springs community and along Barrel Springs Road, lawns, buildings, and the banks/edges of the California Aqueduct. In the BSA, developed/disturbed land cover totals approximately 52.46 acres.

Non-native Woodland

Non-native woodland within the BSA consists of a small area near an abandoned structure southeast of the Littlerock Reservoir access gate in the ANF and covers approximately 0.25 acre. It is comprised of non-native trees such as Arizona cypress (*Hesperocyparis arizonica*), Aleppo pines (*Pinus halepensis*), and tamarisk (*Tamarix* spp.) with a sparse shrubby understory of California buckwheat, fiddlenecks, rubber rabbitbrush, and hairy yerba santa. One old, abandoned recreational structure and two concrete pits occur within this area. This vegetation community is not recognized as a community represented in the MCV2 (Sawyer et. al 2009).

Open Water

Open water occurs as part of Lake Palmdale where the Ditch outfalls into the lake. It contains patchy cattails along the banks and outfall with denser cattail and riparian woodland vegetation extending beyond the BSA. Several small, ponded areas also occur just east of Barrel Springs Road and the bollard access gate near 42nd Street, associated with an isolated patch of Fremont cottonwood

woodland and surrounding California junipers and upland vegetation. This land cover includes approximately 2.99 acres in the BSA.

Palmdale Ditch

The Ditch runs down the middle of the BSA from Littlerock Reservoir to Lake Palmdale. The BSA crosses paved roads at Mt. Emma Road, Cheseboro Road, 47th Steet East, Barrel Springs Road, 40th Street East, Pearblossom Highway, and Sierra Highway and through the unincorporated community of Alpine Springs. In the BSA, the Ditch comprises approximately 5.10 acres.

Riverwash

Riverwash is present within the active channel of Little Rock Wash, adjacent to dense California sycamore woodland habitat along the southeastern portion of the BSA, totaling approximately 0.11 acre. This land cover type consists of sand and cobble that has accumulated in the channels and low terraces in the riverbed. Little to no vegetation is present. Riverwash is a naturally dynamic landform and may shift and change position depending on flood volumes and regularity.

3.5 General Wildlife

The BSA contains habitat suitable for common and special status wildlife species. A range of ecotones provide foraging opportunities, vegetative cover, shelter, and habitat. Over 45 bird species (including four special status raptor species), five mammal species and two mammal signs (scat/tracks), two reptile species, and nine invertebrate species were observed during the field reconnaissance surveys. Bird species included California scrub-jay (*Aphelocoma californica)*; common raven (*Corvus corax*); ladder-backed woodpecker (*Dryobates scalaris*); California quail (*Callipepla californica*); red-winged blackbird (*Agelaius phoeniceus*); blue-gray gnatcatcher (*Polioptila caerulea*); bushtit (*Psaltriparus minimus*); waterfowl such as buffleheads (*Bucephala albeola*) and American coots (*Fulica americana*); and numerous raptors including great horned owl (*Bubo virginianus*), turkey vulture (*Cathartes aura*) and American kestrel (*Falco sparverius*). Other wildlife species observed included Great Basin fence lizard (*Sceloporus occidentalist lonipes*), common side-blotched lizard (*Uta stansburiana*), woodrat (*Neotoma* spp.) middens, California ground squirrel (*Otospermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), as well as domestic dogs (*Canis familiaris*) and cats (*Felis catus*).

Five special status wildlife species were observed within the BSA: Cooper's hawk (*Accipiter cooperii*; CDFW WL), sharp-shinned hawk (*Accipiter striatus*; CDFW WL), northern harrier (*Circus hudsonius*; CDFW SSC), merlin (*Falco columbarius*; CDFW WL) and monarch butterfly (*Danaus plexippus*; Federal Candidate). These species are further discussed in Section 4, *Regulated Biological Resources*.

A complete list of all the plant and wildlife species observed in the BSA during the biological field reconnaissance surveys is presented as Appendix D.

3.6 Nesting Birds

The BSA contains suitable habitat to support a variety of nesting birds, including raptors protected under the CFGC Sections 3503, 3503.5, and 3513 and the MBTA (16 United States Code Sections 703 to 712). Potential nesting locations for native birds were observed throughout the BSA within a variety of habitats including desert scrub, shrubland, Joshua tree woodland, riparian, and oaks, as

well as powerlines and other nesting structures. Several old nests were observed during the field surveys; however, specific nesting bird surveys were not conducted as part of the field reconnaissance surveys because the surveys were conducted outside of the nesting season (generally February 1 through August 31).

4 Regulated Biological Resources

This section discusses special status species and other regulated biological resources observed in the BSA during the field reconnaissance surveys and evaluates the potential for the BSA to support additional regulated biological resources.

4.1 Special Status Species

4.1.1 Special Status Plant Species

Rincon evaluated 29 special status plant species documented in the CNPS and CNDDB within the *Palmdale and Pacifico Mountain, California quadrangles* and surrounding USGS 7.5-minute quadrangles (Appendix F). Species considered FSS were also included and evaluated for their potential to occur in the BSA and specifically on ANF lands. Of the 29 special status plant species evaluated, western Joshua tree (State Candidate Threatened [SCT]) was observed in the BSA, and seven others have moderate or high potential to occur in the BSA as provided in Table 6. A habitat suitability analysis for special status plant species based on the literature review and field reconnaissance survey is included in Appendix F.

Table 6 Special Status Plant Species with Moderate or High Potential to Occur or Observed in the BSA

Species	Status	Moderate Potential	High Potential	Present
Horn's milk-vetch (*Astragalus hornii* var. *hornii*)	CRPR 1B.1		X	
Palmer's mariposa-lily (*Calochortus palmeri* var. *palmeri*)	FSS, CRPR 1B.2	X		
alkali mariposa-lily (*Calochortus striatus*)	FSS, CRPR 1B.2	X		
white pygmy-poppy (*Canbya candida*)	FSS, CRPR 4.2		X	
Mojave paintbrush (*Castilleja plagiotoma*)	FSS, CRPR 4.3	X		
short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)	FSS, CRPR 1B.2		X	
Greata's aster (*Symphyotrichum greatae*)	CRPR 1B.3	X		
western Joshua tree (*Yucca brevifolia*)	SCT, WJTCA			X

CRPR = California Rare Plant Rank; SCT = State Candidate Threatened; FSS = United States Forest Service Sensitive; WJTCA = Protected in California under the Western Joshua Tree Conservation Act

Below is a discussion of the eight special status plant species observed or with a moderate or high potential to occur in the BSA. The remaining special status plant species not discussed below have either a low potential to occur or are not expected to occur based on incompatible habitat conditions (e.g., vegetation assemblage, soils, topography, hydrology, and prior disturbances) or the absence of observations of readily identifiable species (e.g., perennial herbs, shrubs, and/or trees) during the field reconnaissance surveys of the BSA.

Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) – CRPR 1B.1

Horn's milk-vetch is a long-lived, annual herb in the legume family (Fabaceae) endemic to southern California and west-central Nevada. This plant is found in alkaline conditions in meadows, seeps, playas, and lake margins at elevations from 195 to 2,790 feet (60 to 850 meters) amsl. It typically

blooms from May to October, producing white to pale lilac petals (Calflora 2024; Jepson Flora Project 2024).

This species has a high potential to occur within the BSA, and suitable habitat exists in the BSA along the border of Lake Palmdale. The nearest known occurrence is on the edge of Lake Palmdale where it was found to form a clover-like field on the border of the lake, although this record is from 1929 (CDFW 2024a and 2024b).

Palmer's Mariposa-Lily (*Calochortus palmeri* var. *palmeri*) – CRPR 1B.2, FSS

Palmer's mariposa-lily is a perennial, bulbiferous herb in the lily family (Liliaceae) endemic to the Transverse Ranges of southern California. It is typically found in mesic environments, chaparral, lower montane coniferous forest, meadows, and seeps at elevations between 2,330 and 7,840 feet (710 to 2,390 meters) amsl. It blooms from April to July (Calflora 2024; Jepson Flora Project 2024).

The BSA contains suitable meadow, seeps, and juniper habitat where there is a moderate potential for this species to be found. There are three known occurrences in the nine-quadrangle search area. The nearest occurrence is approximately 7.5 miles southeast of the BSA in the *Juniper Hills* quadrangle at a similar elevation to the southern portion of the BSA and in a pinyon and juniper woodland habitat (CDFW 2024a and 2024b). Senescent, unidentifiable *Calochortus* spp. were observed during the reconnaissance surveys.

Alkali Mariposa-Lily (*Calochortus striatus*) – CRPR 1B.2, FSS

Alkali mariposa-lily is a perennial, bulbiferous herb in the lily family found in California and Nevada with populations in Antelope Valley, Kern River Valley and the adjacent southern Sierras, Amargosa Desert, Owens Valley, Yosemite Valley as well as in the eastern Transverse ranges (Calflora 2024). It is typically found in chaparral, chenopod scrub, meadows, seeps, and Mojavean desert scrub between 230 and 5,235 feet (70 to 1,595 meters) amsl. It blooms from April to June (Calflora 2024; Jepson Flora Project 2024).

This species has a moderate potential to occur within the BSA. Suitable soils, including meadow, seeps, upland scrub, and desert scrub habitats occur within the BSA, but alkali flats were not observed. Joshua tree woodlands and adjacent ephemeral washes were identified in the BSA, which could provide suitable microhabitat for this species. No CNDDB occurrences have been recorded in the USGS *Palmdale* or *Pacifico Mountain* quadrangles (CDFW 2024a and 2024b). Numerous observations of this species have been reported within the city of Lancaster, the unincorporated Lake Los Angeles community, and south of the BSA at the higher elevational extent of this species near Waterman Mountain and Chilao Flat in the ANF (Calflora 2024). Senescent, unidentifiable *Calochortus* spp. were observed during the reconnaissance surveys.

White Pygmy-Poppy (*Canbya candida*) – CRPR 4.2, FSS

White pygmy-poppy is a native annual herb in the poppy family (Papaveraceae) found in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland between 1,970 and 4,790 feet (600 to 1,460 meters) amsl. It typically blooms from May to July (Calflora 2024; Jepson Flora Project 2024).

This species has a high potential to occur within the BSA. The nearest CNDDB records are historical observations from 1921 and 1926 upstream of Littlerock Reservoir, on the southern end of the reservoir and within Littlerock Creek approximately one mile from the BSA (CDFW 2024a and 2024b).

Mojave Paintbrush (*Castilleja plagiotoma*) – CRPR 4.2, FSS

Mojave paintbrush is a perennial, hemi-parasitic herb in the broomerape family (Orobanchaceae), found in nine floristic provinces of southern California, which include the San Gabriel Mountains, desert mountains, and Mojave Desert. It is typically found in dry sagebrush/Great Basin scrub, pinyon and juniper woodland, lower montane coniferous forest, and alluvial fans between 985 to 8,205 feet (300 to 2,500 meters) amsl. It blooms from April to June (Calflora 2024; Jepson Flora Project 2024).

Mojave paintbrush has a moderate potential to occur within the BSA; however, this species does not have CNDDB records within a five-mile radius of the BSA (CDFW 2024a and 2024b). Suitable soils, sagebrush scrub, and juniper woodland occur within the BSA, specifically in the southeastern portion.

Short-Joint Beavertail (*Opuntia basilaris var. brachyclada*) – CRPR 1B.2, FSS

Short-joint beavertail is a perennial stem succulent in the cactus family (Cactaceae) found in chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland between 1,395 and 5,905 feet (425 to 1,800 meters) amsl in sandy soil or coarse, granitic loam. It typically blooms from April to August (Calflora 2024; Jepson Flora Project 2024).

There are 61 known records of the species in the *Palmdale* and *Pacifico Mountain* quadrangles and surrounding quadrangles. Five known occurrences are within one mile of the BSA, and numerous *Opuntia* spp. were observed during the reconnaissance surveys (CDFW 2024a and 2024b). Higher numbers of *Opuntia* were observed within the California juniper woodland habitat near the western extent of the BSA between Barrel Springs Road and Sierra Highway. These occurrences are located primarily in the southern portion of the BSA near Littlerock Reservoir.

Greata's Aster (*Symphyotrichum greatae*) – CRPR 1B.3

Greata's aster is a perennial rhizomatous herb in the aster family (Asteraceae) endemic to California. It is typically found in mesic canyons, broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland between the elevations of 985 and 6,595 feet (300 to 2,010 meters) amsl. It blooms from June to October (Calflora 2024; Jepson Flora Project 2024).

This species has a moderate potential to occur within the BSA. Potentially suitable chaparral and riparian woodland habitat is present within the BSA. Historical CNDDB occurrences were recorded five miles upstream of Little Rock Creek in 1994 and 1995 (CDFW 2024a and 2024b).

Western Joshua Tree (*Yucca brevifolia*) – SCT, WJTCA

Western Joshua tree is a species in the Agave family (Agavaceae) that occurs in the Mojave Desert regions of the southwestern United States and is currently protected in California under the WJTCA (Senate Bill 122), which was passed in July 2023. Additionally, western Joshua tree retains candidate status as a threatened species under CESA. During the candidate assessment process, candidate species are afforded the same protections as if they were listed under CESA. Thus, it is currently unlawful to "take" (trim, remove, or otherwise kill) a western Joshua tree (live or dead) without proper authorization from CDFW (Appendix B).

Western Joshua trees are tall, evergreen monocots with spongy fruit. Mature trees range from 16 to 40 feet tall, and leaves range from 7.5 to 15 inches long. Radial and vertical growth is simultaneous

(Simpson 1975) with branching only occurring after flowering. Western Joshua trees occur between 1,900 and 7,200 feet (579 and 2,195 meters) amsl and between 34 degrees and 38 degrees north latitude (Rowlands 1978). Currently, the species is found almost exclusively within the Mojave Basin and Range ecoregion.

Major threats to the species include loss of habitat from invasive species and urban development as well as shifts in climate trends in the ecoregion, including increased maximum/minimum temperatures and extended drought periods. Western Joshua trees do not occur in hotter, dryer, lower-elevation areas within the Mojave Desert because maximum/minimum temperatures constrain the distribution of the species.

A total of 3,463 western Joshua trees were identified and mapped within the BSA during the census survey; an additional six western Joshua trees were identified and mapped outside the BSA during the census, all located in the ANF, for a total of 3,469 western Joshua trees. Of those, 3,043 trees are living; the remaining 426 trees were classified as dead based on criteria described in the CDFW census protocol (CDFW 2023b). Of the total live trees surveyed, 1,838 are Size Class A (less than one meter in height), 1,080 are Size Class B (greater than one meter, but less than five meters in height), and 125 are Size Class C (greater than five meters in height). Of the 3,043 live trees surveyed, 626 trees are mature and the remaining 2,417 trees have not reached maturity. Only one tree documented was observed in its fruiting phase. No trees were observed in a flowering phase.

4.1.2 Special Status Wildlife Species

Rincon evaluated 39 special status wildlife species documented in the CNDDB within the *Palmdale and Pacifico Mountain, California quadrangles* and surrounding USGS 7.5-minute quadrangles (Appendix F). Species considered FSS were also included and evaluated for their potential to occur in the BSA and specifically on ANF lands. The birds on the Los Angeles County sensitive bird list and bird watchlist are considered common in the Palmdale-Lancaster area and are not evaluated further (Audubon Society 2009).Of the 39 special status wildlife species evaluated, 26 special status wildlife species are known or have moderate to high potential to occur in the BSA. One additional species that was not a part of the literature review, sharp-shinned hawk, was detected during field reconnaissance surveys. In total, seventeen species have moderate potential to occur, five have high potential to occur, and five were observed to be present in the BSA (Table 7). No special status amphibians were identified as having a moderate to high potential to occur within the BSA. A habitat suitability analysis for special status wildlife species based on the literature review and field reconnaissance survey is included in Appendix F.

Table 7 Special Status Wildlife Species with Moderate or High Potential to Occur or Observed in the BSA

Species	Status	Moderate Potential	High Potential	Present
Invertebrates				
Crotch's bumble bee (*Bombus crotchii*)	SCE		X	
monarch butterfly – California overwintering population (*Danaus plexippus plexippus pop. 1*)	FCS, FSS			Present (migration) Not Expected (overwintering)
Soledad shoulderband (*Helminthoglypta fontiphila*)	G1/S1 CDFW Special Animal	X		

Species	Status	Moderate Potential	High Potential	Present
Reptiles				
southwestern pond turtle (*Actinemys pallida*)	FPT, FSS, SSC	X		
northern California legless lizard (*Anniella* pulchra)	FSS, SSC	X		
California legless lizard (*Anniella* spp.)	SSC	X		
coast horned lizard (*Phrynosoma blainvillii*)	SSC	X		
two-striped gartersnake (*Thamnophis hammondii*)	FSS, SSC	X		
Birds				
Cooper's hawk (*Accipiter cooperii*)	WL			X (n,f)
sharp-shinned hawk (*Accipiter striatus*)	WL			X (f)
tricolored blackbird (*Agelaius tricolor*)	ST, SSC	X (f)		
southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	WL	X (n,f)		
golden eagle (*Aquila chrysaetos*)	FP, WL, BGEPA	X (f)		
Bell's sparrow (*Artemisiospiza belli belli*)	WL	X (f)		
burrowing owl (*Athene cunicularia*)	SSC	X (n,f)		
ferruginous hawk (*Buteo regalis*)	WL	X (f)		
Swainson's hawk (*Buteo swainsoni*)	ST	X (n,f)		
northern harrier (*Circus hudsonius*)	SSC			X (n,f)
southwestern willow flycatcher (*Empidonax traillii extimus*)	FE, SE	X (f)		
merlin (*Falco columbarius*)	WL			X (f)
prairie falcon (*Falco mexicanus*)	WL	X (f)		
loggerhead shrike (*Lanius ludovicianus*)	SSC		X (n,f)	
least Bell's vireo (*Vireo bellii pusillus*)	FE, SE		X (n,f)	
Mammals				
pallid bat (*Antrozous pallidus*)	FSS, SSC		X (r,f)	
Townsend's big-eared bat (*Corynorhinus townsendii*)	FSS, SSC		X (f)	
San Diego desert woodrat (*Neotoma lepida intermedia*)	SSC	X		
Mohave ground squirrel (*Xerospermophilus mohavensis*)	ST	X		

SCE = State Candidate Endangered; FCS = Federal Candidate Species; FPT = Federally Proposed Threatened; FSS = United States Forest Service Sensitive; SSC = CDFW Species of Special Concern; FE = Federally Endangered; FT = Federally Threatened; WL = CDFW Watch List; FP = State Fully Protected; ST = State Threatened; SE = State Endangered BGEPA = Bald and Golden Eagle Protection Act; G1/S1 CDFW Special Animal = critically imperiled globally or statewide (NatureServe 2024) and included in the CDFW Special Animals list (CDFW 2024d)

n = nesting potential, r = roosting potential, f = foraging potential

Below is a discussion of all special status wildlife species observed or with a moderate or high potential to occur in the BSA. The remaining special status wildlife species not discussed below have either a low potential to occur or are not expected to occur due to limited habitat components meeting the species' requirements and/or because the majority of habitat on and adjacent to the BSA is unsuitable or of very poor quality.

Invertebrates

Crotch's Bumble Bee (Bombus crotchii) – SCE

Crotch's bumble bee (*Bombus crotchii*) is a state candidate endangered (SCE) species that occurs primarily in California but is known to occur southwest Nevada near the state border (Xerces Society 2024a). It inhabits a variety of habitats including open grasslands, shrublands, chaparral, desert margins including Joshua tree woodland, creosote scrub, and semi-urban settings. Floral associations for foraging include California cleome or bladderpod (*Peritoma arborea*), larkspurs (*Delphinium* spp.), yerba (*Eriodictyon* spp.), phacelia, and blue curls (*Trichostema* spp.). Food plants include milkweeds (*Asclepias* spp.), chaenactis (*Chaenactis* spp.), lupines (*Lupinus* spp.), burclovers (*Medicago* spp.) and sages (*Salvia* spp.) (Williams et al. 2014). Like most bumblebees, suitable nesting substrates for Crotch's include rodent holes/tunnels, rock piles, bunch grasses, and leaf piles (Xerces Society 2012).

In the BSA, Crotch's bumble bee has a high potential to occur in suitable foraging and potential habitats such as rubber rabbitbrush scrub, big sagebrush scrub, California buckwheat scrub, and Joshua tree woodland, among others. The presence of these habitats, including rodent burrows, stick piles, and sources of nectar from plant species such as sages, buckwheat, phacelias, individual narrow-leaf milkweed (*Asclepias fascicularis*), and large swaths of yerba santa were all observed within the BSA. Historical CNDDB occurrences were recorded within a five-mile radius of the BSA, including areas near Littlerock Reservoir and the unincorporated community of Littlerock north of Little Rock Wash and northeast of the BSA along Pearblossom Highway (CNDDB 2024a and 2024b). Additionally, recent observations (photos) of verified Crotch's bumble bees were documented within the San Gabriel Mountains (2018), near Mount Gleason and along the Santa Clara River near Lang, in May and August 2023 (California Bumble Bee Atlas 2024).

Monarch Butterfly – California Overwintering Population (Danaus plexippus plexippus pop. 1) – FCS, FSS

Monarch butterfly is an FSS and a federal candidate species (FCS) that overwinters along the coast from northern Mendocino to Baja California, Mexico. This species roosts in wind-protected tree groves with eucalyptus (*Eucalyptus* spp.), Monterey pines (*Pinus radiata*), and cypress (*Cupressus* spp.). It may also form overwintering clusters on California sycamore and coast live oak (Xerces Society 2016). It relies on several milkweed host plants for larval production, including common milkweed (*Asclepias syriaca*), narrow-leafed milkweed, California milkweed (*Asclepias californica*), and woollypod milkweed (*Asclepias eriocarpa*).

During the field reconnaissance surveys, monarch butterfly was observed in the southernmost extent of the BSA, near Littlerock Reservoir in the ANF, foraging on the blooming flowers of rubber rabbitbrush. Small populations of narrow-leafed milkweed, comprised of singular individuals, were observed in the BSA, but not within ANF lands. Suitable foraging shrubs occur throughout the BSA, but the area lacks large populations of suitable host plants. Potentially suitable overwintering trees such as western sycamore occur in the southern portion of the BSA, specifically along Little Rock Wash. The BSA does not contain large groves of suitable overwintering trees. Monarch butterflies may move through the BSA during migration to the California coast. However, the BSA is over 40 miles from the California coast and known overwintering sites.

Soledad Shoulderband (Helminthoglypta fontiphila) – G1/S1 CDFW Special Animal

Soledad shoulderband is ranked as G1/S1 species (critically imperiled globally or statewide according NatureServe's methodology [2024]) and is included in the CDFW Special Animals list (CDFW 2024d). It is a narrow endemic species to California and is one of 38 species (including subspecific ranks) of native terrestrial snails and slugs known to occur in Los Angeles County (Magney 2016). This species is frequently found in riparian habitats. It is associated with seeps, springs, and along streams with floodborne debris and rock piles and can be found under dead yuccas where other cover is unavailable (CDFW 2024a). This species has historical occurrences within Littlerock Creek Canyon both upstream and downstream of Littlerock Reservoir.

Pockets of suitable riparian habitat with debris, sandy wash areas, and rock piles occur along Little Rock Wash in the southern portion of the BSA, on ANF land. CNDDB occurrences were recorded within 0.5-mile downstream of Littlerock Dam in 1931, 1943, 1949, 1950, 1955, and most recently 3 shells were collected along a spring in Little Rock Wash in 2016 (CDFW 2024b).

Reptiles

Southwestern Pond Turtle (Actinemys pallida) – FPT, FSS, SSC

Southwestern pond turtle (*Actinemys pallida*) is a federally proposed threatened (FPT) species, CDFW SSC, and FSS typically found in ponds, marshes, rivers, streams, and irrigation ditches, usually within aquatic vegetation below 6,000 feet of elevation from Monterey Bay to Baja California, Mexico. They are semi-aquatic, requiring both aquatic and terrestrial habitats in close proximity to each other for all life cycle stages.

Southwestern pond turtle has a moderate potential to occur in the BSA. Suitable riparian woodland, marsh, irrigation ditches, and ponded habitats are present. The highest-quality suitable habitat for this species occurs within Little Rock Wash in the southeastern portion of the BSA on ANF land. Suitable habitat is comprised of deeper pooling areas with pockets of cattail marsh, river wash, and within the breaks in cover and part of the understory of the California sycamore woodland vegetation community that occurs in the wash.

No CNDDB occurrences were recorded within five miles of the BSA (CDFW 2024a and 2024b); however, this species was observed downstream of Littlerock Reservoir during field surveys conducted in 2012 during preparation of the Littlerock Reservoir Sediment Removal Project EIR (PWD 2017). This detection was made outside of the current Project's BSA boundaries, and the species was not detected during field reconnaissance surveys

Northern California Legless Lizard (Anniella pulchra) – FSS, SSC and California Legless Lizard (Anniella spp.) - SSC

Northern California legless lizard (*Anniella pulchra*) is a CDFW SSC and FSS; California legless lizard (*Anniella* spp.) is a CDFW SSC. Both occur in sandy or loose loamy soils under sparse vegetation with high soil moisture. They are fossorial and use their head and body movement to burrow into the sand. They forage beneath the leaf litter and moist soil for burrowing. Areas disturbed by agriculture or other human uses are not considered suitable habitat (Zeiner et al. 1990). Northern California legless lizard can be found from Contra Costa County south to Los Angeles County. California legless lizard is not identified to species level as its range (primarily in Los Angeles, Ventura, and Kern Counties) represents a large and insufficiently sampled contact zone between Northern California legless lizard and Southern California (or San Diegan) legless lizard (*Anniella stebbinsi*), the latter of

which ranges from southwestern coastal Ventura County to the Mexican border (Californiaherps.com 2024).

Northern California legless lizard and California legless lizard have a moderate potential to occur within the BSA. Suitable California juniper woodlands, Joshua tree woodlands, and riparian woodlands could provide suitable habitat. Suitable sandy, loose, loamy soils and saturated soils, including natural and artificial cover (trash, debris, boards), also occur in the BSA. One CNDDB record in 2017 includes four individuals discovered under artificial cover in the Juniper Hills area in the BSA. Five additional CNDDB occurrences were recorded within five miles north of the BSA in 2006, 2007, and 2017 (CDFW 2024a and 2024b). None were detected during field reconnaissance surveys.

Coast Horned Lizard (Phrynosoma blainvillii) – SSC

Coast horned lizard (*Phrynosoma blainvillii*) is a CDFW SSC that occurs in grasslands, coniferous forests, woodlands, and chaparral with open areas and patches of loose soil. Horned lizard diets are specialized and consist almost exclusively of native ants (greater than 94 percent by prey item) (Suarez et al. 2000). This species is most commonly associated with open areas of sandy soil and low vegetation, often found near ant hills for feeding. The species ranges from the Baja California border west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir (Nafis 2024).

Coast horned lizard has a moderate potential to occur within the BSA. Potentially suitable sandy, wash, upland scrub, and transitional habitats occur throughout the BSA, specifically in the southeastern portion. Four historical CNDDB occurrences, primarily specimen collections, were recorded within five miles of the BSA, with the most recent being 1990 (CDFW 2024a and 2024b). This species was also detected during biological surveys in 2012 within a sandy drainage adjacent to the main access road to Littlerock Reservoir for the Littlerock Reservoir Sediment Removal Project (PWD 2017). The species was not observed during field reconnaissance surveys.

Two-Striped Gartersnake (Thamnophis hammondii) – FSS, SSC

Two-striped gartersnake is a CDFW SSC and FSS species that occurs from sea level up to 7,000 feet (2,134 meters) amsl. It is a highly aquatic species known to occur in or near permanent freshwater or near water sources such as pools, creeks, and cattle tanks and is associated with streams with rocky beds within riparian areas. It is also associated with oak woodland, willows, coastal sage scrub, chapparal and brushland (CNDDB 2023; Calherps 2024).

Two-striped gartersnake has a moderate potential to occur within the BSA. Suitable perennial pools, rocky beds, and riparian vegetation occur within the BSA, specifically along Little Rock Wash. It should be noted that the flow of water within the wash is intermittent, but pooling areas and otherwise suitable habitat within the BSA occur. CNDDB occurrences are documented in 1991, 1995, and 1997, upstream of Littlerock Reservoir within Littlerock Creek. An additional occurrence was recorded in Santiago Canyon, southeast of Littlerock Reservoir in 1996. This species was also documented downstream of Littlerock Dam in 2012 during biological surveys conducted for the Littlerock Reservoir Sediment Removal Project, within Little Rock Wash but not within the BSA (PWD 2017).

Birds

Cooper's Hawk (Accipiter cooperii) – WL

Cooper's hawk (*Accipiter cooperii*) is a CDFW WL species that typically inhabits oak woodlands, deciduous riparian areas, and forest edges but can also be found in urban parks and neighborhoods where trees are present. During the winter months, Cooper's hawks utilize a wider variety of habitats for foraging including open fields and grasslands. Nests are constructed 25 to 50 feet high in a variety of tree species, including pines, oaks, beeches, and spruces. Nests are made of sticks and are often lined with bark flakes and green twigs. Cooper's hawks are aerial predators that feed primarily on medium-sized birds. In addition to preying on adult birds, Cooper's hawks will also occasionally rob nests and hunt rabbits, rodents, and bats (Cornell Lab of Ornithology 2024b).

Cooper's hawk was present in the BSA during the field reconnaissance surveys. Suitable riparian, California juniper and Joshua tree woodlands provide quality habitat for foraging and nesting throughout the BSA. Residential areas adjacent to the BSA along public roadways also likely provide shelter, nesting, and additional foraging habitat for Cooper's hawk. This species was detected during field reconnaissance surveys, flushing from a perch on a large California juniper shrub within the dense woodland area between Pearblossom Highway and Sierra Highway to the west. The presence of preferred prey animals, such as small songbirds and rodents, was observed throughout the various habitats within the BSA.

Sharp-Shinned Hawk (Accipiter striatus) – WL

Sharp-shinned hawk is a CDFW WL species and a known migrant and common wintering bird that occurs throughout California (Bildstein et al. 2000). This forest dwelling species can be found in all habitats during winter migration except alpine, open prairie, and bare open desert. It prefers forest and forest edges with open habitats nearby and breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffery pine habitats (Polite and Pratt 2008). It is a highly specialized predator of birds and may also prey on small mammals, frogs, lizards and insects (Bildstein et al. 2000). It forages in openings at edges of woodlands, hedgerows, brushy pastures, and shorelines (Polite and Pratt 2008).

This species was observed flying overhead during the field reconnaissance surveys. It is not expected to nest in the BSA because it is a winter migrant in southern California. The BSA provides suitable foraging habitat where it includes or is adjacent to woodland and forest vegetation communities such as near Little Rock Wash.

Tricolored Blackbird (Agelaius tricolor) – ST, SSC

Tricolored blackbird is a state threatened (ST) species and CDFW SSC that occurs in large colonies inhabiting freshwater marshes with dense aquatic vegetation for nesting. It is largely endemic to California and ranges from southern Oregon to the Mexican border with the highest population densities in California's Central Valley. Tricolored blackbirds are highly colonial and forage for insects within a few kilometers of the colony.

Tricolored blackbird has a moderate potential to forage within the BSA, but suitable nesting habitat is not present. Suitable open water wetland habitat with tules (*Schoenoplectus acutus*) and sparse cattails are present near the outfall of the Ditch to Lake Palmdale within the BSA. Denser, more suitable nesting habitat occurs outside of the BSA, to the north of the outfall. The species was not detected during the field reconnaissance surveys; however, red-winged blackbirds were observed.

CNDDB occurrences were recorded in both Lake Palmdale and the adjacent Una Lake in 1990, 1991 to 1993, 1994, 1995 to 1996, 1998, 2004, 2005, 2008, 2009, and most recently in 2011 (CDFW 2024a and 2024b).

Southern California Rufous-crowned Sparrow (Aimophila ruficeps canescens) – WL

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) is a CDFW WL species that resides in Southern California coastal sage scrub and sparse mixed chaparral. This small songbird frequents relatively steep, often rocky hillsides with grass and forb patches. The species prefers south- or west-facing slopes with scattered scrub cover interspersed with grasses and forbs or rock outcrops. Their diet is not well known but includes grasses, forb seeds, and insects, depending on the season, locality, and availability (Collins 2020).

Southern California rufous-crowned sparrow has a moderate potential to forage and nest within the BSA. Suitable mixed upland scrub and California juniper woodland habitats, including steep rocky hillsides, occur within the BSA. No CNDDB occurrences were recorded within five miles (CDFW 2024a and 2024b); however, this species was detected outside the BSA during surveys conducted in 2012 for the Littlerock Sediment Removal Project (PWD 2017). The species was not detected during field reconnaissance surveys for the current Project.

Golden Eagle (Aquila chrysaetos) – FP, WL, Bald and Golden Eagle Protection Act

Golden eagle (*Aquila chrysaetos*) is a CDFW FP and WL species and is also federally protected under the Bald and Golden Eagle Protection Act. This large eagle utilizes open rolling foothills, mountainous areas, sage-juniper flats, and desert where they typically forage for mammal prey species, namely ground squirrels. Golden eagles nest on open and steep cliff faces on the upper portions of mountainous terrain.

Nesting habitat is absent from the BSA; however, golden eagle has a moderate potential to forage within the BSA. Open scrub habitats such as those found in the BSA are potentially suitable foraging habitat that supports a prey base (i.e., California ground squirrels). Small mammal burrows were observed throughout the BSA, but known California ground squirrel colonies were only noted in three areas: just south of Mt. Emma Road; on either side of 47th Street East near the intersection of Barrel Springs Road; and in the western portion of the BSA east of Sierra Highway where the highest level of ground squirrel, rabbit, and other small mammal activity was observed. Based on the lack of suitable cliff nesting habitat, which is typically the preferred nesting habitat for this species, golden eagles are not expected to nest within the BSA. However, large trees, transmission towers, and two large bodies of water (Lake Palmdale and Littlerock Reservoir) could provide high quality nesting and foraging habitat. No CNDDB occurrences were recorded within five miles, and only one historical record was documented in Aliso/Soledad Canyon within the ANF (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Bell's Sparrow (Artemisiospiza belli belli) – WL

Bell's sparrow (*Artemisiospiza belli belli*) is a CDFW WL species. This small songbird is typically found in dry chaparral in interior foothills and sagebrush. Semi-open chaparral areas unencumbered by leafy litter may be preferred. Breeding preference is associated with dense chaparral and desert scrub habitat. It is known to be a winter migrant in the southwestern desert regions. The species primarily nests in shrubs such as California sagebrush, brittlebush, white sage (*Salvia apiana*), California buckwheat, and others, as well as in bunchgrasses and in between shrubs (Cornell Lab of Ornithology 2024b).

Bell's sparrow has a moderate potential to forage in suitable upland scrub habitats throughout the BSA, including along the edges of the Ditch. However, the BSA lacks dense stands of chamise (*Adenostoma fasciculatum*), which is preferred nesting habitat. One CNDDB record from 2005 is located seven miles west of the BSA in a recently burned portion of Ritter Canyon (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Burrowing Owl (Athene cunicularia) – SSC

Burrowing owl (*Athene cunicularia*), a CDFW SSC, is a yearlong resident of open, dry grasslands, sage scrub, agricultural, and desert habitats and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. The species' population has markedly decreased in recent decades. Burrowing owls often use rodent and other small mammal burrows for roosting and nesting, commonly using ground squirrel burrows.

Burrowing owl has a moderate potential to occur within the BSA. Variable foraging and nesting opportunities exist throughout the BSA, but more specifically in the western and northwestern portions where California ground squirrel colonies and potentially suitable burrows were detected during the field reconnaissance surveys. Two CNDDB records from 2000 and 2006 are within five miles of the BSA (CDFW 2024a and 2024b). Neither burrowing owl individuals nor their sign were observed during the field reconnaissance surveys.

On March 5, 2024, the California Fish and Game Commission was petitioned to list burrowing owl as endangered or threatened pursuant to CESA (Center for Biological Diversity et al. 2024). The petition is currently under review by the CDFW, with their recommendation regarding species listing expected in Summer 2024.

Ferruginous Hawk (Buteo regalis) – WL

Ferruginous hawk (*Buteo regalis*), a CDFW WL species, is a winter resident throughout California in open grasslands, sagebrush flats, desert scrub, and low foothill habitats. This large hawk typically perches on the ground or on fence posts and power poles where it forages for small mammals, mostly lagomorphs and ground squirrels. This species breeds in the central United States from Montana to New Mexico and west into Nevada.

Ferruginous hawk has a moderate potential to forage within the BSA. Suitable low foothill, sagebrush, and juniper woodland habitats occur within the BSA. Nesting ferruginous hawks are not expected in the BSA because the species is a winter migrant and/or resident in California. Prey species such as rabbits, ground squirrels, and other small rodent species are present throughout habitats in the BSA, but are more concentrated in the western portion of the BSA where there is open habitat and juniper woodlands. The closest CNDDB records are from 2011, approximately 5.5 to 6 miles west of the portion of the BSA adjacent to Lake Palmdale (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Swainson's Hawk (Buteo swainsoni) – ST

Swainson's hawk (*Buteo swainsoni*) is a ST species found in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. They require adjacent suitable foraging areas such as grasslands or alfalfa or grain fields supporting rodent populations. The species breeds across the western United States from Kansas to California.

Swainson's hawk has a moderate potential to forage and nest within the BSA. Cottonwood trees, juniper woodlands, western Joshua trees, and riparian woodland suitable for nesting and adjacent

to open lands suitable for foraging occur within the BSA. Ongoing Swainson's hawk breeding season surveys conducted from 1979 to 2022 in the Antelope Valley have documented their predilection to nest in non-native or unidentified deciduous trees (86 percent) compared to western Joshua trees (14 percent), which Swainson's hawk were historically known to use for nesting in this region (Bloom et al. 2023). Recent agricultural development in the Antelope Valley has shifted the species' preferred foraging habitats to alfalfa and other crops that support a higher abundance of prey species (e.g., gophers and voles) than surrounding native desert habitat. While foraging still occurs to some extent in native habitats—evidenced by the presence of low numbers of desert horned lizard (*Phrynosoma platyrhinos*) and western whiptail (*Aspidoscelis tigris*) remains in one or two nests—most nest sites are now located in trees near agricultural fields (Bloom et al. 2023). The closest agricultural fields to the BSA are approximately 5.5 miles to the north/northwest. The BSA contains suitable nesting and foraging habitat that were historically significant for the species (e.g., Joshua tree woodlands, native desert scrub habitat that supports a suitable prey base, riparian forests); however, alfalfa and grain fields are currently the preferred foraging habitat in the Antelope Valley. The BSA may also be utilized by migrating individuals. One historical Swainson's hawk CNDDB occurrence from 1927 is recorded within five miles of the BSA in an area of Palmdale that has since been developed; all present-day nest sites documented in the Antelope Valley have been observed near active and fallow agricultural fields greater than five miles from the BSA (CDFW 2024a and 2024b). Swainson's hawks were not detected during field reconnaissance surveys.

Northern Harrier (Circus hudsonius) – SSC

Northern harrier (*Circus hudsonius*) is a CDFW SSC found in coastal salt and freshwater marshes, grasslands, from salt grass in desert sink to mountain cienagas. They nest on the ground in shrubby vegetation, usually at marsh edges. Their nests are typically a large mound of sticks in wet riparian areas.

Northern harrier was detected during field reconnaissance surveys, soaring south of where the BSA crosses the California Aqueduct. This species is typically associated with wetlands or marshes, which are present, but not on a large scale. Marsh-like habitat occurs in patches of the BSA and is associated with Lake Palmdale; other low-lying areas are also present. Both areas could potentially be suitable habitat for nesting for this species. Surrounding upland scrub, shrublands, and riparian woodland habitats could potentially be used for foraging.

Southwestern Willow Flycatcher (Empidonax traillii extimus) – FE, SE

Southwestern willow flycatcher is a federal endangered (FE) and SE species. A riparian obligate, they require dense patches of riparian habitats with willow and cottonwood thickets where they forage for flying insects from perches at the tops of vegetation. They nest in low shrubs and bushes, typically no more than five feet from the ground.

Southwestern willow flycatcher has a moderate potential to forage within the BSA and is within the known geographic distribution of the species (Cornell Lab of Ornithology 2024b). Suitable habitats of riparian woodland comprised of cottonwoods, sycamores, willows, mulefat and other associated riparian vegetation is present in the BSA, specifically in Little Rock Wash downstream of Littlerock Dam. Surveys for the Littlerock Reservoir Sediment Removal Project conducted in 2012 within the riparian habitat south of Littlerock Dam documented five willow flycatchers but did not confirm if they were southwestern willow flycatchers (PWD 2017). Flycatchers in southern California are known to co-occur with least bell's vireo, which are also riparian obligate species of dense riparian habitats associated with streams, rivers, or reservoir inflows (Howell and Kus 2024). Migrating

individuals could utilize the suitable habitat in the southern portion of the BSA at Little Rock Wash during seasonal migration periods. However, there are no known or documented breeding sites within the BSA. The primary flycatcher drainages in California are located within the Kern, Owen's, San Luis Rey, Santa Ana, and Santa Margarita Rivers (Durst et al. 2007).

There are no known CNDDB occurrences within five miles of the BSA (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Merlin (Falco columbarius) – WL

Merlin (*Falco columbarius*) is a CDFW WL species found throughout North America in seacoast, open woodland, savannah, grassland edge, desert, and farm habitats. The species mainly forages for small birds and nests in trees in open woodlands.

One individual was detected during field reconnaissance surveys flying overhead within the BSA south of 40th Street East and Barrel Springs Road. Suitable foraging habitat occurs within the BSA, including a matrix of woodland, upland scrub, and water sources, with expansive open arid habitats where prey (small birds) is available. Merlin is a winter migrant; it is not known to breed in California and is not expected to nest in the BSA.

Prairie Falcon (Falco mexicanus) – WL

Prairie falcon (*Falco mexicanus*) is a CDFW WL species found throughout the western United States. Ideal habitat for this species includes open deserts, grasslands, and agricultural lands. It nests in cavities and ledges on cliffsides and feeds mainly on small mammals, such as ground squirrels, but will also prey on birds and some insects.

Prairie falcon has a moderate potential to forage within the BSA. Marginally suitable foraging habitat includes open areas with mixed upland shrubs, woodlands, and perches; California ground squirrels are also present. However, cliffs for breeding and nesting are not present. No CNDDB records occur within five miles of the BSA (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Loggerhead Shrike (Lanius ludovicianus) – SSC

Loggerhead shrike (*Lanius ludovicianus*) is a CDFW SSC found throughout the United States and Mexico. It prefers open habitats such as broken woodlands, savannah, pinyon-juniper, Joshua tree and riparian woodlands, washes, and desert scrub with conspicuous perches for foraging. The species is a carnivorous songbird mainly feeding on insects, birds, and small mammals, which it impales on thorns, branches, and barbed wire. It is uncommon and declining in much of its range.

Loggerhead shrike has a high potential to forage and nest within the BSA. Potentially suitable riparian woodland, Joshua tree woodlands, desert scrub, and sandy wash habitats, including areas for perching, are present in the BSA. Prey species, such as insects, lizards, small mammals, and birds also occur throughout the BSA. Four CNDDB records, with the most recent in 2008, occur within five miles of the BSA (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Least Bell's Vireo (Vireo bellii pusillus) – FE, SE

Least Bell's vireo is an FE and SE species that formerly nested throughout the coastal slope of southern California, interior coast ranges of central California, the San Joaquin and Sacramento valleys and surrounding foothills, and parts of Inyo County. It now is limited to isolated locations of

extensive riparian habitat in the southern California coastal slope and has bred in small numbers at widely scattered sites elsewhere in its former range (USFWS 2006). Least Bell's vireo is typically found in structurally diverse woodlands located in riparian areas. Habitat requirements critical to the species' continued existence include dense cover within six feet of the ground for nesting and a dense, stratified canopy for foraging. While willow-dominated habitat is often used by least Bell's vireo for nesting, plant species composition does not appear to be as important as the structure of the habitat (Griffith and Griffith 2000).

Least Bell's vireo has a high potential to occur in the BSA, specifically in the southern portion at Little Rock Wash, downstream from Littlerock Dam in the ANF. Suitable riparian habitat at this location is comprised of California sycamore woodland, willow thickets with an understory of mulefat patches, and upland scrub along with a mixture of open, rocky, and washy areas.

Surveys conducted for the Littlerock Sediment Removal Project in 2010, 2011, and 2012 below the dam confirmed occupied habitat with breeding/nesting activity in Little Rock Wash. The surveys documented a breeding pair with an active nest that eventually produced fledglings (PWD 2017). One CNDDB record from 2005 documented one individual singing near Una Lake, east of Lake Palmdale (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

Mammals

Pallid Bat (Antrozous pallidus) – FSS, SSC

Pallid bat (*Antrozous pallidus*), a CDFW SSC and FSS, occurs throughout the western United States and Mexico. It is found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. It is most common in open, dry habitats with rocky areas for roosting. Pallid bats roost in crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees, which protect them from temperature extremes. The species feeds on large insects, such as scorpions and Jerusalem crickets, which are often gleaned from the ground. It is very sensitive to disturbance of roosting sites.

Pallid bat has a high potential to occur (foraging, roosting) in the BSA in suitable riparian, desert scrub, and Joshua tree and juniper woodland foraging habits. Potential rock crevices, mature trees such as cottonwoods, willows, or junipers with exfoliating bark, and other manmade structures are also present in portions of the BSA that could serve as roosting habitat. Several old, abandoned, and degraded structures are located on ANF lands approximately 150 feet from the BSA. Evidence of bat guano droppings and urine staining were present at these structures, but no bats were observed occupying them. No mines are present. The species was detected during acoustic surveys conducted near Littlerock Reservoir in 2012 for the Littlerock Reservoir Sediment Removal Project (PWD 2017). The species was not detected, and no sign of maternity roosts were observed during field reconnaissance surveys for the current Project.

Townsend's Big-Eared Bat (Corynorhinus townsendii) – FSS, SSC

Townsend's big-eared bat (*Corynorhinus townsendii*), a CDFW SSC and FSS, is found throughout the western United States and Mexico. It occurs in a wide variety of habitats, but typically in coniferous or deciduous forests. Roosts are typically in the open, hanging from walls, ceilings in caves, lava tubes, bridges, and buildings. The species is extremely sensitive to human disturbance. It is a specialist moth feeder typically catching its prey on the wing.

Townsend's big-eared bat has a high potential to forage in the BSA, particularly in suitable riparian woodland habitats. The old, abandoned, and degraded structures observed on ANF lands outside the BSA could provide marginally suitable roosting habitat. Evidence of bat guano droppings and urine staining were present; however, the species is very sensitive to human disturbances, which appeared prevalent within and surrounding the structures. Overall, suitable roosting habitat for the species (including the entrance of caves, buildings, or mines) is absent from the BSA, but could occur near Littlerock Reservoir. The species was not detected during field reconnaissance surveys.

San Diego Desert Woodrat – SSC

San Diego desert woodrat, a CDFW SSC, occurs in the coastal scrub of Southern California from San Diego County to San Luis Obispo County. It prefers moderate to dense canopies and is particularly abundant in rock outcrops, rocky cliffs, and slopes, associating with cacti patches and dense undergrowth, although it can be found in less rocky habitats.

San Diego desert woodrat has a high potential to occur in the BSA. Numerous woodrat stick nests or "middens" were documented throughout the BSA during the field reconnaissance surveys, although the presence of special status woodrat subspecies was not confirmed. The woodrat middens in the BSA were primarily associated with California juniper woodland habitats near the Ditch, starting north of Mt. Emma Road and west to Sierra Highway. It is unconfirmed whether the middens are home to the San Diego desert woodrat subspecies *intermedia* and not the desert woodrat (*Neotoma lepida*).

Mohave Ground Squirrel (Xerospermophilus mohavensis) – ST

Mohave ground squirrel (*Xerospermophilus mohavensis*) is an ST species endemic to the western Mojave Desert and inhabits desert areas with flat or moderately-sloping topography, deep sandy or gravelly friable soils, and an abundance of annual herbaceous vegetation. The species is found in creosote bush scrub, shadscale scrub, alkali sink scrub, and Joshua tree woodlands. It has been found in all major desert scrub habitats in the western Mojave Desert in California (Laabs 2006), including between Palmdale and Victorville in the south, Owens Lake in the north, the eastern escarpment of the Sierra Nevada Mountain range in the west, and the Mojave River Valley in the east (Leitner 2008). Mohave ground squirrel nests in underground burrows, often beneath large shrubs and has one of the smallest geographic ranges of any North American ground squirrel (Wessman 1977). The species relies on a specific set of plant species as food resources, including Joshua tree fruits, winterfat (*Krascheninnikovia lanata*), and spiny hopsage (*Grayia spinosa*) (Stewart 2005).

Mohave ground squirrel has a moderate potential to occur in the BSA in potentially suitable desert scrub and Joshua tree woodland. Dispersed individual winterfat shrubs and spiny hopsage were observed in the BSA, including in the Joshua tree woodland, but were not concentrated in a single area. The BSA also contains boxthorns dispersed within several vegetation communities, including Joshua tree woodland, rubber rabbitbrush scrub, and California juniper woodland. Clusters of spiny hopsage and winterfat were observed within an open, low vegetated area between stands of California junipers in the northwestern extent of the BSA east of Sierra Highway. Active California ground squirrels and burrow complexes were observed in this area and along a berm and washy channel near 47th Street East and adjacent to dense Joshua tree woodland habitat. The northwestern portion of the BSA is at the southernmost extent of the species' historical range and has been impacted by development. Known current populations occur further north near Edwards Air Force Base in Kern County. Multiple historical CNDDB occurrences were recorded within five

miles of the BSA but none within the last five years (CDFW 2024a and 2024b). The species was not detected during field reconnaissance surveys.

4.1.3 USFWS Designated Critical Habitat for Federally Listed Species

The USFWS Critical Habitat Online Mapper and Information for Planning and Consultation databases were queried for federally designated critical habitat in the vicinity of the BSA. No critical habitat is located within or adjacent to the BSA (USFWS 2024a and 2024b).

4.1.4 Non-Listed Special Status Birds, Nesting Birds, and Raptor Foraging Habitat

While common birds are not designated as special status species, destruction of their eggs, nests, and nestlings is prohibited by federal and state law. CFGC Section 3503.5 specifically protects birds of prey and their nests and eggs against take, possession, or destruction. CFGC Section 3513 also incorporates restrictions imposed by the federal MBTA with respect to migratory birds (which consist of most native bird species).

Migratory or other common nesting birds have the potential to nest throughout the BSA. Riparian habitats, individual cottonwood or sycamore trees, cacti, California buckwheat scrub, rubber rabbitbrush scrub, Joshua tree woodland, California juniper woodland, big sagebrush scrub, non-native woodland, ornamental trees, and transmission towers in the BSA have the potential to support nesting birds and raptors.

Raptors generally require large home ranges, and individual foraging territories are often measured in terms of tens of acres to square miles. During breeding, demand for prey increases, and additional habitat must be available for young birds to disperse from nesting locations and establish new territories. Loss of foraging habitat reduces prey abundance and availability, which reduces and limits the number of raptors a given area can support. In general, smaller populations are less resilient to environmental stress (e.g., drought, disease, and fluctuations in prey availability). A number of special status and non-special status raptors have potential to forage in the BSA, including Swainson's hawk, ferruginous hawk, golden eagle, and prairie falcon, among others. Cooper's hawk, merlin, great horned owl, northern harrier, red-tailed hawk, red-shouldered hawk, and sharp-shinned hawk were observed during the field reconnaissance surveys in November and December 2023.

The BSA occurs in a largely undeveloped and unfragmented landscape from the foothills of the San Gabriel Mountains to the desert floor that provides suitable raptor foraging habitat.

4.2 Sensitive Natural Communities

Natural vegetation communities are classified as sensitive biological resources if they have limited distributions, have high wildlife value, include special status species, or are particularly susceptible to disturbance. Vegetation alliances in the CNDDB are ranked 1 through 5 based on NatureServe's methodology (2024), with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Some alliances with the rank of 4 and 5 have also been included in the sensitive natural communities list under CDFW's revised ranking methodology (CDFW 2023a).

Of the vegetation associations documented in the BSA, five are classified as sensitive by the CDFW (2023a), as summarized in Table 8 and presented in Figure 4a to Figure 4l in Appendix A. Riparian habitat is also present in the BSA in small, isolated areas along the Ditch or other drainages and wetlands, as well as in Little Rock Wash.

Table 8 Summary of Sensitive Natural Communities in the BSA[1]

Sensitive Natural Community *(location within BSA)*	Approximate Acreage[2]	Global and State Rank
Arroyo Willow Thickets Shrubland Association *(along the Ditch on ANF land west of Cheseboro Road)*	<0.01	G4S4
California Sycamore – Red Willow/Arroyo Willow – Mulefat Association *(in or near Little Rock Wash)*	6.10	G3S3
Fremont Cottonwood Woodland Association *(at the intersection of 40th Street and Barrel Springs Road and scattered north of Mt. Emma Road)*	7.87	G2Q
Goodding's Willow – Red Willow Riparian Woodland Association *(in small strips and scattered within drainages north of Mt. Emma Road with the largest area in California juniper woodland)*	1.61	GNR
Western Joshua Tree/California Juniper/Nevada Ephedra Woodland Association *(southeast of 47th Street E)*	7.20	G3S3
Total	**22.79**	**N/A**

[1] Vegetation community ranks sourced from CDFW (2023a).

[2] Acreages are rounded from GIS calculations

G2 – Imperiled. At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3 – Vulnerable. At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4 – Apparently Secure. At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
Q – Questionable taxonomy that may reduce conservation priority.
GNR - Unranked — Global rank not yet assessed
S3 – Vulnerable. At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 – Apparently Secure. At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

In addition, the southernmost 0.78 mile of the BSA within the ANF is subject to the USFS 2005 ANF Land Management Plan (USDA, USFS 2005). The Plan includes Riparian Conservation Areas (RCAs) defined as "an area delineated next to water features requiring special management practices to maintain and/or improve watershed and riparian-dependent resource conditions" (USDA, USFS 2005). These areas are managed for habitat conservation according to Standard S47 in Part 3 of the USFS ANF Land Management Plan. This standard requires that RCAs within the Project site be identified using the USDA, USFS Five-Step Project Screening Process for RCAs. RCAs include areas containing aquatic and terrestrial components and serve as the interface between land and water. Specifically, RCAs can include lands adjacent to perennial, intermittent, or ephemeral streams as well as in and around meadows, lakes, reservoirs, ponds, wetlands, vernal pools, seeps, springs, and other water bodies. RCAs are unique areas that support a high diversity of plant and wildlife species and typically have a high degree of endemism, including threatened and endangered species. The variety of wildlife species associated with RCAs in the ANF is high, and these species use these areas for breeding, aestivation, foraging, refugia, and movement corridors (USDA, USFS 2005).

To provide for the management of species that use riparian areas, each RCA has a buffer area of associated upland habitat that corresponds to the unique life history of the species. The size of an RCA is determined primarily by the type of water (perennial or intermittent) but can be adjusted for other characteristics such as topography, species present, and connectivity to other RCAs. Within the BSA, Little Rock Wash is an intermittent stream with seasonal flow (Rincon 2024). As a result, the RCA buffer would be 98 feet (30 meters) on either side of the wash, measured from the bank full edge (USDA, USFS 2005). The Little Rock Wash RCA intersects the BSA where it meanders into and out of the BSA along its winding course to the north.

4.3 Jurisdictional Waters and Wetlands and Executive Order 11990 (Protection of Wetlands)

In accordance with CFGC Section 1602, CDFW asserts jurisdiction over lakes and streambeds (including adjacent riparian resources). CDFW regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake. In addition, under CWA Section 404, USACE has authority to regulate activities that discharge dredge or fill material into wetlands or other "waters of the United States" through issuance of a Section 404 Permit. The Regional Water Quality Control Board (RWQCB) also has jurisdiction over "waters of the State" pursuant to the Porter-Cologne Water Quality Control Act and has the responsibility to issue water quality certifications pursuant to CWA Section 401. Finally, Executive Order 11990 directs federal agencies to avoid adverse impacts to wetlands.

The jurisdictional delineation performed by Rincon concluded a minimum of 41 potentially jurisdictional features occur in the BSA, including the Ditch, Lake Palmdale, Little Rock Wash, the California Aqueduct, one unnamed pond, 20 unnamed drainages, and 16 wetlands. Two additional potentially jurisdictional wetlands may also be present, but due to access limitations, jurisdictional boundaries could not be confirmed. The delineated features included natural and manmade perennial, intermittent, and ephemeral streams; culverts; a pond; a lake; and isolated wetlands that may be subject to USACE, RWQCB, and/or CDFW jurisdictions (Rincon 2024). A summary of potential jurisdictional waters identified within the BSA is presented by agency in Table 9. Figures illustrating jurisdictional waters in the BSA are provided in the Jurisdictional Delineation Report (Rincon 2024).

The Ditch extends approximately 7.2 miles within the Palmdale Ditch Conversion Project Site BSA, including both aboveground segments of the Ditch as well as culverted segments. The open, aboveground portions of the Ditch include both concrete-lined and earthen-bottomed segments. Approximately 35 percent of the Ditch is concrete-lined or culverted, while approximately 65 percent is earthen-bottomed. The Ditch is an intermittent system that is generally dry for most of the year and contains water primarily during scheduled releases from Littlerock Reservoir. Releases typically occur in the spring and summer months (generally March to July), but may occur in the fall and winter months (i.e., October through February), depending on water availability in Littlerock Reservoir. The Ditch flows for an average of 90 days per year, following scheduled releases. More detailed information regarding water delivery quantities, duration, and timing since 1995 is provided in Section 4.4, *Wildlife Movement*.

Table 9 Potential Jurisdictional Waters within the BSA

Jurisdictional Water Type	Amount (acres)
USACE Jurisdiction	
Non-Wetland Waters of the U.S.	7.60
Culverted Non-Wetland Waters of the U.S.	0.51
Wetland Waters of the U.S.	0.15
Total Waters of the U.S.	**8.26**
RWQCB Jurisdiction	
Non-Wetland Waters of the State	9.48
Culverted Non-Wetland Waters of the State	0.54
Wetland Waters of the State	5.13
Total Waters of the State	**15.15**
CDFW Jurisdiction	
CDFW-Jurisdictional Streambed	21.64
CDFW-Jurisdictional Lake	4.34
Total CDFW Jurisdiction	**25.98**
Potentially Jurisdictional	
Not Accessible	0.16

Source: Rincon 2024

4.3.1 USACE Jurisdiction

The Ditch is an intermittent Relatively Permanent Water (RPW) with direct surface connectivity to Lake Palmdale, a TNW. Therefore, the Ditch and Lake Palmdale are likely non-wetland waters of the U.S. under jurisdiction of USACE pursuant to Section 404 of the CWA. Lake Palmdale also potentially contains wetland waters of the U.S. along the lake margins where emergent hydrophytic vegetation is present. The California Aqueduct is a perennial drainage feature with direct surface connectivity to Lake Perris, a TNW, and is also likely under jurisdiction of USACE as non-wetland waters of the U.S. The remainder of the aquatic resources in the BSA are either ephemeral non-TNWs or are isolated (i.e., do not contain direct surface connectivity) from waters of the U.S. and are therefore not likely to be regulated by USACE. A minimum of approximately 8.26 acres of potential waters of the U.S. are present, including 7.60 acres of non-wetland waters of the U.S., 0.51 acre of culverted non-wetland waters of the U.S., and 0.15 acre of wetland waters of the U.S., and are likely to be regulated by USACE. Detailed acreages of jurisdiction by feature and figures illustrating their locations are included in the Jurisdictional Delineation Report (Rincon 2024).

4.3.2 RWQCB Jurisdiction

Several ephemeral and intermittent drainages (including culverted waters), ditches/canals (including the Ditch, the California Aqueduct, and Unnamed Drainages 9 and 10), ponds/lakes (including Lake Palmdale and Unnamed Pond 1), and 16 isolated wetlands (Wetlands 1 to 16) are likely waters of the State under jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA and Porter-Cologne Water Quality Control Act. A minimum of approximately 15.15 acres of potential waters of the State, including 9.48 acres of non-wetland waters of the State, 0.54 acre of culverted non-wetland waters of the State, and 5.13 acres of wetland waters of the State are present and are likely to be regulated by the Lahontan RWQCB. Detailed acreages of jurisdiction by feature and

figures illustrating their locations are provided in the Jurisdictional Delineation Report (Rincon 2024).

Potential Wetlands 17 and 18 may be waters of the State as determined by field observations via binoculars from the limits of the right-of-way or via the literature review (i.e., aerial imagery, NHD map, or NWI map). However, these features could not be definitively defined as waters of the State due to limited access for evaluation.

4.3.3 CDFW Jurisdiction

Several ephemeral and intermittent drainages, ditches/canals (including the Ditch, the California Aqueduct, and Unnamed Drainages 9 and 10) are likely CDFW-jurisdictional streambeds pursuant to CFGC Section 1600 et. seq. In addition, multiple ponds/lakes (including Lake Palmdale and Unnamed Pond 1) and one isolated wetland that contained a defined bed and bank (i.e., Wetland 5) are likely CDFW-jurisdictional lakes pursuant to CFGC Section 1600 et seq. A minimum of approximately 25.98 acres of potential CDFW-jurisdictional areas are present, including 21.64 acres of CDFW-jurisdictional streambed and 4.34 acres of CDFW-jurisdictional lake. Detailed acreages of jurisdiction by feature and figures illustrating their locations are provided in the Jurisdictional Delineation Report (Rincon 2024).

4.4 Wildlife Movement

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats in the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (e.g., rock outcroppings, vernal pools, or oak trees) may need to be in the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large- and small-scale. At the regional/landscape-level scale, the BSA is not located within mapped landscape habitat connectivity models, such as Essential Connectivity Areas in the *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (Spencer et al. 2010). However, the southern terminus of the BSA near Littlerock Reservoir is adjacent to, but outside of, a Natural Landscape Block mapped in the California Essential Habitat Connectivity Project (Spencer et al. 2010). Habitat corridors are present within the BSA, including riparian habitat in Little Rock Wash, as well as ridges and slopes in the foothills of the San Gabriel Mountains. The Ditch occurs along a transition between mountain and desert ecosystems within a largely undeveloped area lacking physical barriers to connectivity or artificial lighting that creates the potential for wildlife movement across the BSA. The BSA likely

contributes to a larger regional corridor for wintering and local migratory species, especially at Lake Palmdale and along the foothills of the San Gabriel Mountains. Lake Palmdale is a migratory stopover and potential breeding location for numerous waterfowl and shorebirds (Yorke 2020a and 2020b).

The Ditch itself may function as a source of water for local and migrating wildlife during times that water deliveries are occurring. From 1995 to 2006, water deliveries typically began in late winter or early spring and lasted through mid-spring (and sometimes into summer, depending on water availability in Littlerock Reservoir). During that time, it was common for deliveries to occur for at least five months of the year. However, the amount and regularity of water deliveries have generally fluctuated greatly and the amount decreased on average since approximately 2008, likely as a result of multiple drought years and changing climatic patterns affecting precipitation timing and amounts in the Palmdale area. From 1995 to 2006, water deliveries occurred for approximately 122 days per year on average; from 2008 to 2023, water deliveries occurred for approximately 54 days per year on average. Similarly, from 1995 to 2006, the amount of water delivered was approximately 4,841 acre-feet per year, as compared to approximately 2,440 acre-feet per year on average from 2008 to 2023. During the period from 2008 to 2024, no water deliveries were made in the late winter or early spring months for seven different years, and water deliveries for 10 different years occurred for four months or less each year. During four of those 10 years, water deliveries occurred during only one or two months of the year. During these 10 years, water deliveries all occurred at different times of the year (some in spring, summer, or fall) (Yao 2024). In the absence of a reliable and predictable water supply in the Ditch over the years, wildlife likely rely on other readily available sources of water within and adjacent to the BSA, such as Littlerock Wash and other water features overlying the San Andreas Fault (i.e., sag ponds), Lake Palmdale, Lake Una, and the water features between the Ditch and Barrel Springs Road, among others.

4.5 Resources Protected by Local Policies and Ordinances

California Government Code Section 53091 exempts PWD from compliance with local zoning and building ordinances for projects involving the construction of facilities for the production, generation, storage, treatment, or transmission of water. This exemption applies to the Ditch and proposed pipeline infrastructure included in the Project because they are water conveyance infrastructure and a direct component of PWD's overall water treatment, storage, and transmission system. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential impacts on the environment, this analysis evaluates proposed Project compatibility with relevant City and County policies and ordinances.

4.5.1 Los Angeles County 2035 General Plan and Significant Ecological Areas

The Los Angeles County 2035 General Plan (2022) includes policies that address biological resources within the county. Policies that seek to preserve biological resources are contained in Chapter 9 of the Conservation and Natural Resources Element of the General Plan. The following policies are relevant to the Project:

Policy C/NR 3.6: Assist state and federal agencies and other agencies, as appropriate, with the preservation of special status species and their associated habitat and wildlife

movement corridors through the administration of the SEAs and other programs.

Policy C/NR 3.8: Discourage development in areas with identified significant biological resources, such as SEAs.

Policy C/NR 3.10: Require environmentally superior mitigation for unavoidable impacts on biologically sensitive areas, and permanently preserve mitigation sites.

The SEA Program is a tool that helps guide land development to avoid conflicts with important and irreplaceable biological resources within Los Angeles County. An SEA is an officially designated area within Los Angeles County that contains irreplaceable biological resources. The SEA Ordinance, which is a part of the Los Angeles County Planning and Zoning Code (Los Angeles County Code of Ordinances Section 22.102 et seq.), establishes the permitting, design standards, and SEA Technical Advisory Committee review process for development within SEAs. The BSA intersects two SEAs. A portion of the BSA north of the California Aqueduct intersects the San Andreas SEA for approximately 0.3 mile in unincorporated Los Angeles County and approximately 2 miles in the city of Palmdale, and the southernmost extent of the BSA intersects the Antelope Valley SEA for approximately 0.78 mile in the ANF and approximately 0.13 mile in unincorporated Los Angeles County. The SEA Ordinance (Chapter 22.102 of the Los Angeles County Municipal Code) would only be relevant to proposed Project activities in unincorporated Los Angeles County; however, the Project is exempt from local zoning codes and is therefore exempt from compliance with the SEA Ordinance.

4.5.2 Protected Trees and Vegetation

Los Angeles County Oak Trees and Oak Woodland Management

The Los Angeles County Oak Tree Ordinance is part of the Los Angeles County Planning and Zoning Code (County Code of Ordinances Section 22.174 et seq.). Pursuant to the ordinance, an oak tree permit must be obtained prior to damaging or removing any tree of the oak genus (*Quercus* spp.) that is:

- Eight inches or more in diameter (25 inches in circumference), as measured 4.5 feet above mean natural grade,
- Oaks with multiple trunks, where the combined diameter of any two trunks is 12 inches (38 inches in circumference) or more, or
- Provided as a replacement tree (pursuant to Los Angeles County Code Section 22.174.020).

The objectives of the Los Angeles County Oak Woodlands Conservation Management Plan (Woodland Plan) (County of Los Angeles 2011) are to prioritize the preservation of oak woodlands, promote conservation by integrating oak woodlands into the development process in a sustainable manner, and effectively mitigate the loss of oak woodlands. The Woodland Plan was prepared by the County pursuant to the California Oak Woodlands Conservation Act (Assembly Bill 242) to qualify for funding to preserve oak woodlands through the Oak Woodlands Conservation Fund; the County Board of Supervisors adopted the Woodland Plan on August 23, 2011 (County of Los Angeles 2024). The accompanying Oak Woodlands Conservation Management Plan Guide (Woodland Guide) (County of Los Angeles 2014) implements portions of the Woodland Plan and focuses on potential impacts to oak woodlands from proposed developments. The Woodland Guide defines oak woodlands as:

> An oak stand, including its understory, which consists of two or more oak trees (all native trees of the genus Quercus) of at least five inches in diameter (of the largest trunk) measured at 4.5' above mean natural grade, with greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover as early as January 1, 2005 (effective date of California Public Resources Code Section 21083.4).

A cluster of Tucker oak trees comprising 0.26 acre is located approximately 0.3 mile west of the Littlerock Reservoir access gate, northeast of the Ditch and at the edge of the BSA as shown in Figure 4k of Appendix A. The oak trees are within unincorporated Los Angeles County and are surrounded by California buckwheat scrub, rubber rabbitbrush scrub, and emergent western Joshua trees. Sufficient data is not available to determine whether these oaks meet the size and spacing thresholds defined in the Los Angeles County Oak Tree Ordinance, Woodland Management Plan, and Woodland Guide. The Project is exempt from local zoning codes and is therefore exempt from compliance with the Los Angeles County Oak Tree Ordinance.

City of Palmdale Native Desert Vegetation

Palmdale Municipal Code Chapter 14.04, *Joshua Tree and Native Desert Vegetation Preservation*, is intended to protect and preserve desert vegetation, which specifically includes western Joshua trees and California juniper trees, in a manner that is consistent with the City's General Plan and CEQA. This regulation outlines avoidance, minimization, and mitigation of impacts to both species. A CDFW protocol census of western Joshua trees was conducted within the BSA, where accessible, and mapped a total of 3,469 western Joshua trees and remnants of Joshua trees (as described in Section 4.1.1, *Special Status Plant Species*). California junipers were also observed throughout the entirety of the BSA, with denser woodlands occurring from Barrel Springs Road to Sierra Highway (described in Section 3.4.1, *Natural Vegetation Communities*).

4.6 Habitat Conservation Plans

Desert Renewable Energy Conservation Plan

The non-ANF portion of the BSA is located within the broader boundaries of the Desert Renewable Energy Conservation Plan (DRECP; United States Department of the Interior [USDoI], Bureau of Land Management [BLM] 2016), a collaboration between the California Energy Commission (CEC), BLM, USFWS, and CDFW that is designed to streamline renewable energy development while conserving unique and valuable desert ecosystems and providing outdoor recreation opportunities. The Project is not subject to the DRECP because the Project does not propose to develop renewable energy and because the DRECP is implemented exclusively on BLM lands, which do not occur within the BSA.

BLM West Mojave Plan

The non-ANF portion of the BSA is also located within the BLM West Mojave Plan area. The West Mojave Plan (USDoI, BLM 2005) is a habitat conservation plan and federal land use plan amendment that presents a comprehensive strategy to conserve and protect natural communities and sensitive species such as the desert tortoise (*Gopherus agassizii*) and the Mohave ground squirrel. The BLM West Mojave Plan is a collaborative effort of cities, counties, and state and federal agencies having jurisdiction over lands within the region. The Project is not subject to the BLM West Mojave Plan because the portion of the BSA within the BLM West Mojave Plan area boundary does not include federal land.

ANF Land Management Plan and San Gabriel Mountains National Monument Management Plan

The southern 0.78 mile of the BSA extent is located in the San Gabriel Mountains National Monument (established on October 10, 2014, under the President's Antiquities Act authority) and on ANF lands administered by the USFS, including those subject to the 2005 ANF Land Management Plan (USDA, USFS 2005). The Land Management Plan divides USFS lands into Land Use Zones, which identify appropriate management types of uses that are consistent with the desired conditions of each place within the ANF. The Project occurs within the Developed Area Interface zone, defined as an area adjacent to communities and developed sites, including developed recreation facilities and infrastructure. This zone allows a variety of uses and is one of the least restrictive zones described in the ANF Land Management Plan.

The ANF Land Management Plan includes objectives and direction for managing resources on the ANF, including plant and wildlife species that are federally listed and/or FSS. The Plan outlines program strategies and tactics relevant to biological resources, including:

- **WL-1 – Threatened, Endangered, Proposed, Candidate, and Sensitive Species Management.** Requires USFS to manage habitat to move listed species toward recovery and de-listing and to prevent listing of proposed and sensitive species.
- **WL-2 - Management of Species of Concern.** Directs USFS to maintain and improve habitat for fish, wildlife, and plants, including those designated as game species, harvest species, and watch list species.
- **IS-1 – Invasive Species Prevention and Control.** Directs USFS management activities to prevent the introduction of new invaders, to conduct early treatment on new infestations, and contain and control established infestation of invasive species.
- **FH-1 – Vegetation Restoration.** Requires USFS to restore vegetation after events or activities that degrade or cause a loss of plant communities.

In addition, the San Gabriel Mountains National Monument Management Plan (USDA, USFS 2018) contains the following desired conditions for biological resources:

- Habitat conditions are stable or improving over time as indicated by the 2016 Angeles Land Management Plan Monitoring Strategy.
- Habitats of special status species (threatened and endangered and FSS) in the Monument are managed to preserve and protect these species.

4.7 Coastal Zone, Wild and Scenic Rivers, Essential Fish Habitat, and Coastal Barrier Resources System

The BSA is not located within or adjacent to the Coastal Zone, federally designated Wild and Scenic Rivers, Essential Fish Habitat, or areas covered by the Coastal Barrier Resources System. As such, the Coastal Zone Management Act, Wild Scenic Rivers Act, Magnuson-Stevens Fishery Conservation and Management Act, and Coastal Barrier Resources Act are not applicable to the proposed Project.

4.8 Floodplain Management (Executive Order 11988)

Executive Order 11988 was enacted to mitigate adverse effects to floodplains and thereby reduce the risk of flooding to preserve both human health/safety and natural values. Most of the Ditch is located in Zone X (areas determined to be outside the 0.2 percent annual chance floodplain) (Federal Emergency Management Agency [FEMA] 2024). Exceptions include a small portion of the Ditch that connects to Lake Palmdale, which is within Zone A (1 Percent Annual Chance Flood Hazard) and a portion of the southern extent of the Ditch located within Zone D (Area of Undetermined Flood Hazard) (FEMA 2024). The Ditch was constructed in uplands to convey water from Littlerock Reservoir, and PWD controls the flow during water deliveries. As a result, floodplains are largely absent, and flood risk is low in the BSA.

4.9 Invasive Species (Executive Orders 13112/13751)

Executive Orders 13112/13751 were enacted to take steps to prevent the introduction and spread of invasive species and to support efforts to eradicate and control invasive species that are established. A variety of species listed as invasive by the California Invasive Plant Council (Cal-IPC) were documented in the BSA during the field survey, including herbaceous species (e.g., black and short-podded mustards [*Hirschfeldia incana*, *Brassica nigra*], Italian thistle [*Carduus pycnocephalus*], white horehound [*Marrubium vulgare*]), grasses (e.g., brome species, cheatgrass, pampas grass [*Cortaderia selloana*]), and shrubs (e.g., tamarisk), a number of which are listed as moderately or highly invasive (Cal-IPC 2024). These species can be found throughout the BSA.

5 Impact Analysis

This section discusses potential adverse impacts to biological resources that may occur from implementation of the proposed Project within the BSA. Recommended mitigation measures referenced in the analysis are presented in Section 6, *Recommended Mitigation Measures*.

5.1 Special Status Species

5.1.1 Special Status Plant Species

Eight special status plant species are known to occur or have moderate to high potential to occur in the BSA. Western Joshua tree (SCE, WJTCA) is present in the BSA. Horn's milk-vetch (CRPR 1B.1), Palmer's mariposa-lily (FSS, CRPR 1B.2), alkali mariposa-lily (FSS, CRPR 1B.2), white pygmy-poppy (FSS, CRPR 4.2), Mojave paintbrush (FSS, CRPR 4.3), short-joint beavertail cactus (FSS, CRPR 1B.2), and Greata's aster (CRPR 1B.3) were not observed during the field reconnaissance surveys but have a moderate to high potential to occur.

Ground disturbance from Project construction could result in damage to or removal of special status plants if present in the disturbance footprint. Direct impacts could occur through injury or mortality to individuals by heavy equipment during construction. Indirect impacts could result from habitat modifications, such as by the introduction of invasive plants disseminated from construction equipment, contamination of soils, or habitat degradation due to accidental fuel spills during construction. Given the proposed construction methods and potential temporary impacts related to construction activities (including site disturbances, staging areas, and equipment/vehicle access), western Joshua trees and individuals of other special status plant species identified above, if present, could be removed, damaged, or disturbed by Project construction.

With regard to western Joshua tree in the BSA, direct and indirect impacts could occur if individuals are removed to accommodate pipeline installation or staging/access or damaged by collision with construction equipment. Direct and indirect impacts could also occur if ground disturbing activities are conducted within 50 feet (15 meters) of an individual such that roots are severed by earth-moving machinery. Indirect impacts may occur if ground disturbing activities result in compacted soils that decrease the potential for western Joshua tree recruitment or infiltration of precipitation. Soil recontouring could also result in surface water diversion, depriving individuals of necessary water for growth. The WJTCA prohibits export, take, possession, purchase, or sale of any western Joshua tree in California unless authorized by CDFW. Potential impacts to western Joshua tree would require an Incidental Take Permit from CDFW.

Therefore, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, on special status plant species, and impacts would be significant. Implementation of Mitigation Measures BIO-1 through BIO-8 is recommended to reduce Project impacts to a less-than-significant level. These measures involve implementation of Best Management Practices (BMPs), delineation of work limits, a construction worker environmental awareness program (WEAP) training, pre-Project special status plant surveys, avoidance measures, a special status plant species mitigation and monitoring plan including compensatory mitigation (if applicable), avoidance/minimization/compensatory measures for western Joshua tree, and invasive plant species control.

5.1.2 Special Status Wildlife Species

Twenty-seven special status wildlife species are known or have moderate to high potential to occur in the BSA. Seventeen have moderate potential to occur, five have high potential to occur, and five were detected during the field reconnaissance surveys. The following subsections and Section 5.1.4, *Non-Listed Special Status Birds, Nesting Birds, and Raptor Foraging Habitat*, describe Project impacts in relation to those species documented as present or with a moderate or high potential to occur.

Crotch's Bumble Bee

Crotch's bumble bee (SCE) has high potential to occur in the BSA. Project construction activities have the potential to directly impact (through injury and mortality from initial ground disturbance and vegetation removal) and indirectly impact (through construction noise, dust, and other human disturbances) this species. If, at the commencement of Project construction, Crotch's bumble bee is still considered a CESA candidate species or has been listed as threatened or endangered under CESA, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, to Crotch's bumble bee, and impacts would be potentially significant.

Implementation of Mitigation Measure BIO-9, which involves pre-construction surveys, avoidance buffers, and compensatory mitigation, is recommended to reduce Project impacts to a less-than-significant level. If Crotch's bumble bee is still considered a CESA candidate species or has been listed as threatened or endangered under CESA at the commencement of Project construction, PWD would be required to obtain an Incidental Take Permit from CDFW for potential Project impacts to the species, if present.

Monarch Butterfly – California Overwintering Population

Monarch butterfly (FCS, FSS) may pass through the BSA during migration; individuals were observed foraging in rubber rabbitbrush in the BSA near Littlerock Reservoir during field reconnaissance surveys in November and December 2023. However, the BSA is over 40 miles from the California coast and known monarch butterfly overwintering sites (Xerces Society 2024b). The BSA does not contain wind-protected tree groves with suitable roost trees (e.g., eucalyptus, Monterey pine, and cypress) to support overwintering of the species; therefore, no impacts to monarch butterfly overwintering roost habitat would occur.

Potential direct impacts (injury or mortality) to monarch butterflies during initial vegetation removal for the Project, including potential crushing of individuals that may be foraging in the BSA, are not anticipated to occur given the mobility of the species to move out of harm's way. Therefore, no impacts to migrating monarch butterflies would occur.

Project implementation could result in loss of habitat to support foraging and migrating monarch butterflies during construction; however, such loss would be less than significant given extensive areas of natural habitat surrounding the BSA that are suitable and sufficient to sustain migrating individuals and the limited nature of permanent Project impacts associated with small footprints of appurtenant structures. Therefore, potential Project impacts from foraging habitat loss would be less than significant. Overall, the Project would not potentially result in adverse effects, either directly or through habitat modifications, to monarch butterfly, and impacts would be less than significant.

Soledad Shoulderband

Soledad shoulderband (G1/S1 CDFW Special Animal) has moderate potential to occur in the BSA in riparian habitat associated with Little Rock Wash, where it has been previously documented in the CNDBB as recently as 2016 (CDFW 2024a and 2024b).

The Project has been designed to avoid construction work within Little Rock Wash riparian areas, which provides suitable habitat for this species. As a result, direct impacts to the species or its habitat from ground disturbance or vegetation removal (resulting in injury or mortality) would not occur. Indirect impacts to the species (if present) and its suitable habitat in Little Rock Wash from Project-related noise, vibration, dust, or lighting (resulting in alterations to normal behavior) has potential to occur. Therefore, Project construction would potentially result in substantial adverse indirect effects to Soledad shoulderband, and impacts would be potentially significant. Implementation of Mitigation Measures BIO-1, BIO-2, and BIO-19, is recommended to reduce these impacts to less-than-significant levels through implementation of BMPs, work limit delineation, and avoidance of materials/spoils stockpiling and spills near jurisdictional resources and riparian habitat.

Special Status Reptiles

Southwestern pond turtle (FPT, FSS, SSC), coast horned lizard (SSC), northern California legless lizard (FSS, SSC), California legless lizard (SSC), and two-striped garter snake (FSS, SSC) have moderate potential to occur in the BSA. Project construction activities have potential to directly impact (through injury and mortality) and indirectly impact (through construction noise, dust, and other human disturbances) these species if and where they are present within the BSA. Therefore, Project construction would potentially result in substantial adverse effects, either directly or indirectly, to special status reptiles, and impacts would be potentially significant. Implementation of Mitigation Measures BIO-1 through BIO-3, as well as Mitigation Measures BIO-10 and BIO-11, is recommended to reduce these impacts to less-than-significant levels through implementation of BMPs, work limit delineation, a WEAP, pre-activity surveys for special status wildlife, and biological construction monitoring.

Project implementation could also result in permanent loss of habitat that support special status reptile populations; however, such loss would be less than significant given extensive areas of natural habitat surrounding the BSA that are suitable and sufficient to support robust populations of these species and the limited nature of permanent Project impacts associated with small footprints of appurtenant structures. Therefore, potential Project impacts from habitat loss would be less than significant.

If southwestern pond turtle has been listed as threatened or endangered under the federal ESA at the time Project construction commences, PWD would be required to obtain an incidental take authorization from USFWS to address potential impacts to the species, if present on or adjacent to the Project site.

Tricolored Blackbird, Least Bell's Vireo, and Southwestern Willow Flycatcher

Tricolored blackbird (ST, SSC) has moderate potential to occur adjacent to the BSA in wetland habitat with tules and cattails associated with Lake Palmdale, where it has been previously documented in the CNDBB as recently as 2011 (CDFW 2024a and 2024b). In addition, in the riparian habitat associated with Little Rock Wash in the BSA, southwestern willow flycatcher (FE, SE) has moderate potential to occur, and least Bell's vireo (FE, SE) has high potential to occur. Southwestern willow flycatcher has not been documented within five miles of the BSA in the CNDDB (CDFW 2024a

and 2024b); however, least Bell's vireo was documented as recently as 2012 below the Littlerock Dam as part of surveys conducted for the Littlerock Sediment Removal Project (PWD 2017).

The Project has been designed to avoid construction work within or near suitable habitat for these species near Lake Palmdale and Little Rock Wash during their respective nesting seasons – near Lake Palmdale during the tricolored blackbird nesting season from mid-March to June and near Little Rock Wash during the southwestern willow flycatcher nesting season from mid-April to August and least Bell's vireo nesting season from mid-March to August. No-work buffers of at least 500 feet would be employed around suitable nesting habitat for these species during their nesting seasons, as determined by a qualified biologist. Removal of suitable nesting habitat for these species during construction would also be avoided. As a result, direct impacts from vegetation removal or trimming (resulting in injury or mortality) or indirect impacts from Project-related noise, vibration, dust, or lighting (resulting in altered nesting behavior or abandonment of nests) would not occur. The Project would also avoid removal of suitable habitat for these species. Therefore, the Project would not result in substantial adverse effects, either directly or through habitat modifications, to tricolored blackbird, southwestern willow flycatcher, and least Bell's vireo, and impacts would be less than significant.

Burrowing Owl

Burrowing owls (SSC) are a ground-dwelling species that rely on small mammals and large insects for prey. If owls are present, Project construction activities have the potential to directly impact (through injury or mortality) and indirectly impact (through noise, dust, and other human disturbances that may impact the species' normal behavior) burrowing owl. The Project would also potentially result in the loss of foraging habitat during the breeding season if a nesting pair is present in or within 500 feet of the BSA. Therefore, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, to burrowing owl, and impacts would be significant.

Implementation of Mitigation Measures BIO-12 and BIO-13, which include focused breeding season burrowing owl surveys and compensatory mitigation for foraging habitat loss, is recommended to reduce these impacts to less-than-significant levels.

Finally, if the species is considered a CESA candidate species or has been listed as threatened or endangered under CESA at the time Project construction commences, PWD would be required to obtain an Incidental Take Permit from CDFW for potential Project impacts to the species, if present on the Project site and/or within a 500-foot buffer.

Swainson's Hawk

Swainson's hawk (ST) is known to historically nest and forage in Joshua tree woodlands, native desert scrub with a suitable prey base, and riparian forests in the Antelope Valley, all of which exist in the BSA (i.e., suitable cottonwood trees, juniper woodlands, and western Joshua trees). However, present-day Swainson's hawk nests in the Antelope Valley have been documented primarily adjacent to agricultural areas that support high abundance of prey species (e.g., small mammals) (Bloom et al. 2023). Potential impacts to suitable (though not necessarily preferred) foraging habitat for Swainson's hawk within the BSA would occur during Project construction during one nesting season. Removal of foraging habitat during Project construction would be significant if it represents a large proportion of the foraging habitat necessary to support Swainson's hawk in the region, especially if the removal is permanent. The BSA occurs within and constitutes a small portion of the largely undeveloped landscape in the foothills of the San Gabriel Mountains. Project construction

would be confined to the Project site, only a fraction of which would require temporary vegetation removal to allow for construction access and installation of the underground pipeline. The majority of the vegetation removal would be temporary and permanent impacts would be limited to small footprints of appurtenant structures. Therefore, potential Project impacts on foraging habitat and reproductive capacity of Swainson's hawk through temporary loss of foraging habitat within the BSA would be less than significant.

Implementation of the Project could result in direct impacts (ground disturbance and removal of vegetation that contain active nests) or indirect impacts (construction noise, lighting, and fugitive dust) to nesting Swainson's hawk, if present on or within 0.25 mile of work areas. These impacts could lead to individual mortality or harassment that might reduce nesting success. Therefore, the Project would potentially result in substantial adverse effects to Swainson's hawk, either directly or indirectly, and impacts would be potentially significant. Implementation of Mitigation Measure BIO-14, which involves Swainson's hawk nesting surveys during the breeding season prior to the start of construction and establishment of protective buffers if nests are located within 0.5 mile of the Project site, are recommended to reduce potential impacts to the species to less-than-significant levels and to facilitate Project compliance with the MBTA, CFGC, and CESA.

Finally, if Swainson's hawk is still an ST species at the time Project construction commences, PWD would be required to obtain an Incidental Take Permit from CDFW if pairs are confirmed nesting within 0.5-mile of the Project site that could potentially be impacted by Project activities.

Mohave Ground Squirrel

Mohave ground squirrel (ST) has moderate potential to occur within the northwestern portion of the BSA east of Sierra Highway where spiny hopsage and winterfat plants were observed within an open, low vegetated area between stands of California junipers. This area is within the species' historical range, and California ground squirrels and burrow complexes were observed in this area during the field reconnaissance surveys. If Mohave ground squirrel is present in the BSA, Project activities have the potential to directly impact (through ground disturbance) and indirectly impact (through construction noise, lighting, and fugitive dust) individuals. These impacts could lead to individual mortality or harassment that might reduce reproductive success. Therefore, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, to Mohave ground squirrel, and impacts would be potentially significant.

The CDFW requires a live-trapping protocol survey for Mohave ground squirrel for projects that propose impacts to habitat with potential to support the species and are within or adjacent to the species' known range. Accordingly, implementation of Mitigation Measure BIO-15, which includes a protocol live-trapping survey and implementation of avoidance and minimization measures if necessary, is recommend to reduce potential impacts to the species to less-than-significant levels and facilitate Project compliance with CESA.

Finally, if Mohave ground squirrel is still a ST species at the time Project construction commences, PWD would be required to obtain an Incidental Take Permit from CDFW if the species is confirmed present on or within 50 feet of the Project site that could potentially be impacted by Project activities.

Special Status Bats

Pallid bat (FSS, SSC) has potential to roost in rock crevices, mature trees, and other manmade structures in the BSA. Project activities could potentially impact roosting bats, including special

status bat species such as pallid bat, if roosting habitat is impacted during vegetation removal within the BSA. Therefore, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, to roosting special status bat species, and impacts would be potentially significant. Implementation of Mitigation Measure BIO-16, which involves a roosting bat habitat assessment and avoidance and minimization measures if necessary, is recommended to reduce impacts to roosting bats to less-than-significant levels.

Although Townsend's big-eared bat has high potential to forage in the BSA, it is unlikely to roost in the BSA given the lack of suitable roosting habitat (such as cave entrances, buildings, or mines). Project activities could potentially impact foraging habitat for special status bats. However, impacts would be temporary, and permanent impacts would be limited to small footprints of appurtenant structures. Therefore, potential Project impacts on foraging habitat of special status bats through temporary loss of foraging habitat within the BSA would be less than significant.

San Diego Desert Woodrat

Numerous woodrat stick nests or "middens" were observed throughout the BSA, although the presence of any special status woodrat subspecies was not confirmed during the field reconnaissance surveys. If present in the Project site, Project activities have the potential to impact San Diego desert woodrat (SSC) during ground disturbance and vegetation/soil removal through direct removal of individuals or middens, resulting in injury or mortality. Project activities also have the potential to indirectly impact San Diego desert woodrat, if present in the Project site, through construction noise, dust, and lighting that could alter normal behaviors and influence reproductive success. Therefore, the Project would potentially result in substantial adverse effects, either directly or through habitat modifications, to San Diego desert woodrat, and impacts would be potentially significant. Implementation of Mitigation Measure BIO-17, which includes pre-construction surveys for active woodrat middens and avoidance and minimization measures if necessary is recommended to reduce potential Project impacts to less-than-significant levels.

5.1.3 USFWS Designated Critical Habitat for Federally Listed Species

The BSA is not located in USFWS-designated critical habitat areas. Therefore, no impact would occur to USFWS-designated critical habitat.

5.1.4 Non-Listed Special Status Birds, Nesting Birds, and Raptor Foraging Habitat

The nests of most native birds and raptors are protected under federal and state laws. It is likely birds use the BSA for nesting (generally from early February through late August), given the mix of native and non-native vegetation as well as the number of bird species and individuals observed during the field reconnaissance surveys.

The Project has potential to result in direct and indirect impacts to nesting birds, including SSC and CDFW WL species such as Cooper's hawk, southern California rufous-crowned sparrow, northern harrier, and loggerhead shrike, as well as other species protected under the MBTA and CFGC Section 3503, if they are nesting within the BSA and/or immediate vicinity during Project construction activities. Direct impacts from construction activities may include ground disturbance and removal of vegetation, which could potentially contain birds' nests. Indirect impacts may include construction noise, lighting, and fugitive dust that could lead to individual mortality or harassment

that might reduce nesting success. Therefore, the Project would potentially have substantial adverse effects, either directly or through habitat modifications, on nesting birds, including SSC and CDFW WL species, and impacts would be potentially significant. Implementation of Mitigation Measure BIO-18, which includes a pre-construction nesting bird survey and protective buffers if nesting birds are located, is recommended to reduce potential Project impacts to special status nesting birds and other species protected under the MBTA and CFGC Section 3503 to less-than-significant levels and to facilitate compliance with the MBTA and CFGC.

Removal of foraging habitat during Project construction would be significant if it represents a large proportion of the foraging habitat necessary to support migrating or overwintering birds or raptors in the region (including special status species such as sharp-shinned hawk, golden eagle, Bell's sparrow, ferruginous hawk, merlin, and prairie falcon), especially if the removal is permanent. The BSA occurs within and constitutes a small portion of the largely undeveloped landscape in the northern foothills of the San Gabriel Mountains. Project construction would be confined to the Project site, only a fraction of which would require vegetation removal to allow for construction access and installation of the underground pipeline. The majority of vegetation removal would be temporary; permanent impacts would be limited to small footprints of appurtenant structures. Therefore, potential Project impacts on foraging habitat of migratory birds and raptors and reproductive capacity of raptors through temporary loss of foraging habitat within the BSA would be less than significant.

5.2 Sensitive Natural Communities

Five vegetation communities documented in the BSA are classified as sensitive by the CDFW: Arroyo Willow Thickets Shrubland Association, California Sycamore-Red Willow/Arroyo Willow-Mulefat Association, Fremont Cottonwood Woodland Association, Goodding's Willow-Red Willow Riparian Woodland Association, and Western Joshua Tree/California Juniper/Nevada Ephedra Woodland Association. Riparian habitat in the BSA occurs in small, isolated areas along the Ditch and other drainages or wetlands, as well as in Little Rock Wash. In addition, small portions of the BSA overlap the Little Rock Wash RCA (including the 98-foot buffer on either side of the wash), as defined in the USFS 2005 ANF Land Management Plan (USDA, USFS 2005).

Project construction would be confined to the Project site, only a fraction of which would require temporary vegetation removal, potentially in sensitive vegetation communities and riparian habitat vegetation, to allow for construction access and installation of the underground pipeline. No impacts would occur to Little Rock Wash or the riparian habitat vegetation associated with the wash; however, construction activities may temporarily disturb upland vegetation communities and habitats within the wash's RCA buffer. Most of the vegetation removal would be temporary. Permanent impacts would be limited to the Ditch itself as well as small footprints of appurtenant structures, some of which may be within sensitive vegetation communities or riparian habitat vegetation, but none of which are proposed within the Little Rock Wash RCA. Therefore, the Project would potentially have a substantial adverse effect on riparian habitat vegetation or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS, and impacts would be significant.

Implementation of Mitigation Measures BIO-19 and BIO-20, which include avoidance and minimization of potential Project impacts to sensitive natural communities and riparian habitat vegetation to the extent feasible as well as compensatory mitigation for impact areas at a minimum ratio of 1:1, is recommended to reduce Project impacts to sensitive natural communities, riparian

habitat vegetation, and Little Rock Wash RCA to less-than-significant levels. In the ANF, PWD would also be required to comply with the USFS requirements regarding RCAs.

5.3 Jurisdictional Waters and Wetlands and Executive Order 11990 (Protection of Wetlands)

Project implementation would result in temporary and permanent impacts of up to approximately 5.61 acres and 38,387 linear feet of waters of the U.S. and State and up to approximately 10.95 acres and 38,490 linear feet of CDFW-jurisdictional streambeds if they cannot be avoided as part of Project design or during Project construction activities. This includes permanent impacts of up to approximately 5.0 acres and 32,750 linear feet of waters of the U.S. and State and up to approximately 9.5 acres and 33,000 linear feet of CDFW jurisdictional streambeds. If avoidance of jurisdictional waters and wetlands is not feasible, the Project would have substantial temporary and permanent adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means, and impacts would be significant.

Implementation of Mitigation Measure BIO-21, which includes compensatory mitigation for permanent impacts, as well as Mitigation Measure BIO-19 (impact avoidance, minimization), are recommended to reduce impacts to jurisdictional waters to less-than-significant levels.

In addition, a minor amount of groundwater dewatering during construction may be necessary in two locations where the groundwater table is near the planned depth of excavations. Disposal of the water to surface water bodies (including Little Rock Wash) other than the Ditch would not be allowed. Dewatering activities would be required to comply with applicable NPDES permit or Waste Discharge Requirements for the selected method(s) of disposal, including any water quality standards that may require pre-treatment prior to storage. Therefore, no impact to jurisdictional waters and wetlands from potential groundwater dewatering would occur.

Prior to ground disturbing activities that could impact jurisdictional waters or wetlands, PWD should consult with the appropriate regulatory agencies (Lahontan RWQCB, CDFW, and/or USACE) anticipated to assert jurisdiction over the features. The Project is anticipated to require a Lake and Streambed Alteration Agreement from CDFW, a Water Quality Certification under CWA Section 401 from the Lahontan RWQCB, and a permit under CWA Section 404 from USACE. Based on such consultation, any required permits should be obtained prior to disturbance of jurisdictional resources.

5.4 Wildlife Movement

While the BSA likely contributes to supporting wildlife movement across the undeveloped extent of the northern San Gabriel Mountain foothills between mountain and desert ecosystems, including riparian and wetland habitats at Little Rock Wash and Lake Palmdale, construction activities would be temporary, short-term, and would primarily occur during the daytime. Project construction would result in a temporary decrease in the function of the BSA to support wildlife movement. However, Project construction would likely not occur along the entire extent of the Ditch all at once, even though simultaneous construction along multiple segments may occur. Wildlife can, and would likely, traverse around the work areas during construction. Therefore, Project construction would not 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, and impacts would be less than significant.

Project operation would not increase activities that could impact wildlife movement beyond existing conditions. The Project would be located primarily belowground, with the exception of small footprints of appurtenant structures, which would not interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Moreover, removal of the open-channel segments of the Ditch would not eliminate the only source of water available to wildlife moving through the region. As detailed further in Section 4.4, *Wildlife Movement*, water deliveries via the Ditch have fluctuated greatly since 2008 with deliveries being less predictable in quantity (acre-feet), duration (number of days), and timing (days and/or months during the year). Other water sources available in the general vicinity of the BSA (e.g., Littlerock Wash, other water features overlying the San Andreas Fault [i.e., sag ponds], Lake Palmdale, Lake Una, and water features between the Ditch and Barrel Springs Road) have likely played an important role in supporting local and migrating wildlife in the absence of a reliable and predictable water supply in the Ditch over the years. As a result, removal of the Ditch as a water source for wildlife would not interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Therefore, impacts during Project operation would be less than significant.

5.5 Resources Protected by Local Policies and Ordinances

California Government Code Section 53091 exempts PWD from compliance with local zoning and building ordinances for projects involving the construction of facilities for the production, generation, storage, treatment, or transmission of water. This exemption applies to the Ditch and proposed pipeline infrastructure included in the Project because they are water conveyance infrastructure and a direct component of PWD's overall water treatment, storage, and transmission system. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential impacts on the environment, this analysis evaluates proposed Project compatibility with relevant policies and ordinances of the County and City.

5.5.1 Los Angeles County 2035 General Plan and Significant Ecological Areas

The portion of the BSA in unincorporated Los Angeles County intersects two Los Angeles County SEAs – approximately 0.3 mile of the BSA is within the San Andreas SEA and approximately 0.13 mile of the BSA is within the Antelope Valley SEA. Implementation of the proposed Project would involve ground disturbance and vegetation removal that could impact biological resources (plants, wildlife, and vegetation communities) that are important components and targets of protection under the Los Angeles County SEA Program and under Policies C/NR 3.6, 3.8, and 3.10 of the County's 2035 General Plan. Therefore, Project construction would potentially conflict with the provisions of the Los Angeles County SEA Program and the County's 2035 General Plan, and impacts would be significant. Implementation of Mitigation Measures BIO-1 through BIO-20 (BMPs; work limit delineation; WEAP; special status species surveys and avoidance, minimization, and compensatory measures; invasive plant species control; biological monitoring; and habitat revegetation, restoration, and monitoring) is recommended to achieve consistency with the goals and policies of

the Los Angeles County 2035 General Plan and SEA Program and reduce Project impacts to less-than-significant levels.

During operation, Project facilities would be located primarily belowground and aboveground appurtenant structures would have small footprints. Therefore, Project operation would not conflict with the provisions of the Los Angeles County SEA Program and the County's 2035 General Plan, and no impacts would occur.

5.5.2 Protected Trees and Vegetation

Los Angeles County Oak Trees and Oak Woodland Management

Tucker oak trees are present on approximately 0.26 acre of the BSA and may meet the size and spacing thresholds to be classified as protected oak trees or protected oak woodlands as defined in the Los Angeles County Oak Tree Ordinance (Los Angeles County Code of Ordinances Section 22.174 et seq.), the Woodland Management Plan (Los Angeles County 2011), and the Woodland Guide (Los Angeles County 2014). The trees may be impacted by Project activities, including ground disturbance and vegetation removal as part of construction equipment/vehicle access and installation of the underground pipeline. Therefore, Project construction would potentially conflict with the Los Angeles County Oak Tree Ordinance, the Woodland Management Plan, and the Woodland Guide, and impacts would be significant. Implementation of Mitigation Measures BIO-1 through BIO-3, BIO-8, BIO-11, and BIO-20 (BMPs; work limit delineation; WEAP; invasive plant species control; biological construction monitoring; and habitat revegetation, restoration, and monitoring) is recommended to achieve consistency with the goals of the Los Angeles Oak Tree Ordinance, Woodland Management Plan, or Woodland Guide and reduce Project impacts to less-than-significant levels.

City of Palmdale Native Desert Vegetation Ordinance

Western Joshua trees and California juniper trees are present throughout the BSA, including within the jurisdiction of the City of Palmdale. The trees may be impacted by Project activities including ground disturbance and vegetation removal as part of construction equipment/vehicle access and installation of the underground pipeline. Therefore, Project construction would potentially conflict with the City's Native Desert Vegetation Ordinance, and impacts would be significant. Implementation of Mitigation Measures BIO-1 through BIO-3, BIO-6, BIO-8, BIO-11, and BIO-20 (BMPs; work limit delineation; WEAP; western Joshua tree avoidance, minimization, and compensation measures; invasive plant species control; biological construction monitoring; and habitat revegetation, restoration, and monitoring) is recommended to achieve consistency with the goals of the City's Native Desert Vegetation Ordinance and reduce Project impacts to less-than-significant levels.

5.6 Habitat Conservation Plans

The non-ANF portion of the BSA is located within the broader boundaries of the DRECP (USDoI, BLM 2016) and within the planning area of the BLM West Mojave Plan (USDoI, BLM 2005). However, the Project is not subject to the DRECP or BLM West Mojave Plan because 1) the portion of the Project alignment within those plan areas is not on federal land and 2) the Project does not propose to develop renewable energy. The Project is not located in other areas subject to an adopted HCP or

NCCP. Therefore, the Project would not conflict with an adopted HCP or NCCP, and no impact would occur.

A 0.78-mile portion of the southernmost portion of the BSA is located in the San Gabriel Mountains National Monument on ANF lands administered by the USFS and subject to the 2005 ANF Land Management Plan, which outlines program strategies and tactics relevant to biological resources (USDA, USFS 2005), and the San Gabriel Mountains National Monument Plan, which identifies desired conditions for biological resources (USDA, USFS 2018). The Project has the potential to adversely affect biological resources that are targets for management in the 2005 ANF Land Management Plan and the San Gabriel Mountains National Monument Plan, including, but not limited to, federally listed, proposed, or candidate species and FSS; stability of special status species habitat; control of invasive species; and vegetation restoration. As a result, Project construction would potentially conflict with the 2005 ANF Land Management Plan and San Gabriel Mountains National Monument Plan, and impacts would be significant. Implementation of Mitigation Measures BIO-1 through BIO-20 is recommended to reduce potential Project impacts to special status species, stability of special status species habitat, control of invasive species, and vegetation restoration to less than significant and to facilitate Project conformance with the program strategies and tactics outlined for biological resources in the ANF Land Management Plan, including WL-1, WL-2, IS-1, and FH-1, and the relevant desired conditions of the San Gabriel Mountains National Monument Plan. With implementation of Mitigation Measures BIO-1 through BIO-20, the Project would not conflict with the 2005 ANF Land Management Plan or the San Gabriel Mountains National Monument Plan.

5.7 Coastal Zone, Wild and Scenic Rivers, Essential Fish Habitat, and Coastal Barrier Resources System

Because the BSA is not within or adjacent to the Coastal Zone, federally-designated Wild and Scenic Rivers, Essential Fish Habitat, or areas covered by the Coastal Barrier Resources System, no impacts to these resources would occur.

5.8 Floodplain Management (Executive Order 11988)

The BSA is within areas that are outside the 0.2 percent annual chance floodplain, with the exception of a small portion adjacent to Lake Palmdale (1 percent annual chance flood hazard) and the southern portion of the BSA (area of undetermined flood hazard) (FEMA 2024). The Ditch was constructed in uplands, floodplains are largely absent, and flood risk is low in the BSA. Project activities within the floodplain near Lake Palmdale and in areas with undetermined flood hazard would be temporary in nature, and once complete, Project facilities would be located primarily belowground and would not have the potential to interfere with flood flows. Therefore, the Project would not conflict with Executive Order 11988.

5.9 Invasive Species (Executive Orders 13112/13751)

Invasive species are found throughout the BSA, including a variety of species listed as invasive by Cal-IPC (Cal-IPC 2024). Project construction has the potential to introduce and spread additional invasive species to areas within and adjacent to the BSA if seeds or other plant parts are transported to the site via construction equipment or personnel. Implementation of the work limit delineation and standard construction BMPs described in Mitigation Measures BIO-1 and BIO-2; a WEAP

described in Mitigation Measure BIO-3 that would include information regarding invasive species; construction equipment cleaning and use of weed-free materials described in Mitigation Measure BIO-8; and post-construction restoration of temporary impact areas described in Mitigation Measure BIO-20 is recommended to avoid the introduction or spread of invasive species and achieve consistency with Executive Orders 13112/13751.

6 Recommended Mitigation Measures

This section includes recommended mitigation measures to avoid, minimize, and compensate for potential Project impacts to biological resources.

6.1 General Measures

BIO-1 General Best Management Practices

PWD should require the Project construction contractor(s) and their personnel to adhere to the following general BMPs during Project construction:

- Project-related vehicles should observe a 10-mile-per-hour speed limit within the unpaved limits of construction.
- All open trenches or excavations should be fenced and/or sloped to prevent entrapment of wildlife species.
- All food-related trash items such as wrappers, cans, bottles, and food scraps generated during Project construction should be disposed of in closed containers only and removed daily from the Project site.
- No deliberate feeding of wildlife should be allowed.
- No pets should be allowed on the Project site.
- No firearms should be allowed on the Project site.
- Vehicle or equipment maintenance should be performed in designated staging areas.
- Access to the construction area outside of established work hours for the Project should be prohibited.
- If construction must occur at night (i.e., between dusk and dawn), all lighting should be shielded and directed downward to minimize the potential for glare or spillover.
- During construction, heavy equipment should be operated in accordance with standard BMPs. All equipment used on-site should be properly maintained to avoid leaks of oil, fuel, or residues. Provisions should be in place to remediate accidental spills.
- While encounters with special status species are not anticipated, any worker who inadvertently injures or kills a special status species or finds one dead, injured, or entrapped should immediately report the incident to the construction foreman or biological monitor (recommended under Mitigation Measure BIO-11). The construction foreman or biological monitor should immediately notify PWD.

BIO-2 Work Limit Delineation

PWD should clearly identify work area limits on Project design and construction plans and should require its Project construction contractor(s) to delineate and clearly mark approved construction work area limits with flagging or temporary orange construction fencing in the field prior to initial ground disturbing activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). The marked boundaries should be maintained for the duration of Project construction activities in each work area and should be clearly visible to personnel on foot and by heavy equipment operators. Fencing or other barriers

should be placed on the impact side of the work area limit (i.e., within the Project site boundaries) to reduce the potential for encroachment and additional vegetation loss within adjacent open space. Fencing should be installed pursuant to the approved construction and grading plans. Prior to initial ground disturbing activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation), the biological monitor (recommended under Mitigation Measure BIO-11) should verify the limits of construction have been properly staked and are readily identifiable. Employees should strictly limit their activities and vehicles to the designated Project site, staging areas, and routes of travel. Intrusion by unauthorized vehicles outside of construction limits should be prohibited, with control exercised by an on-site foreman. All temporary fencing should be removed only after the conclusion of all grading, clearing, and construction activities at each work area along the Project alignment.

BIO-3 Construction Worker Environmental Awareness Program

PWD should retain a qualified biologist to conduct a pre-Project WEAP training for all personnel working at the Project site. The WEAP should aid workers in recognizing special status species and regulated biological resources known to occur (e.g., western Joshua trees, sensitive natural communities, jurisdictional waters or wetlands) or potentially occurring on the Project site (as determined by the qualified biologist identified in Mitigation Measure BIO-11 and as confirmed by the results of the focused surveys conducted pursuant to Mitigation Measures BIO-4, BIO-9, BIO-10, and BIO-12 through BIO-18) and focus on conditions and protocols necessary to avoid and minimize potential impacts to biological resources. All personnel associated with Project construction should attend the WEAP training prior to initiation of Project construction activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). The training should include information about the special status species potentially occurring within the Project site, identification of special status species and habitats, a description of the regulatory status and general ecological characteristics of special status resources, and a review of the limits of construction and measures required to avoid and minimize impacts to biological resources within the work area. A fact sheet conveying this information should also be prepared for distribution to all contractors, their employees, and other personnel involved with construction of the Project. All employees working at the Project site should sign a form provided by the trainer documenting they have attended the WEAP and understand the information presented to them. The signed form should be provided to PWD as documentation of training completion. The crew foreman should be responsible for ensuring crew members adhere to the guidelines and restrictions designed to avoid impacts to special status species and other regulated biological resources. If new personnel are brought onto the Project after completion of the initial WEAP training, the training should be conducted for all new personnel before they can participate in construction activities.

6.2 Special Status Plants

BIO-4 Special Status Plant Surveys

PWD should retain a qualified biologist to conduct surveys for special status plants prior to any vegetation removal, grubbing, or other construction activity within the Project footprint. The surveys should be floristic in nature and seasonally timed to coincide with the blooming periods of Horn's milk-vetch, Palmer's mariposa-lily, alkali mariposa-lily, white pygmy-poppy, Mojave paintbrush, short-joint beavertail, and Greata's aster. The surveys should be conducted during the relevant target species' blooming periods no more than two years prior to construction. Special

status plant species identified on site should be mapped onto a site-specific aerial photograph. Surveys should be conducted in accordance with the most current CDFW and USFWS protocols. A report of the survey results should be submitted to PWD for review and approval.

BIO-5 Special Status Plant Avoidance Measures

If special status plants other than western Joshua trees are detected during special status plant surveys conducted pursuant to Mitigation Measure BIO-4, the observed special status plants should be avoided through Project design where feasible, and vegetation clearing within 50 feet (15 meters) of any identified special status plant should be conducted by hand by the Project construction contractor(s), if practicable. An avoidance buffer of at least 50 feet (15 meters), or other distance as approved by a qualified biologist, should be established around any identified special status plants that can be feasibly avoided, and the avoidance buffer should be delineated with bright orange protective fencing. The avoidance buffers should be maintained for the duration of Project construction activities in each work area and should be removed only after the conclusion of all grading, clearing, and construction activities at each work area along the Project alignment.

BIO-6 Special Status Plant Mitigation and Monitoring Plan

If special status plants other than western Joshua tree are detected during special status plant surveys conducted pursuant to Mitigation Measure BIO-4 and would be impacted by Project construction, PWD should retain a qualified restoration specialist to develop a Special Status Plant Mitigation and Monitoring Plan that provides for the on-site or off-site replacement of the species impacted by the Project. The Special Status Plant Mitigation and Monitoring Plan should specify the following:

- A summary of impacts;
- The location of the mitigation site;
- Methods for harvesting seeds or salvaging and transplanting individuals to be impacted;
- Measures for propagating plants or transferring living plants from the salvage site to the mitigation site;
- Site preparation procedures for the mitigation site;
- A schedule and action plan to maintain and monitor the mitigation site;
- Criteria and performance standards by which to measure the success of the mitigation, including replacement of impacted plants at a minimum 1:1 ratio;
- Measures to exclude unauthorized entry into the mitigation areas; and
- Contingency measures such as replanting or weeding if mitigation efforts are not successful.

The performance standards for the Special Status Plant Mitigation and Monitoring Plan should be, at a minimum, the following:

- Within five years after introducing the plants to the mitigation site, the number of established, reproductive plants should equal the number impacted during Project construction; and
- Restoration should be considered successful after the success criteria have been met for a period of at least two years without any maintenance or remediation activities other than invasive species control.

The Special Status Plant Mitigation and Monitoring Plan should be initiated prior to Project construction (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation) and should be implemented over a five-year period. The plan may also be combined with the Habitat Revegetation, Restoration, and Monitoring Program described under Mitigation Measure BIO-20.

Annual reports discussing the implementation and management of the Special Status Plant Mitigation and Monitoring Plan should be submitted to PWD for review and approval. Five years after the start of the mitigation project, a final report should be submitted to PWD for review and approval and should, at a minimum, discuss the implementation and management of the Special Status Plant Mitigation and Monitoring Plan over the five-year period and indicate whether the Special Status Plant Mitigation and Monitoring Plan has been successful based on the established performance standards. Should the success criteria be met before Year Five, the mitigation effort can be deemed complete.

BIO-7 Western Joshua Tree Avoidance, Minimization, and Compensation Measures

The Project should be designed to avoid impacts to western Joshua trees to the extent feasible. An avoidance buffer of at least 50 feet (15 meters) should be established around western Joshua tree individuals that can be feasibly avoided. If a 50-foot buffer is not feasible, a reduced buffer can be established if a qualified desert native plant specialist and CDFW determine the reduced buffer would avoid direct impacts to individual western Joshua tree(s). No Project activities should occur within the buffer. The avoidance buffers should be maintained for the duration of Project construction activities in each work area and should be removed only after the conclusion of all grading, clearing, and construction activities at each work area along the Project alignment.

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

- The western Joshua tree individual should be trimmed or relocated under the guidance of a desert native plant specialist. Tree relocation should be implemented in accordance with the following measures and CDFW-provided guidelines and relocation protocols, if made available prior to Project construction, to assist the survival of the relocated tree (WJTCA; CFGC Section 1927):
  - The relocated western Joshua tree should be placed in a suitable location and with proper orientation to improve its survival.
  - The western Joshua tree should be relocated at a time that maximizes its survival, when feasible.
  - A desert native plant specialist should be on site to oversee relocation of the tree.
- PWD should submit payment of an in-lieu fee to CDFW pursuant to CDFW's standard mitigation fee structure for western Joshua tree in effect at the time of application for an Incidental Take Permit (CDFW 2024e; CFGC Section 1927). The current (2024) standard mitigation fee structure is as follows:
  - Trees five meters or greater in height - $2,500 per tree
  - Trees one meter or greater but less than 5 meters in height - $500 per tree
  - Trees less than one meter in height - $340 per tree

BIO-8 Invasive Plant Species Control Measures

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

6.3 Special Status Wildlife

BIO-9 Crotch's Bumble Bee Avoidance, Minimization, and Compensation Measures

If Crotch's bumble bee is still considered a CESA candidate species or has been listed as threatened or endangered under CESA at the time Project construction commences, PWD should implement the following avoidance, minimization, and compensation measures for this species:

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

consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). Once the nest has been determined to be inactive, construction activities within the no-disturbance buffer(s) should be allowed to resume. Otherwise, the no-disturbance buffer should be maintained for the duration of Project construction activities in each work area and should be removed only after the conclusion of all grading, clearing, and construction activities at each work area along the Project alignment.

- If establishment of a no-disturbance buffer and/or avoidance of the nest is not feasible, the qualified biologist should consult with CDFW regarding potential encroachment into the no-disturbance buffer and for Project activities that may result in take of Crotch's bumble bee.
- If Crotch's bumble bee is determined to be present on the Project site, floral resources associated with the species that will be removed or damaged by Project activities in the areas of the Project site where Crotch's bumble bee is detected and documented should be replaced at a 1:1 ratio. Planning and implementation of suitable habitat replacement may be integrated into the Habitat Revegetation, Restoration, and Monitoring Program described under Mitigation Measure BIO-20.

BIO-10 Special Status Reptile Pre-activity Survey

PWD should retain a qualified biologist to conduct a pre-activity clearance survey for special status reptile species no more than seven days prior to commencement of ground or vegetation disturbing activities at each work area within the Project site. The pre-activity survey should utilize methods to detect special status reptile species with potential to occur at the site. Prior to commencement of Project construction activities at each work area, the methods and results of the surveys and, if a special status reptile species is found, recommended species-specific avoidance and/or relocation measures, should be submitted in a report for review and approval by PWD, and implemented during construction activities. These measures may include, but would not be limited to, the qualified biologist conducting a sweep of the proposed impact areas before the daily start of construction in each work area in the locations where special status reptile individuals were observed during the pre-construction survey, or have moderate or high potential to occur based on habitat suitability as determined by the qualified biologist, and avoidance of work in the sweep areas until the qualified biologist confirms special status reptiles are not present, or if present, until they have moved out of harm's on their own, as determined by the qualified biologist, or have been moved out of harm's way to adjacent suitable habitat by the qualified biologist.

BIO-11 Qualified Biological Monitor

PWD should retain a qualified biological monitor with relevant experience with the taxa and species in the Antelope Valley desert and mountain foothills for which pre-construction surveys, monitoring, or other support is required during Project construction (potentially including, but not limited to, rare plants, northern California legless lizard, coast horned lizard, raptors, nesting birds, roosting bats, woodrats, and those special status species with potential to occur based on the results of pre-activity and focused surveys conducted prior to Project initiation in accordance with Mitigation Measures BIO-4, BIO-9, BIO-10, and BIO-12 through BIO-18). The qualified biologist role may be satisfied by one or more individuals depending on qualifications and experience with one or more species and taxa. The qualified biologist should be present during initial ground disturbance or vegetation removal activities and should have the authority to temporarily stop work if one or more special status species are observed that may be impacted by Project activities. The biologist should relocate special status amphibian, reptile, or mammals present within anticipated Project impact

areas to suitable undisturbed habitat outside the areas directly and indirectly affected by construction activities. The biologist should hold the requisite incidental take permits or authorizations for the capture and handling of the species, if applicable.

The biologist should recommend measures to ensure compliance with avoidance and minimization measures, applicable permit conditions, and conditions required for observed special status species. When the biologist is present on site, they should be responsible for:

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

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

BIO-12 Burrowing Owl Breeding Season Survey and Foraging Habitat Mitigation

PWD should retain a qualified biologist to conduct focused breeding season surveys for burrowing owl in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012), or the most current CDFW guidance in effect at the time. Surveys should be conducted during the burrowing owl breeding season immediately prior to the start of Project construction.

The focused surveys should be conducted by the qualified biologist in the portions of the BSA with suitable burrowing owl habitat plus a 500-foot buffer (burrowing owl survey area). The surveys should be conducted in the morning or evening to evaluate the presence/absence of burrowing owl during the nesting season. All potential burrowing owls and burrows with burrowing owl sign should be recorded using a GPS unit capable of submeter accuracy. Observations should be conducted to determine if individual owls and/or nesting pairs are present and their status/disposition (e.g., late winter migrant, actively nesting, single individual not nesting). Representative photos of the habitat, potential and occupied burrows, and vegetation within the burrowing owl survey area should be taken and included as an appendix to the survey report. All vertebrate fauna detected in the burrowing owl survey area should be recorded in field notes. Inaccessible areas of the burrowing owl survey area outside the Project site should be surveyed using binoculars and/or spotting scopes to determine if owls are present.

A survey report should be prepared that includes survey methodology, survey results, an analysis of potential Project impacts to actively nesting pairs, and a calculation of the compensatory mitigation for foraging habitat, if impacted. Late winter migrants and non-nesting individuals located outside of the Project impact area should not require habitat mitigation unless passive relocation is necessary, as described in Mitigation Measure BIO-13. Maps showing burrow locations, a delineation of suitable habitat areas, and burrowing owls observed should be included in the survey report.

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

- A 500-foot buffer should be established around each active nest burrow to indicate the primary foraging habitat area for each nesting pair.
- Permanent Project disturbance areas should be overlain onto the foraging buffer zone(s) to calculate the area(s) of habitat loss.
- Permanent foraging habitat loss should be mitigated at a 1:1 ratio.

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

BIO-13 Burrowing Owl Pre-construction Clearance Survey and Occupied Burrow Avoidance and Minimization Measures

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

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

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

- If active winter burrows are found that would be directly affected by ground disturbing activities, owls can be excluded from winter burrows according to recommendations in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The qualified biologist should prepare a passive relocation program in accordance with Appendix E (Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) and submit the passive relocation program to PWD and CDFW for review and approval prior to the commencement of ground disturbance activities. If required, a compensatory mitigation agreement should be developed in coordination with CDFW prior to passive relocation of owls.
- Smaller non-disturbance buffers may be permitted in the winter (and sometimes breeding season) for the burrowing owl individuals if a noise and visual barrier, such as hay bale walls, is installed between the occupied burrowing owl burrow and construction activities, as long as the qualified biologist determines the reduced buffer will provide adequate protection.
- When a qualified biologist determines burrowing owls are no longer occupying the Project site and passive relocation is complete, ground disturbing activities may begin. A final letter should be prepared by the qualified biologist documenting the results of the passive relocation. The letter should be submitted to CDFW.

BIO-14 Swainson's Hawk Avoidance and Minimization Measures

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

If an active Swainson's hawk nest is detected within 0.5 mile of the Project site, PWD should implement the following measures:

- Retain a qualified biologist to prepare a Swainson's Hawk Nest Monitoring and Mitigation Plan that incorporates the following measures to avoid and minimize impacts to Swainson's hawk nests in and near the construction areas during the breeding season (March 1 to September 15):
  - If nesting Swainson's hawks are detected within 0.5 mile of Project activities during the breeding season, CDFW should be consulted regarding the establishment of a no-disturbance buffer to avoid impacts to the active nest. Construction activities should maintain a 0.25-mile no-disturbance buffer around an active nest unless a reduced buffer is approved in consultation with the qualified biologist and CDFW.
  - If construction activities are necessary within the buffer zone, PWD should consult with CDFW as to the potential for take. Monitoring of the nest site by a qualified biologist and funding of Swainson's hawk recovery efforts may be necessary.
  - If a hawk is found injured during Project-related activities on the Project site, the injured hawk should be immediately relocated to a raptor recovery center approved by CDFW. The

qualified biologist should notify CDFW personnel via telephone or email, followed by a written report that includes the date, time, location, and circumstances of the incident.

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

BIO-15 Mohave Ground Squirrel Avoidance and Minimization Measures

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

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

- A qualified biologist should conduct pre-construction clearance surveys for Mohave ground squirrel no more than 30 days prior to the start of any ground-disturbing activities in areas of the Project site that contain suitable habitat for the species, as documented in the Mohave ground squirrel habitat assessment and survey report. The survey should cover 100 percent of the anticipated impact area intersecting suitable Mohave ground squirrel habitat and a 50-foot buffer (survey area). The qualified biologist should document locations of potential Mohave ground squirrel burrows. A 50-foot no-disturbance buffer should be established around suspected or known Mohave ground squirrel burrows. Project activities should not be conducted within the no-disturbance buffer unless at the discretion of the qualified biologist. A report documenting the results of the survey, locations of suspected or known Mohave ground squirrel burrows, and recommended no-disturbance buffers should be submitted to PWD for review and approval prior to commencement of Project activities in the survey area.
- If burrows are identified during the survey that are suspected or known to be occupied by Mohave ground squirrel and cannot be avoided, the qualified biologist should prepare a Mohave Ground Squirrel Relocation Plan outlining measures to relocate individual Mohave ground squirrels prior to construction start. The plan should be submitted to PWD and CDFW for review and approval and should be implemented prior to commencement of Project activities in work areas with suspected or known Mohave ground squirrel burrows. The Plan should outline measures for burrow excavation, handling of individuals, identification of proposed relocation areas, and release of relocated individuals after the conclusion of all grading, clearing, and

construction activities. A report documenting relocation activities and outcomes should be prepared by the qualified biologist and submitted to PWD and CDFW for review and approval after completion of relocation activities.

- Within occupied Mohave ground squirrel habitat (as determined by the results of the focused habitat assessment and live trapping survey results as well as the pre-construction clearance survey results), the area of disturbance of vegetation and soils should be the minimum required for the Project. Clearing of vegetation and grading should be minimized. Wherever practicable, rather than clearing vegetation and grading access routes, equipment and vehicles should use existing surfaces or previously disturbed areas. Where grading is necessary, surface soils should be stockpiled and replaced following construction. To the extent practicable, disturbance of shrubs and surface soils due to stockpiling should be minimized. A qualified biologist should monitor Project activities during initial ground disturbance in suitable Mohave ground squirrel habitat. The qualified biologist should work with the construction foreman and crew to implement and achieve compliance with the Mohave ground squirrel biological monitoring plan prepared for the Project.

BIO-16 Roosting Bats Avoidance and Minimization Measures

PWD should implement the following measures for special status roosting bats:

- To the extent feasible, demolition or disturbance of suitable bat roosting habitat (e.g., live and dead trees, rock outcrops) should be scheduled between October 1 and February 28, outside of the maternity roosting season.
- If suitable roost trees must be encroached during the maternity season (March 1 to September 30) or structures must be removed at any time of the year, PWD should retain a qualified bat specialist to conduct a pre-construction survey no more than seven days prior to the start of Project construction in a given work area to identify those trees or structures proposed for disturbance that could provide hibernacula or nursery colony roosting habitat for bats. The trees or structures should be closely inspected by the bat specialist to determine the presence or absence of roosting bats. If potentially suitable hibernacula or nursery colony roosting habitat for bats is not present in areas anticipated to be directly impacted by Project activities, no additional action is recommended.
- Trees or structures determined to be maternity roosts should be left in place until the end of the maternity season (March 1 to September 30). Any structure containing a hibernating colony should be left in place until a qualified bat specialist determines the bats are no longer hibernating.
- If bats are not detected, but the bat specialist determines roosting bats may be present at any time of year, trees or structures should be brought down in a controlled manner using heavy machinery. To ensure the optimum warning for any roosting bats that may still be present, the trees or structures should be nudged lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Trees or structures may then be pushed to the ground slowly under the supervision of a qualified bat specialist. Felled trees should remain in place until they are inspected by a bat specialist. Trees that are known to be bat roosts should not be sawed up or mulched immediately. A period of at least 48 hours should elapse prior to such operations to allow bats to escape.
- The bat specialist should document all demolition monitoring activities and prepare a summary report for review and approval by PWD upon completion of tree disturbance or structure demolition activities.

- In exceptional circumstances, such as when roosts cannot be avoided and bats cannot be evicted by non-invasive means, it may be necessary to capture and transfer the bats to appropriate natural or artificial bat roosting habitat in the surrounding area. Bats raising young or hibernating should not be captured and relocated. Capture and relocation should be performed by a qualified bat specialist in coordination with CDFW requirements and should be subject to approval by CDFW.
- If confirmed occupied or formerly occupied bat roosting habitat is destroyed during Project construction, the bat specialist should determine the need for artificial bat roosts based on the availability and condition of suitable bat roosts in the immediate vicinity of the Project site. If artificial bat roosts are deemed necessary due to a potential lack of suitable bat roosts in the area, the artificial roosts should be of comparable size and quality and should be constructed and maintained at a suitable undisturbed area. The design and location of the artificial bat roosts should be determined by the bat specialist in consultation with CDFW and pursuant to the following standards:
    - A monitoring plan should be prepared for the replacement roosts, which should include performance standards for the use of the replacement roosts by the displaced species, as well as provisions to prevent harassment, predation, and disease of relocated bats. The performance standards should consider the location and condition of habitat where replacement roosts are placed and should be sufficient to serve the number of bats estimated to be displaced by Project impacts to suitable roosting habitat. Annual reports detailing the success of roost replacement and bat relocation should be prepared and submitted to PWD and CDFW for five years following relocation. If artificial roosts are not in use by the third year of monitoring, PWD should consult with CDFW as to larger trends in bat populations in the area that may be affecting roost use and/or determine if adjustments to roost location or design are needed.

BIO-17 Woodrat Midden Avoidance and Minimization Measures

PWD should retain a qualified biologist to conduct a pre-construction survey for active woodrat middens in and adjacent to areas anticipated for ground disturbance or vegetation removal in the Project site within 30 days prior to initial site disturbance in each work area. A report documenting pre-construction survey results, including the location of any active woodrat middens, should be submitted to PWD for review and approval. If no active woodrat middens are observed during the pre-construction survey, no additional action is recommended.

All occupied woodrat middens should be mapped and flagged for avoidance to the extent feasible, with a minimum 10-foot buffer surrounding the active midden. If avoidance is not feasible, middens should be “daylighted” by a qualified biologist one night before anticipated vegetation removal or ground disturbance within each work area to allow for the rats to escape within the BSA and passively relocate prior to disturbance of the area. A brief report documenting the passive relocation actions taken should be submitted to PWD for review and approval prior to commencement of Project construction activities within 10 feet of the active woodrat middens.

6.4 Non-Listed Special Status Birds and Nesting Birds

BIO-18 Pre-construction Nesting Bird Survey and Avoidance and Minimization Measures

Project-related activities should occur outside of the bird breeding season (February 1 to August 31) to the extent practicable. If construction must commence within the bird breeding season, PWD should retain a qualified biologist to conduct a pre-construction nesting bird survey within the disturbance footprint plus a 100-foot buffer (300 feet for raptors), where feasible, no more than seven days prior to initiation of ground disturbance (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation) in each work area. If the proposed Project is phased or construction activities stop for more than one week, a subsequent pre-construction nesting bird survey should be conducted prior to each phase of construction, if initiated during the bird breeding season.

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

If no nesting birds are observed during pre-construction surveys, no further action is required. If nests are found, an appropriate avoidance buffer ranging in size from 25 to 50 feet for passerine (perching birds) nests and up to 300 feet for active, non-listed raptor nests (depending on the species and the proposed work activity) should be determined by the qualified biologist and demarcated with bright orange construction fencing or other suitable flagging. Active nests should be monitored at a minimum of once per week until a qualified biologist has determined the birds have fledged and are no longer reliant upon the nest or parental care for survival. No construction activity should occur within this buffer until the qualified biologist confirms the breeding/nesting is completed and all the young have fledged. If Project activities must occur within the buffer, they should only be conducted at the discretion of the qualified biologist.

6.5 Sensitive Natural Communities, Riparian Habitat, and Jurisdictional Features

BIO-19 Sensitive Natural Communities and Jurisdictional Features Avoidance and Minimization Measures

Sensitive natural communities and jurisdictional features identified for avoidance within the BSA should be demarcated using brightly colored flagging, as necessary, and avoided to the extent feasible during Project construction. The marked boundaries should be maintained for the duration of Project construction activities in each work area and should be clearly visible to personnel on foot and by heavy equipment operators. Construction personnel should be instructed to avoid these areas as feasible. All temporary flagging should be removed only after the conclusion of all grading, clearing, and construction activities at each work area along the Project alignment. Compliance with this measure should be documented in the biological monitoring reporting required under Mitigation Measure BIO-11.

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

- Any material/spoils generated from Project construction should be located away from sensitive natural communities and jurisdictional features and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
- Materials, hand-held equipment and other non-heavy or non-vehicle equipment should be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from sensitive natural communities and jurisdictional areas.
- Any spillage of material should be stopped if it can be done safely. The contaminated area should be cleaned, and any contaminated materials should be properly disposed of. For all spills, the Project foreman and biological monitor (recommended in Mitigation Measure BIO-11) should be notified.

BIO-20 Sensitive Vegetation Community Compensatory Mitigation

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

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

BIO-21 Jurisdictional Waters and Wetlands Compensatory Mitigation

If impacts to jurisdictional waters and wetlands cannot be avoided, PWD should identify compensatory mitigation prior to disturbance of the features. Compensatory mitigation for impacts to the jurisdictional extents of the Ditch should be provided at a minimum 0.5:1 ratio given the Ditch's altered hydrology as a manmade structure constructed entirely in uplands that is artificially lined in a number of areas (concrete, synthetic liner, elevated flume) and its controlled flow that fluctuates in quantity and timing from year to year depending on annual climatic conditions and available water supply in Littlerock Reservoir. Compensatory mitigation for impacts to other

jurisdictional waters and wetlands should be provided at a minimum 1:1 ratio, unless a higher ratio is required by Lahontan RWQCB, CDFW, and/or USACE. Mitigation may take the form of permittee-responsible, on-site or off-site mitigation or the purchase of credits from an approved mitigation bank.

If on-site or off-site mitigation is proposed, a Compensatory Mitigation Plan should be prepared that outlines the compensatory mitigation in coordination with the Lahontan RWQCB, CDFW, and/or USACE. If on-site mitigation is proposed, the Compensatory Mitigation Plan can be integrated with the Habitat Revegetation, Restoration, and Monitoring Program described in Mitigation Measure BIO-20 and should identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration. Determination of mitigation adequacy should be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity. The Compensatory Mitigation Plan should include remedial measures if performance criteria are not met. If the Compensatory Mitigation Plan is not integrated with the Habitat Revegetation, Restoration, and Monitoring Program described in Mitigation Measure BIO-20, the same reporting requirements should apply for monitoring and evaluation of Compensatory Mitigation Plan implementation as detailed in Mitigation Measure BIO-20.

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

7 Limitations, Assumptions, and Use Reliance

This Biological Resources Assessment has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. Reconnaissance biological surveys for certain taxa may have been conducted as part of this assessment but were not performed during a particular blooming period, nesting period, or particular portion of the season when positive identification would be expected if present, and therefore cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile wildlife species could occupy the site on a transient basis or re-establish populations in the future. Our field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site reconnaissance, jurisdictional areas, review of CNDDB RareFind5, and specified historical and literature sources. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

8 References

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Appendix A

Figures

Figure 1 Regional Project Location

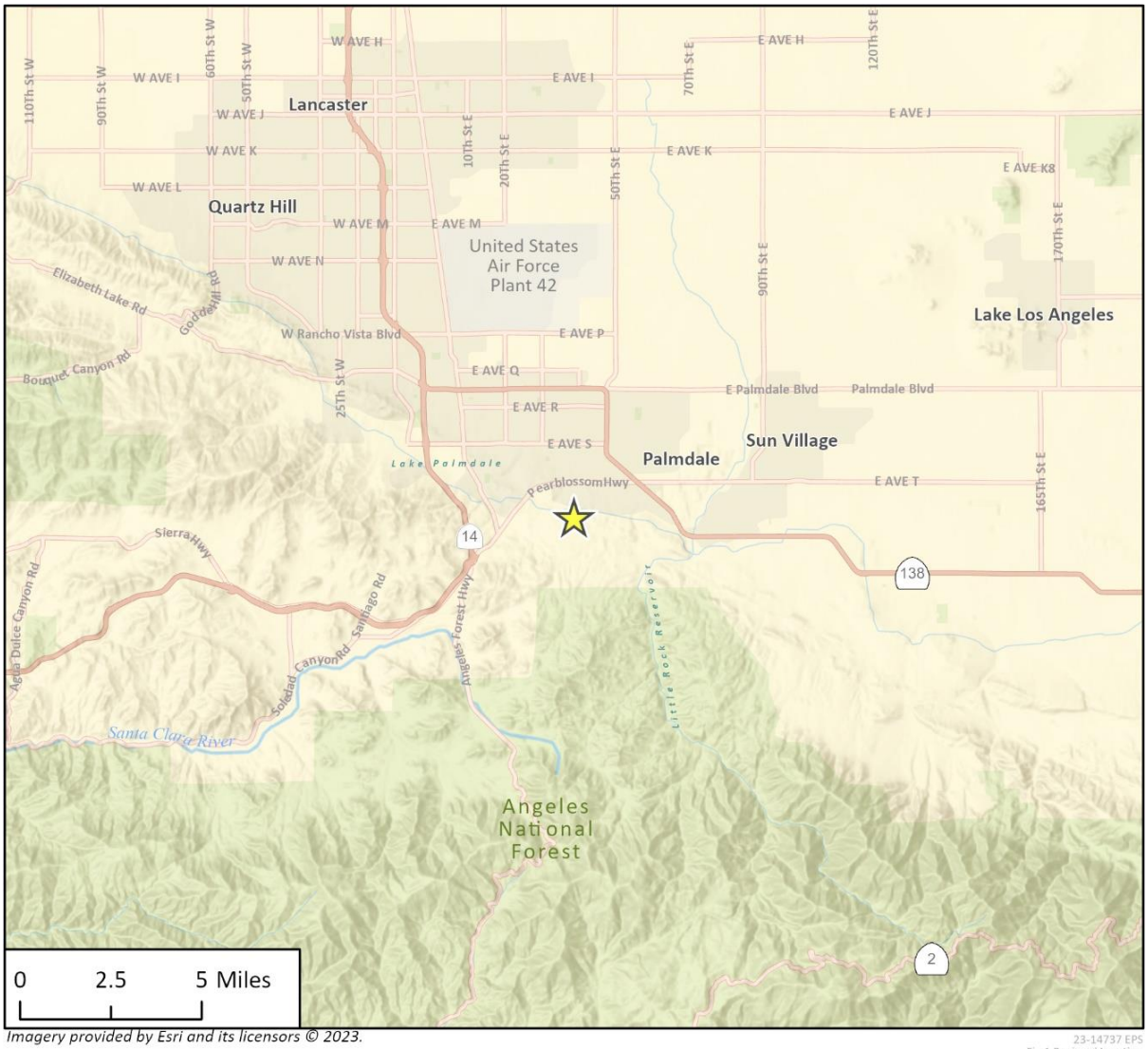

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Fig 1 Regional Location

Project Location

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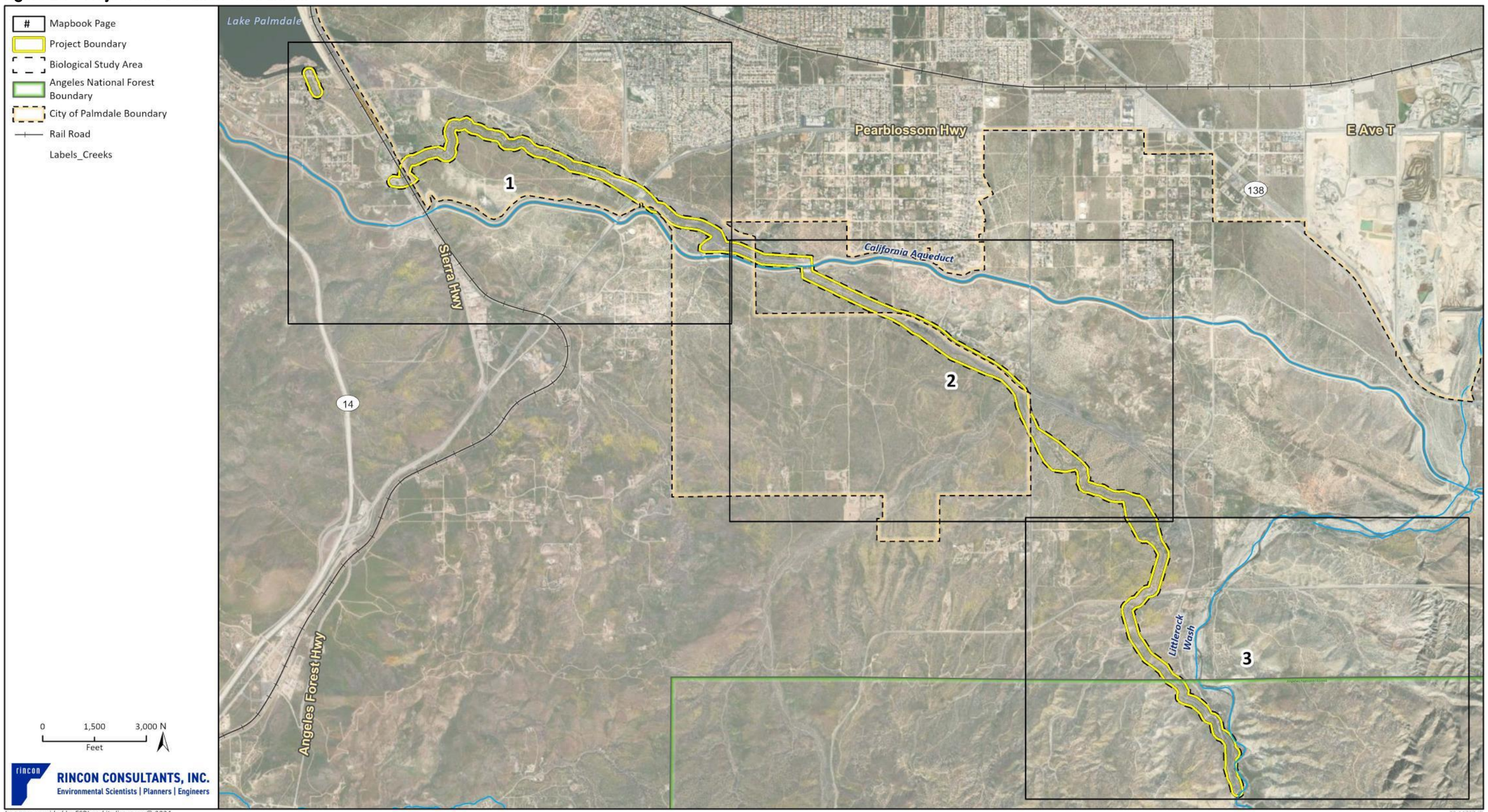
Figure 2a Project Site Location – Full Extent



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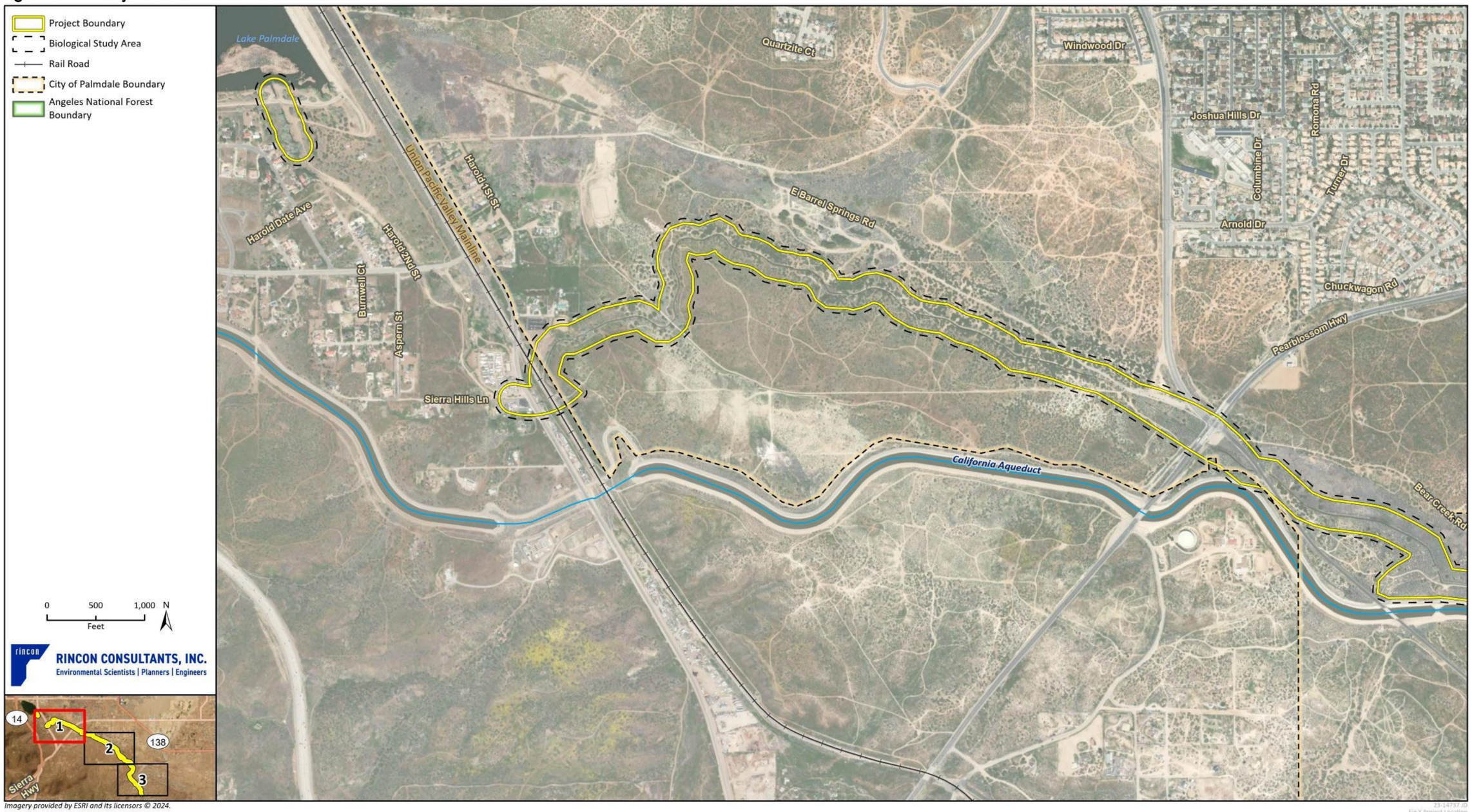

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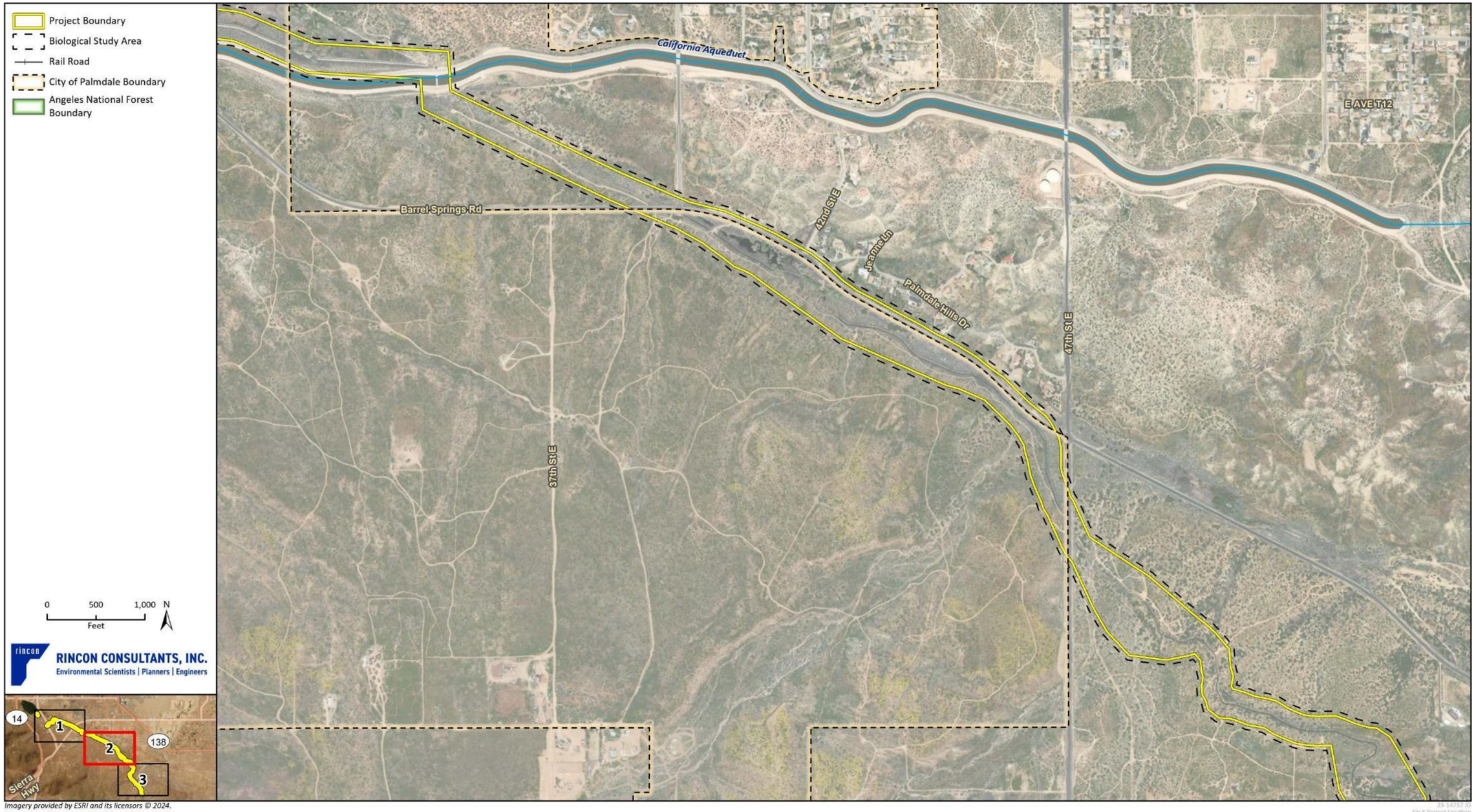
Fig X Project Location

Figure 4c Project Site Location – Central Extent



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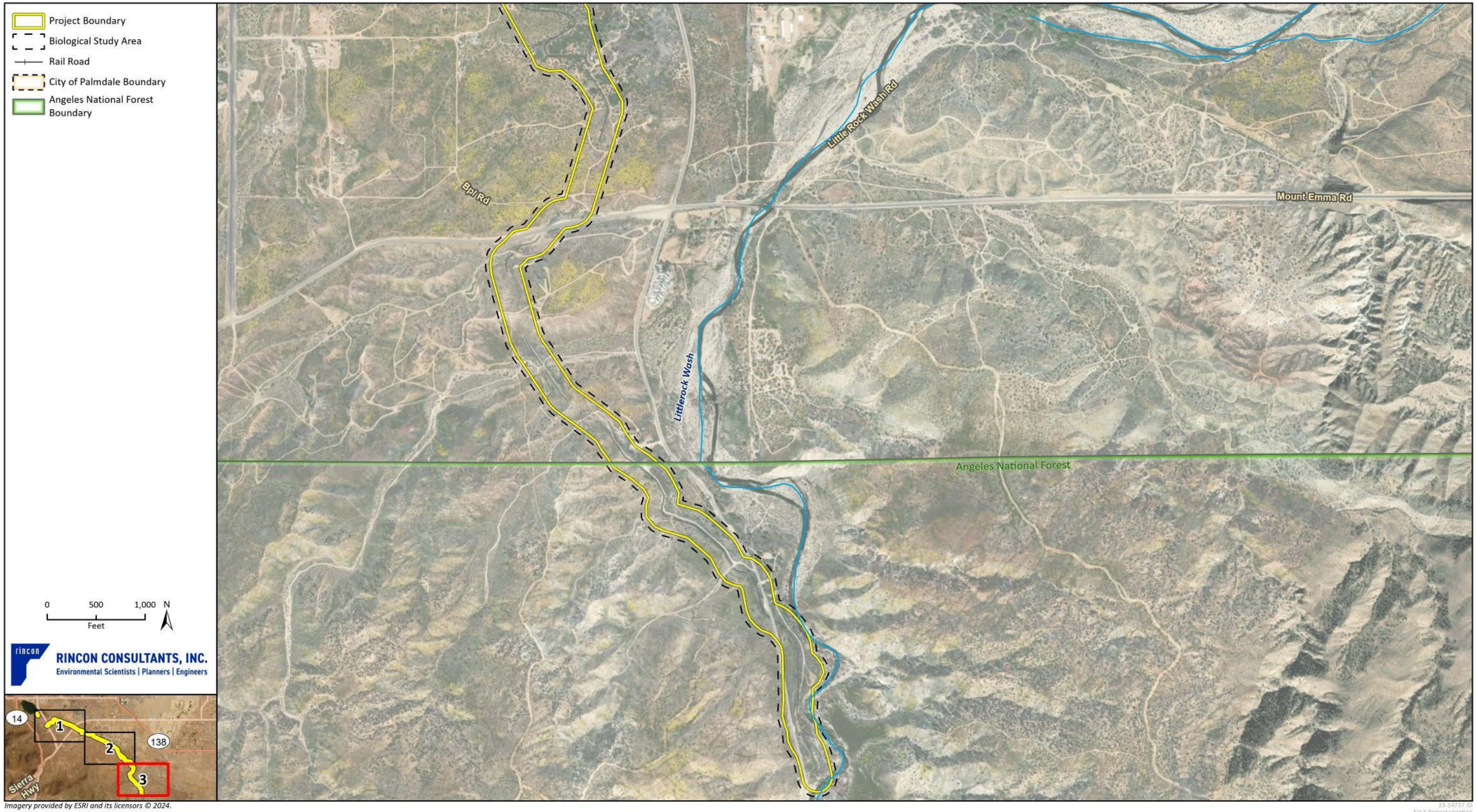

Figure 3a Soils in the BSA (Map 1 of 9)

Figure 3b Soils in the BSA (Map 2 of 9)

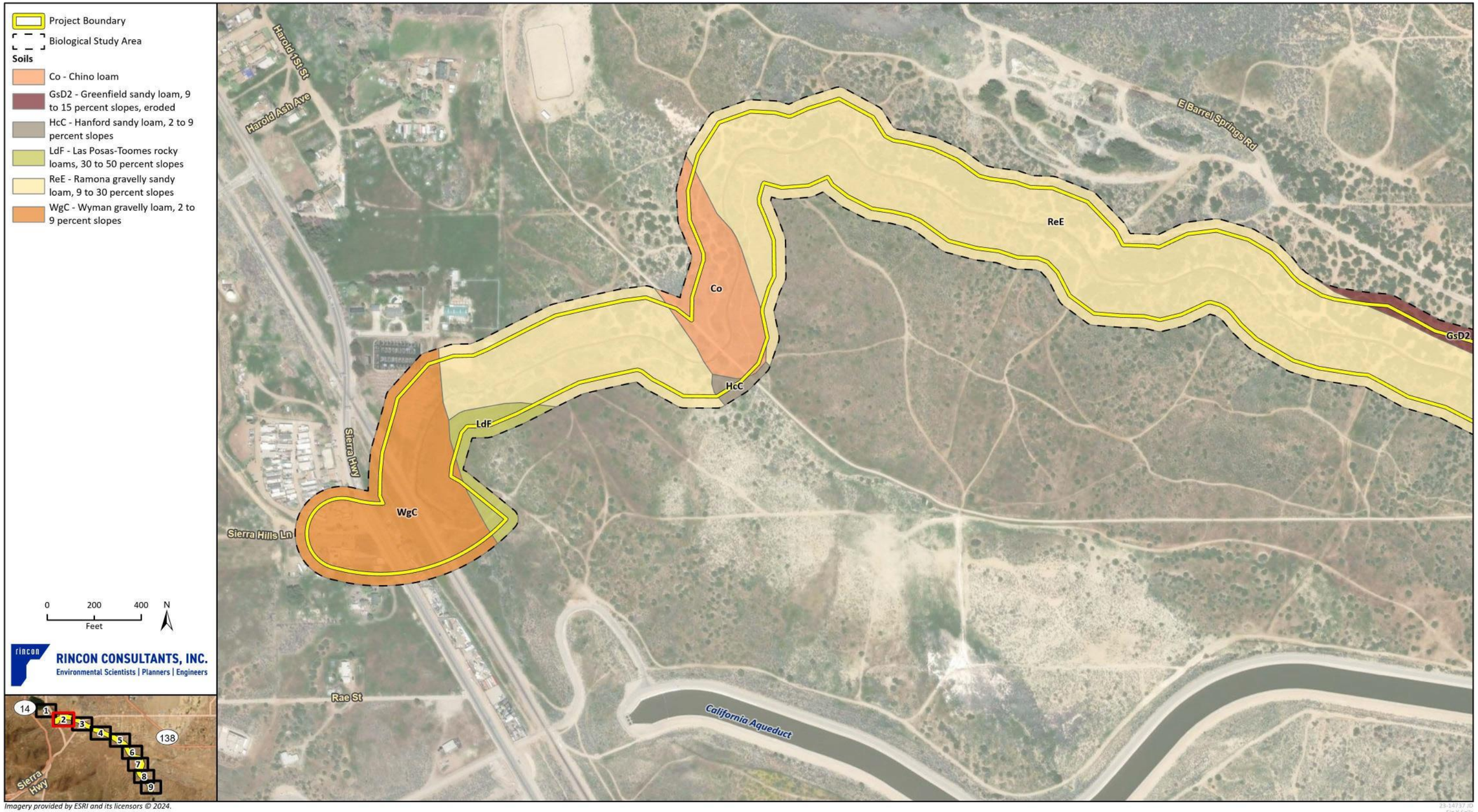

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Fig X Soils

Figure 3c Soils in the BSA (Map 3 of 9)

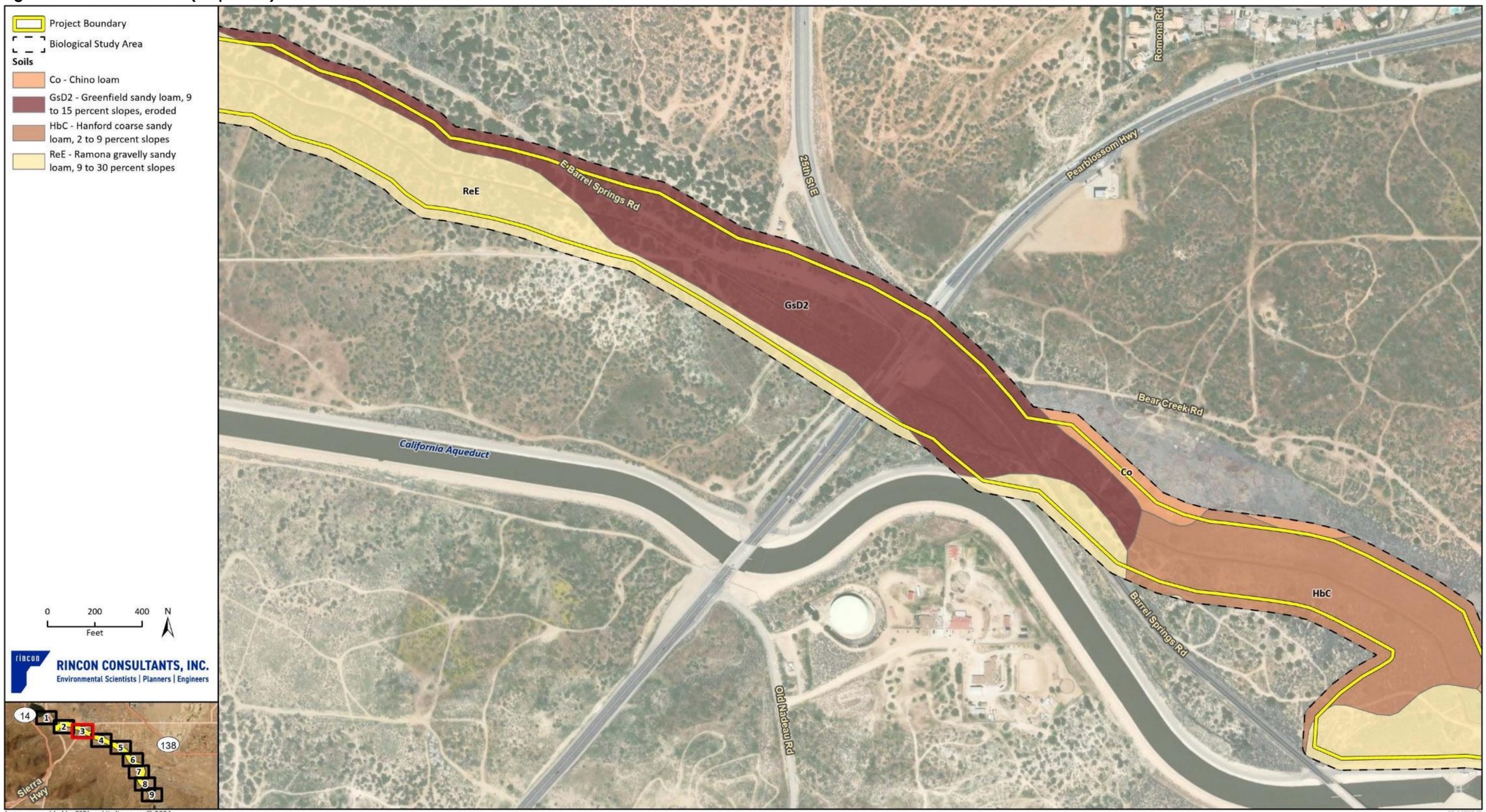

Figure 3d Soils in the BSA (Map 4 of 9)

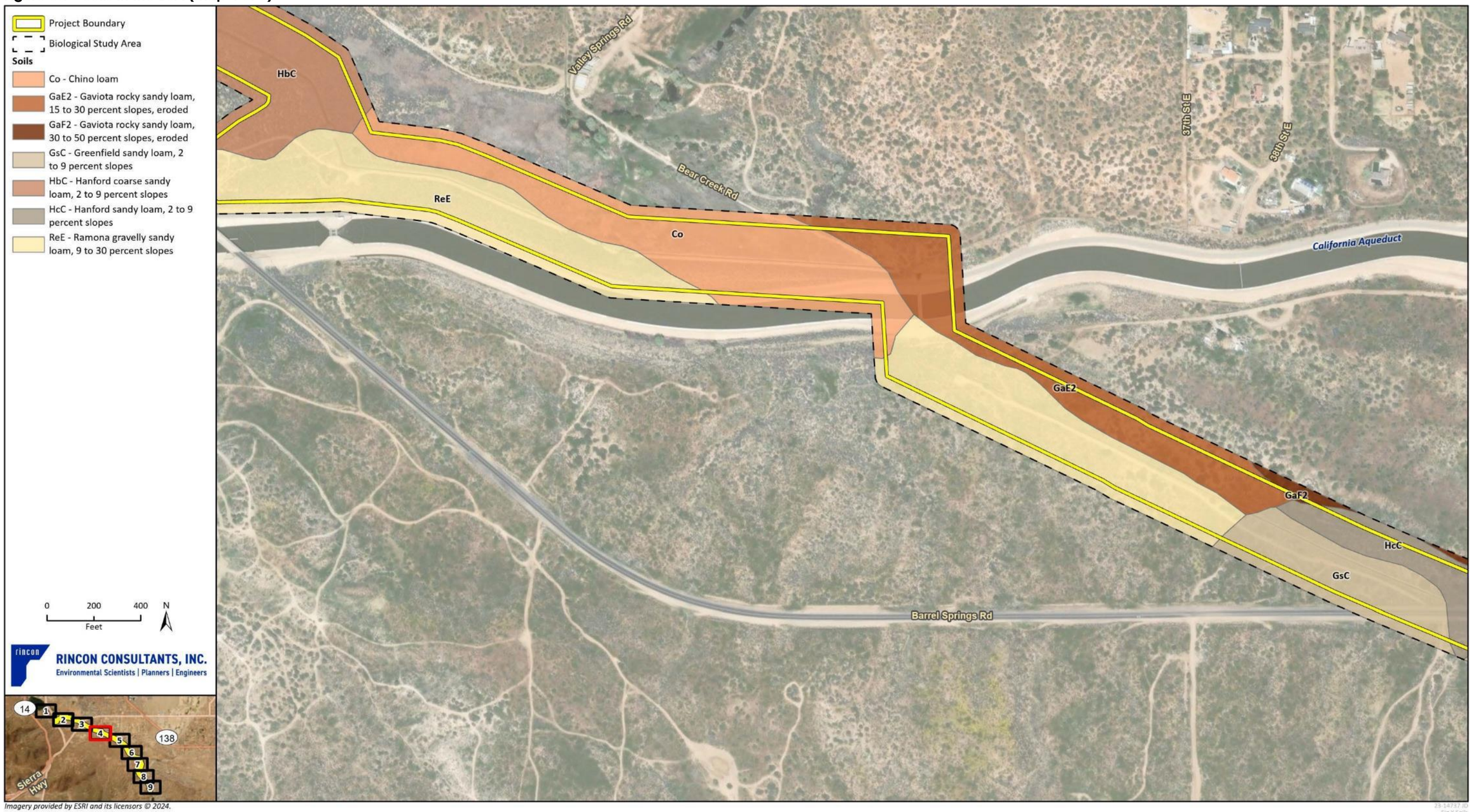

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Fig X Soils

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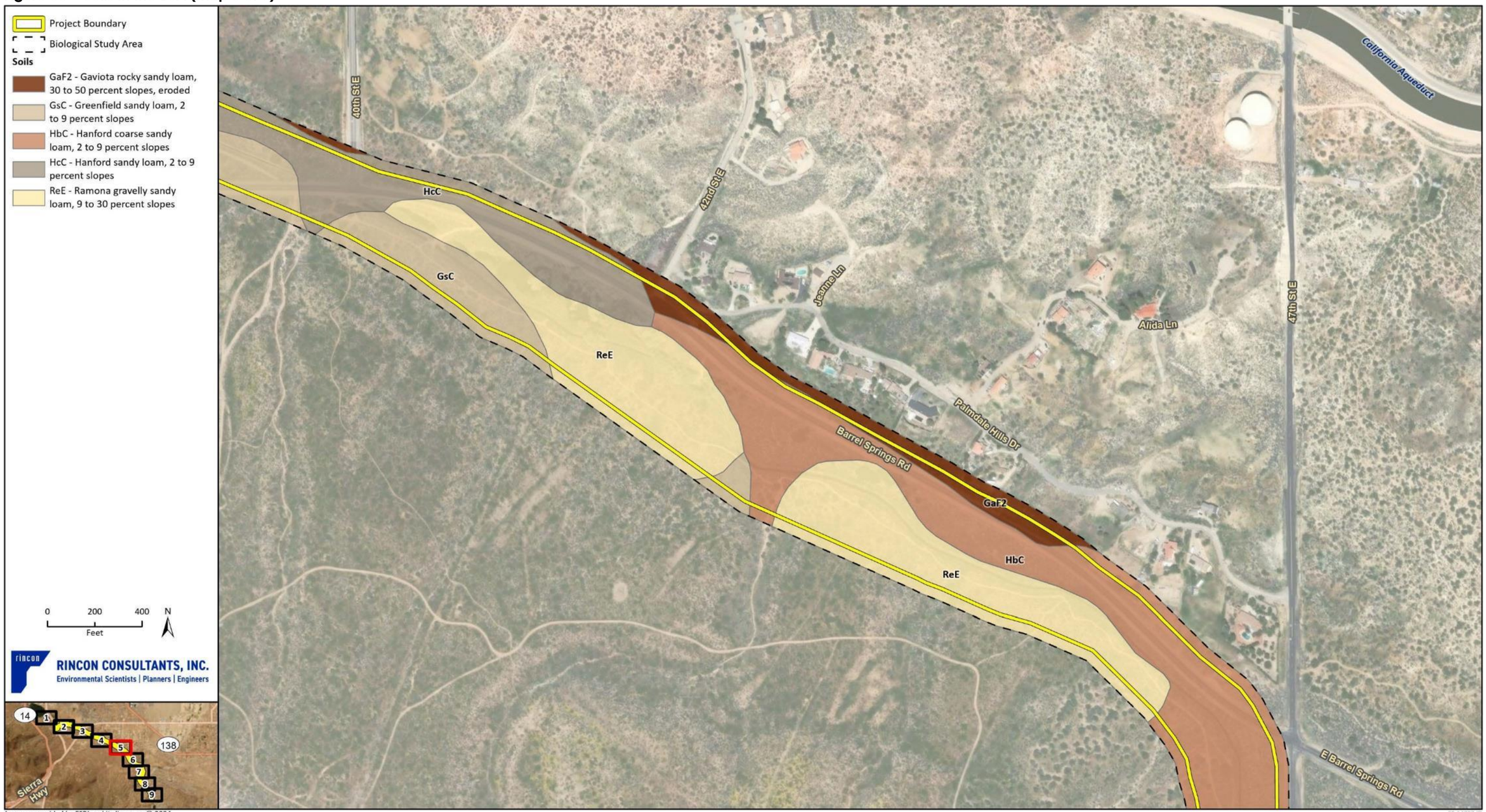

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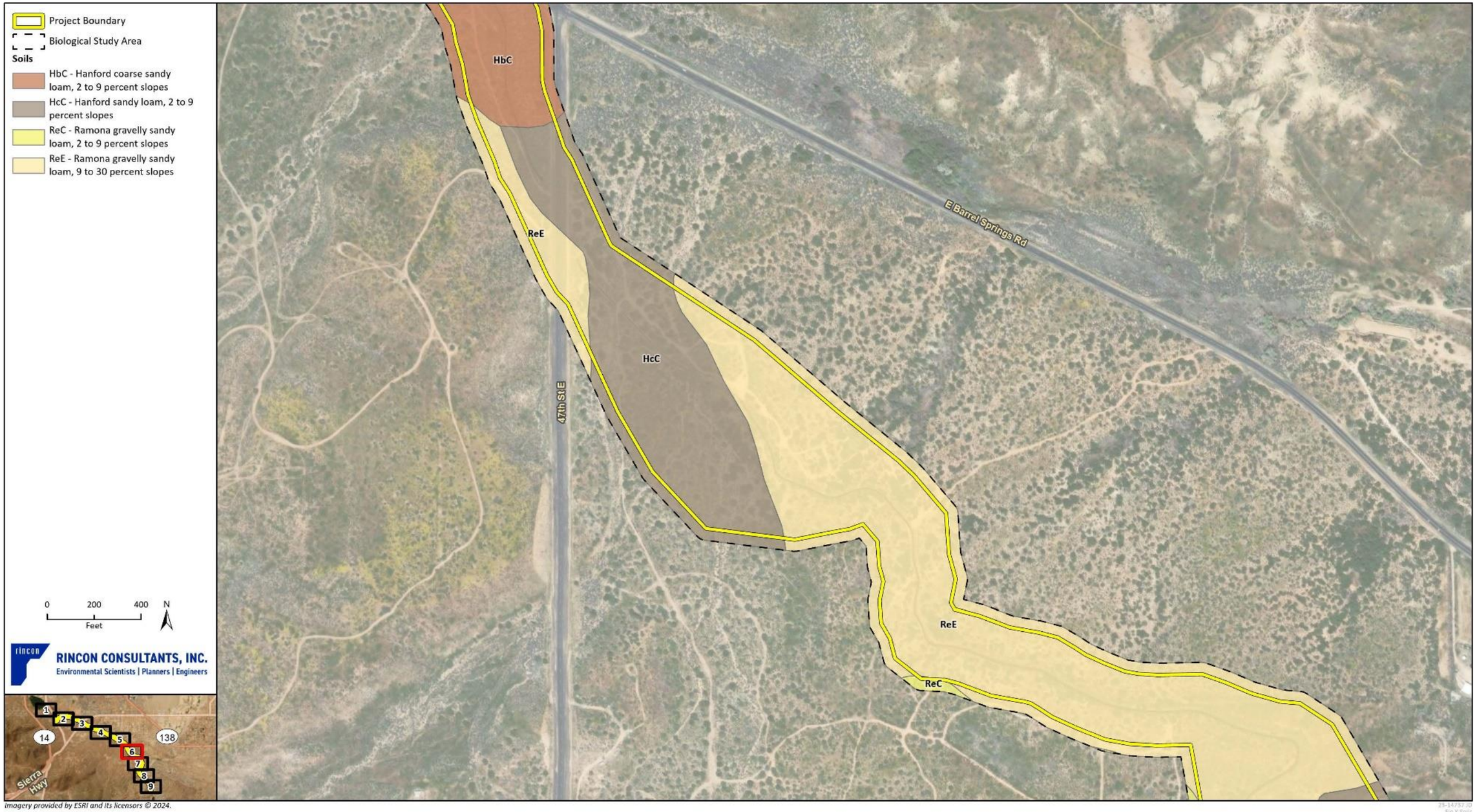
Figure 3f Soils in the BSA (Map 6 of 9)



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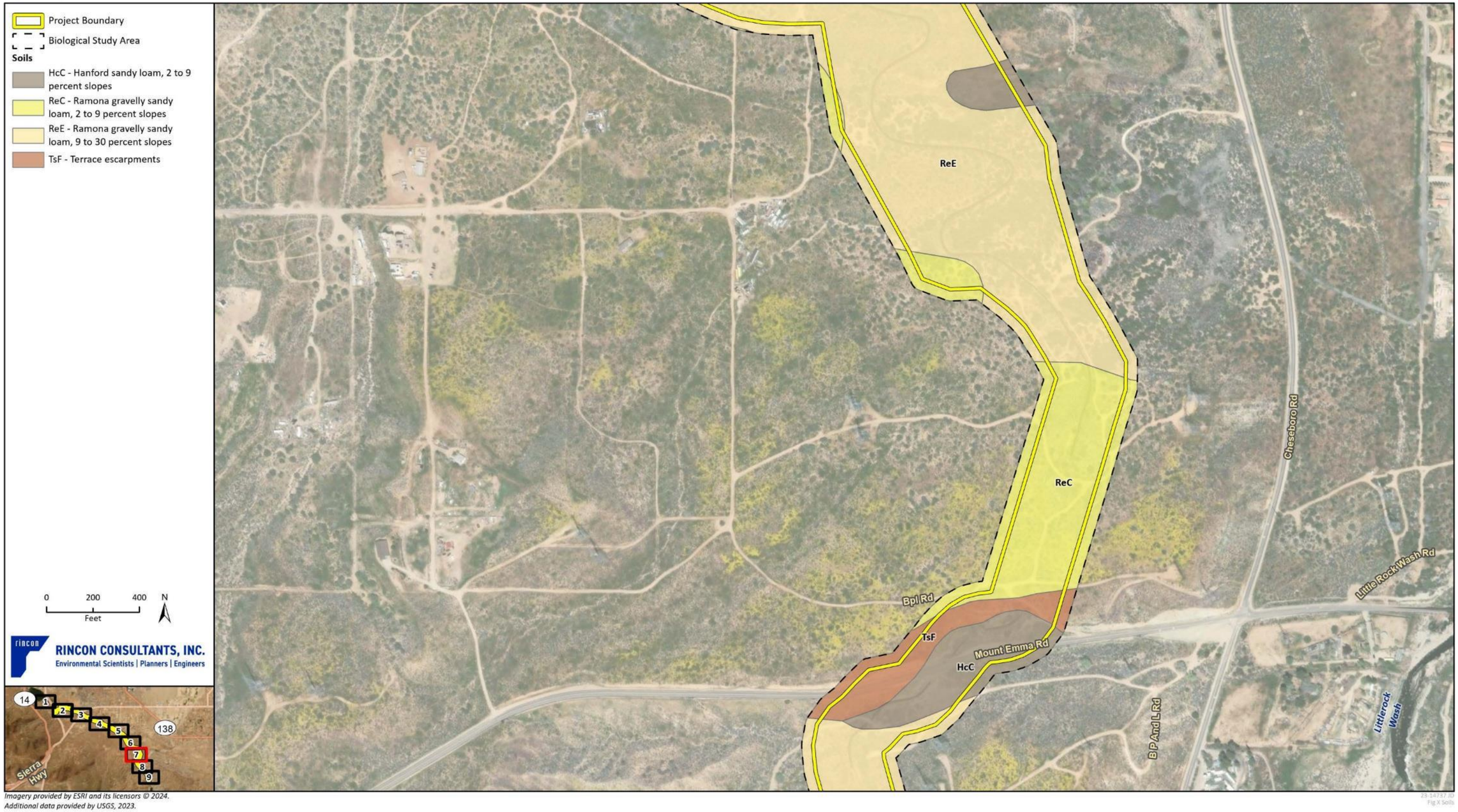

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Figure 3h Soils in the BSA (Map 8 of 9)

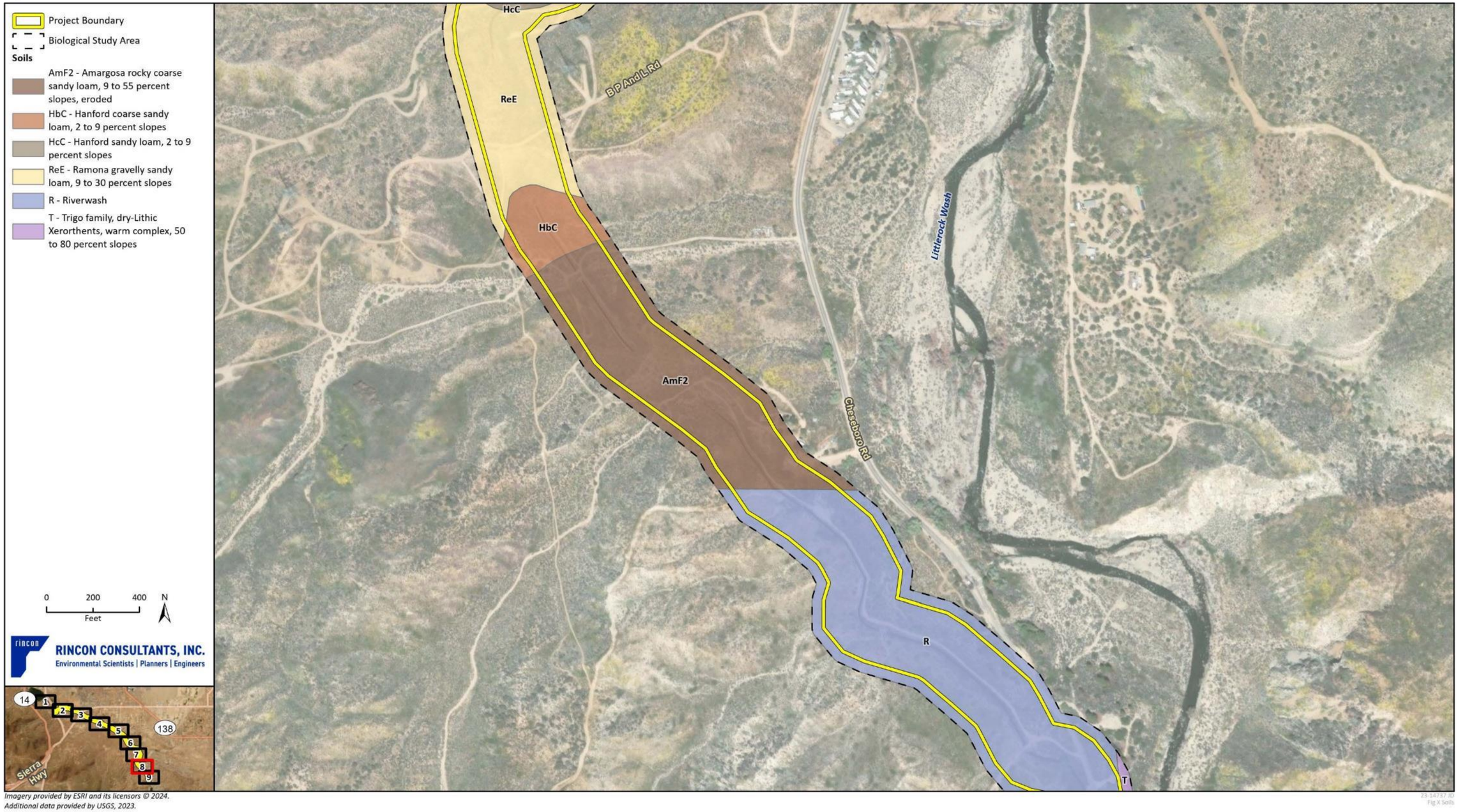

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Figure 3i Soils in the BSA (Map 9 of 9)

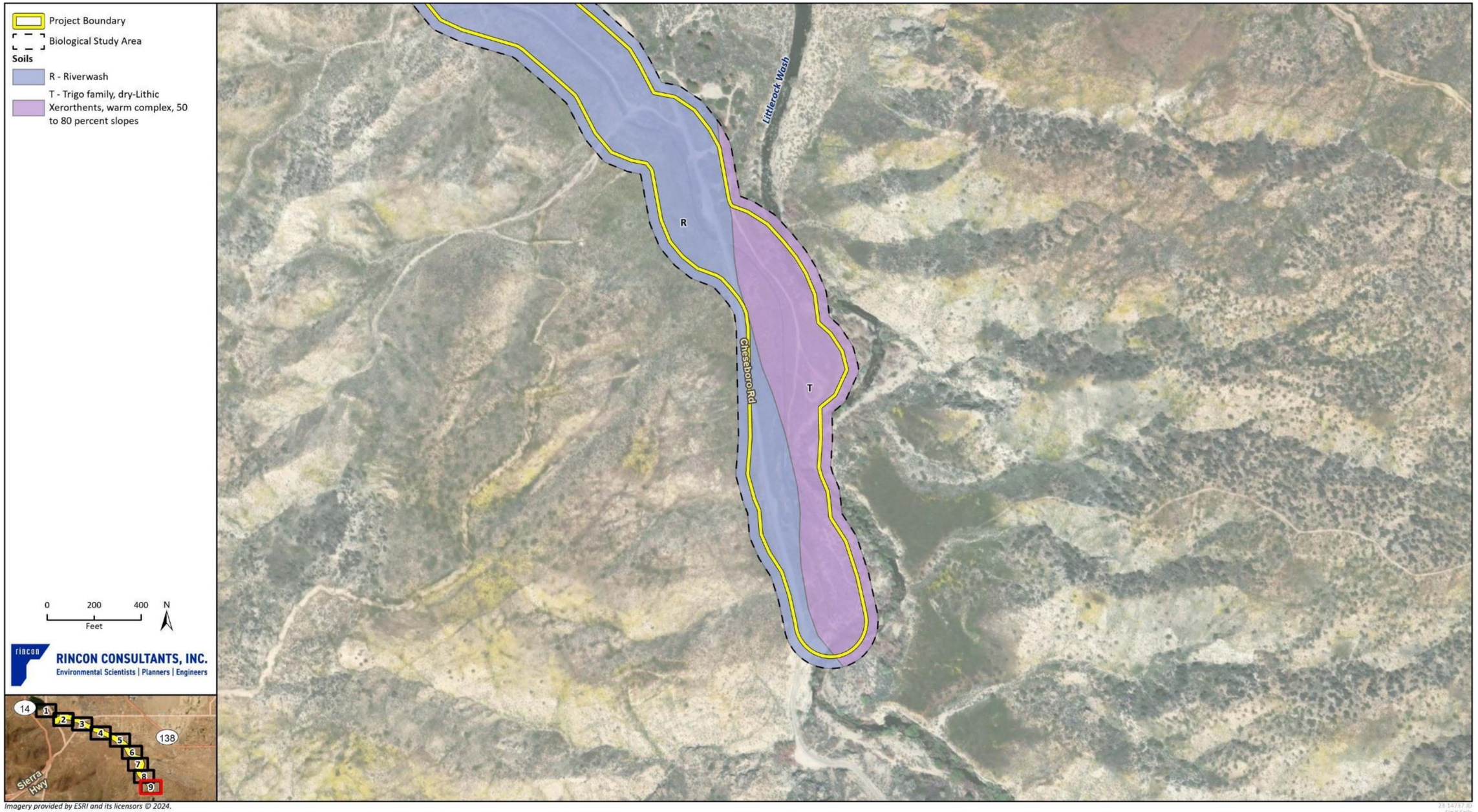

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Fig X Soils

Figure 4a Vegetation Communities and Land Cover – Overview

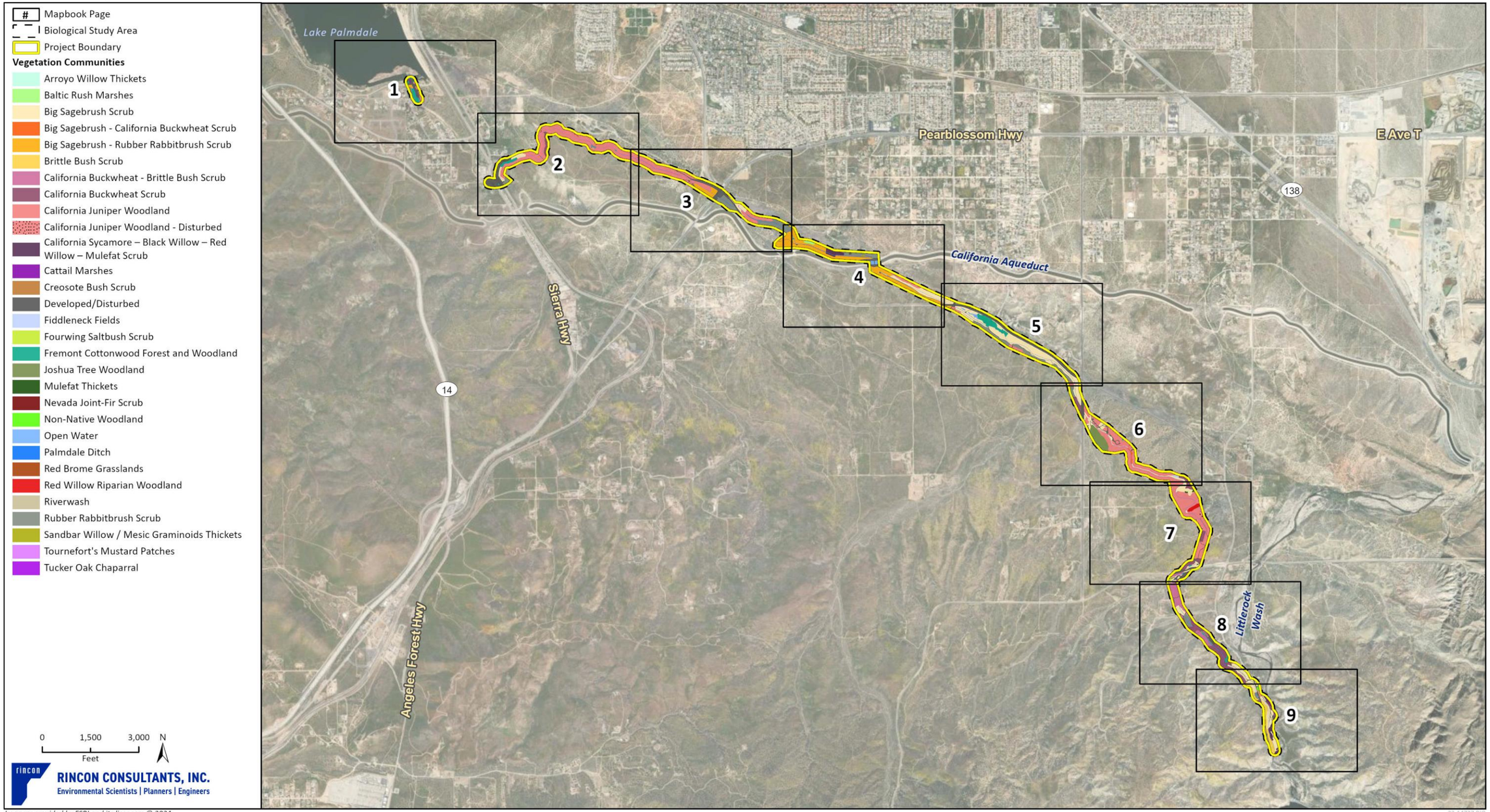

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Fig X Vegetation_ Overview

Figure 4b Vegetation Communities and Land Cover (Map 1 of 11)

Figure 4c Vegetation Communities and Land Cover (Map 2 of 11)

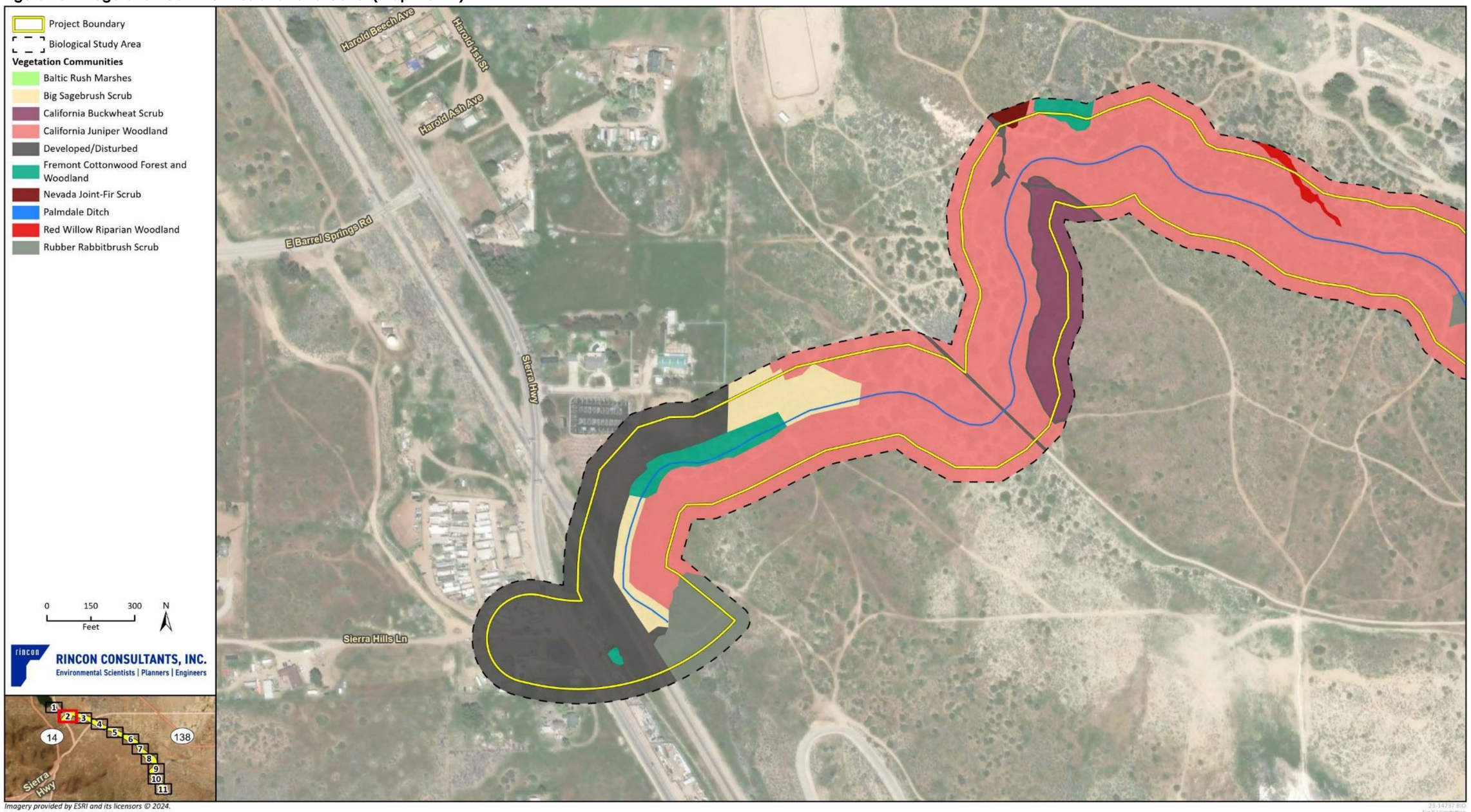

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Figure 4d Vegetation Communities and Land Cover (Map 3 of 11)

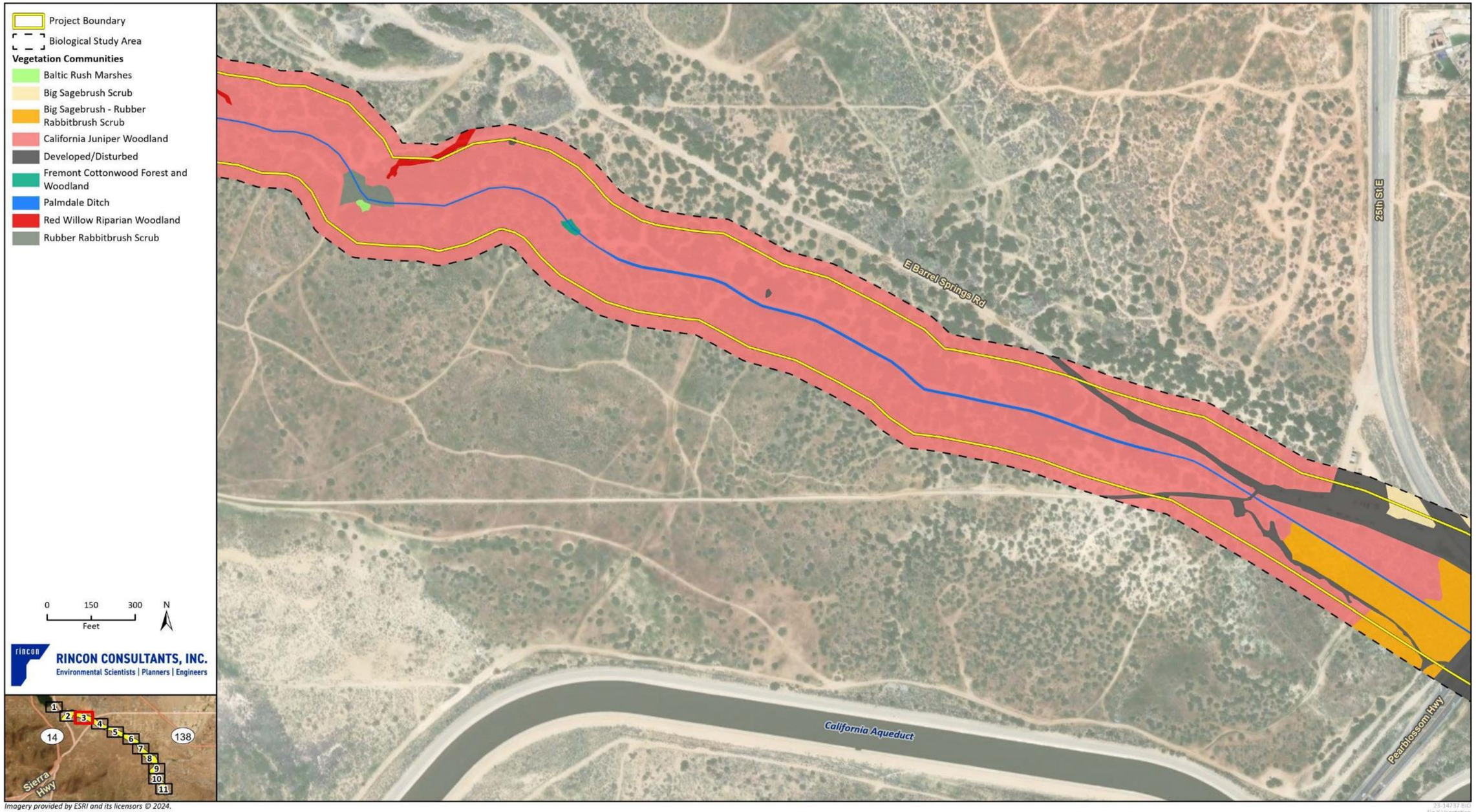

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Fig X Vegetation

Figure 4e Vegetation Communities and Land Cover (Map 4 of 11)

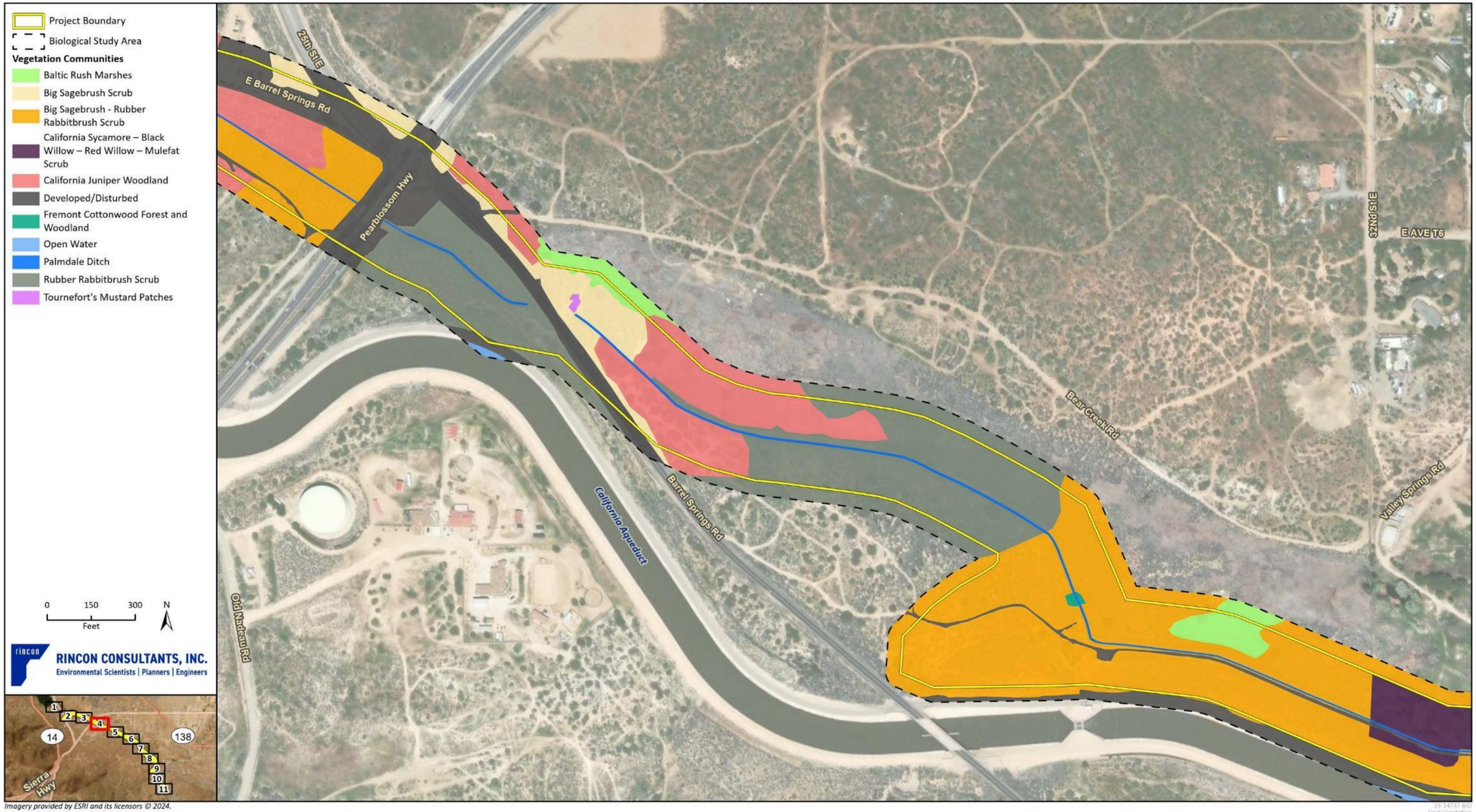

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Fig X Vegetation

Figure 4f Vegetation Communities and Land Cover (Map 5 of 11)

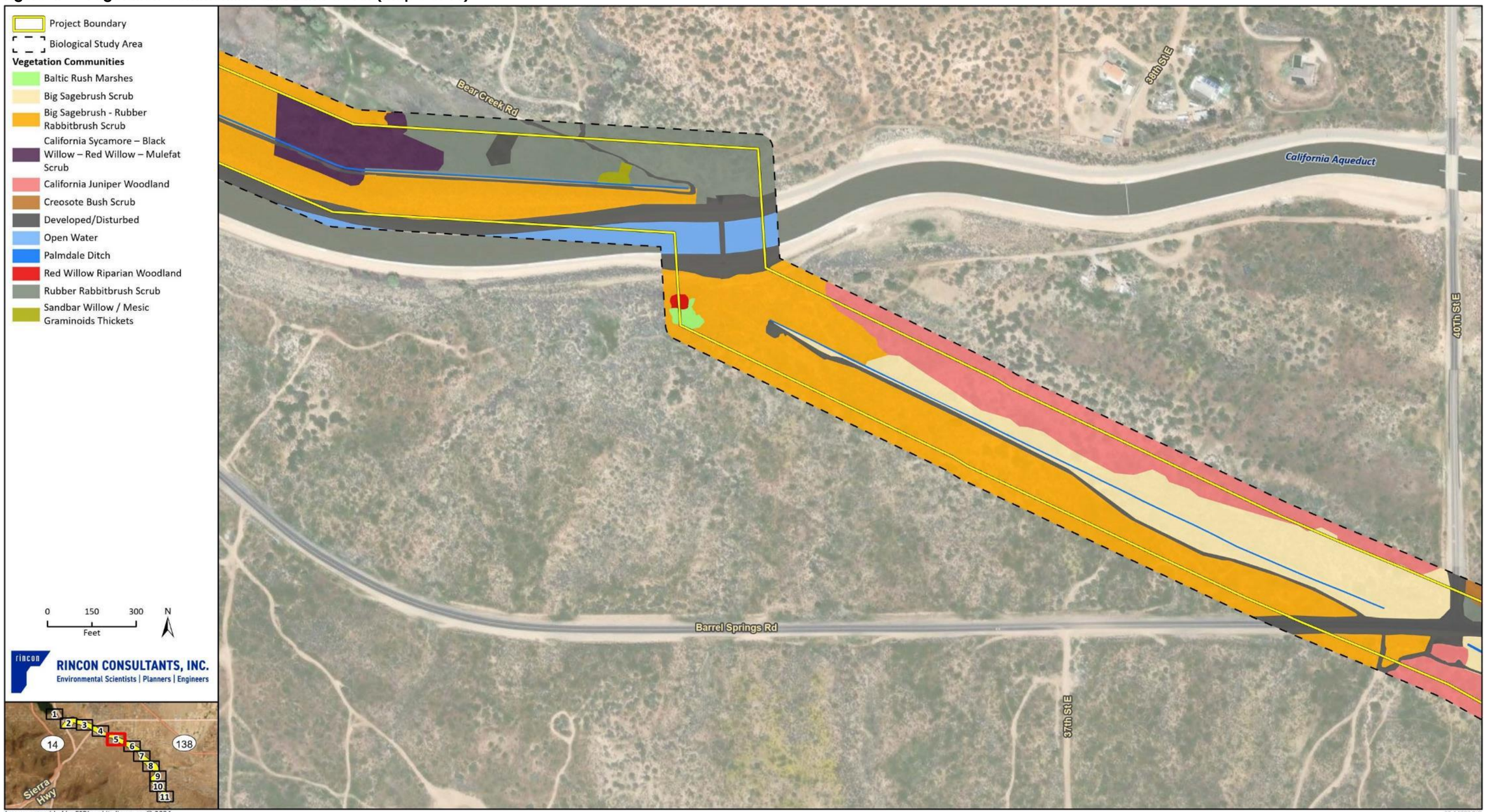

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Fig X Vegetation

Figure 4g Vegetation Communities and Land Cover (Map 6 of 11)

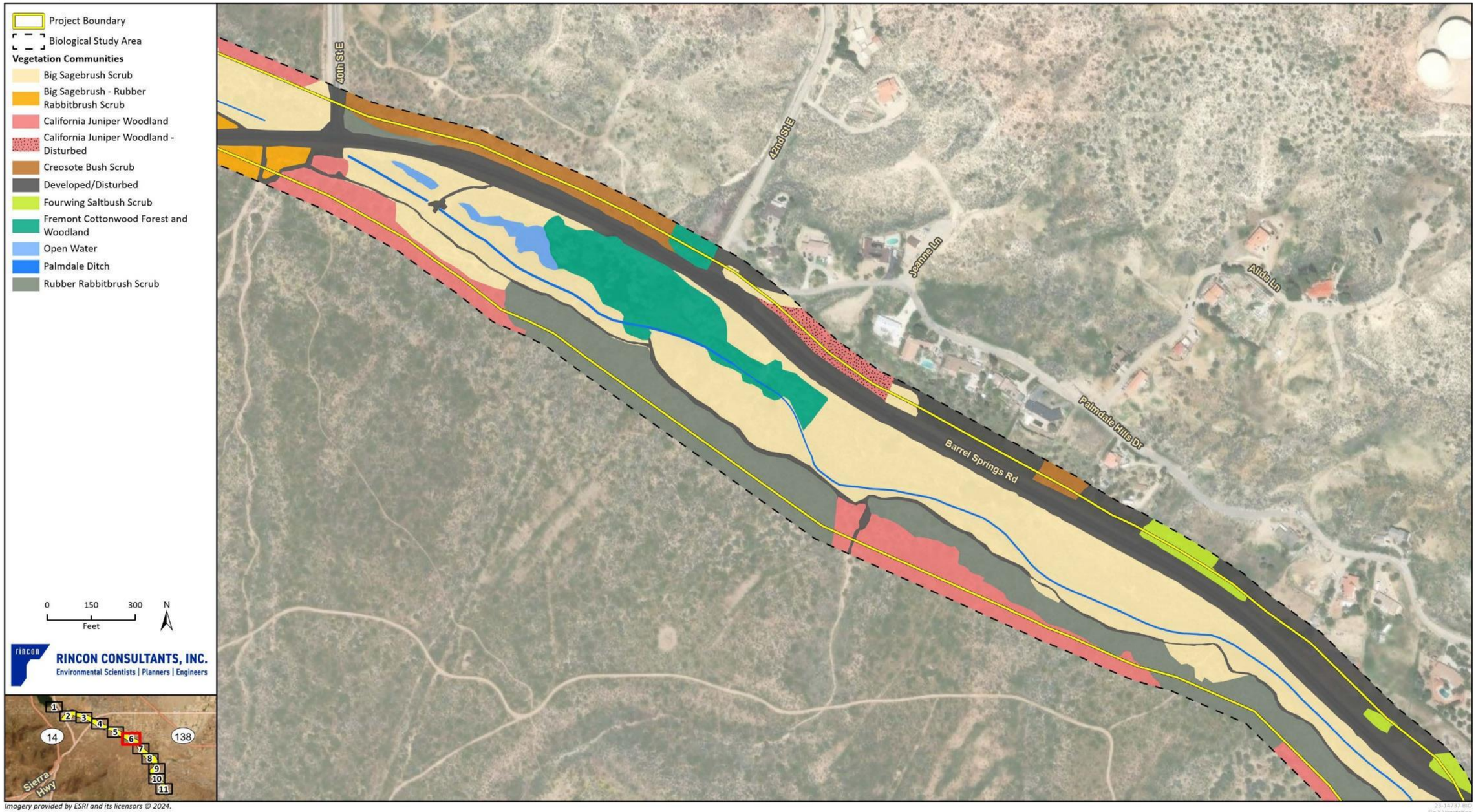
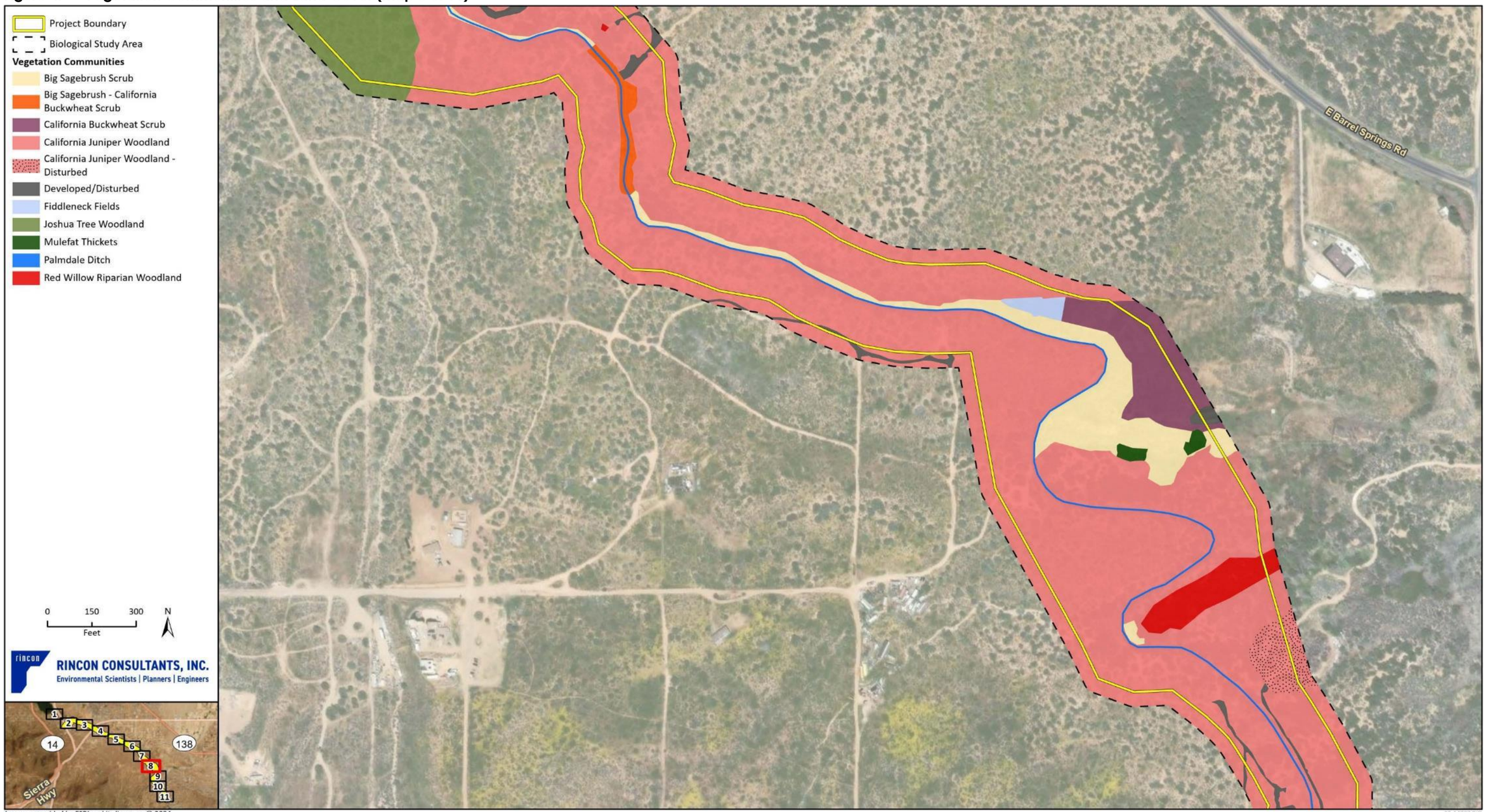


Figure 4h Vegetation Communities and Land Cover (Map 7 of 11)

Figure 4i Vegetation Communities and Land Cover (Map 8 of 11)



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23-14787 BIO
Fig X Vegetation

Figure 4j Vegetation Communities and Land Cover (Map 9 of 11)

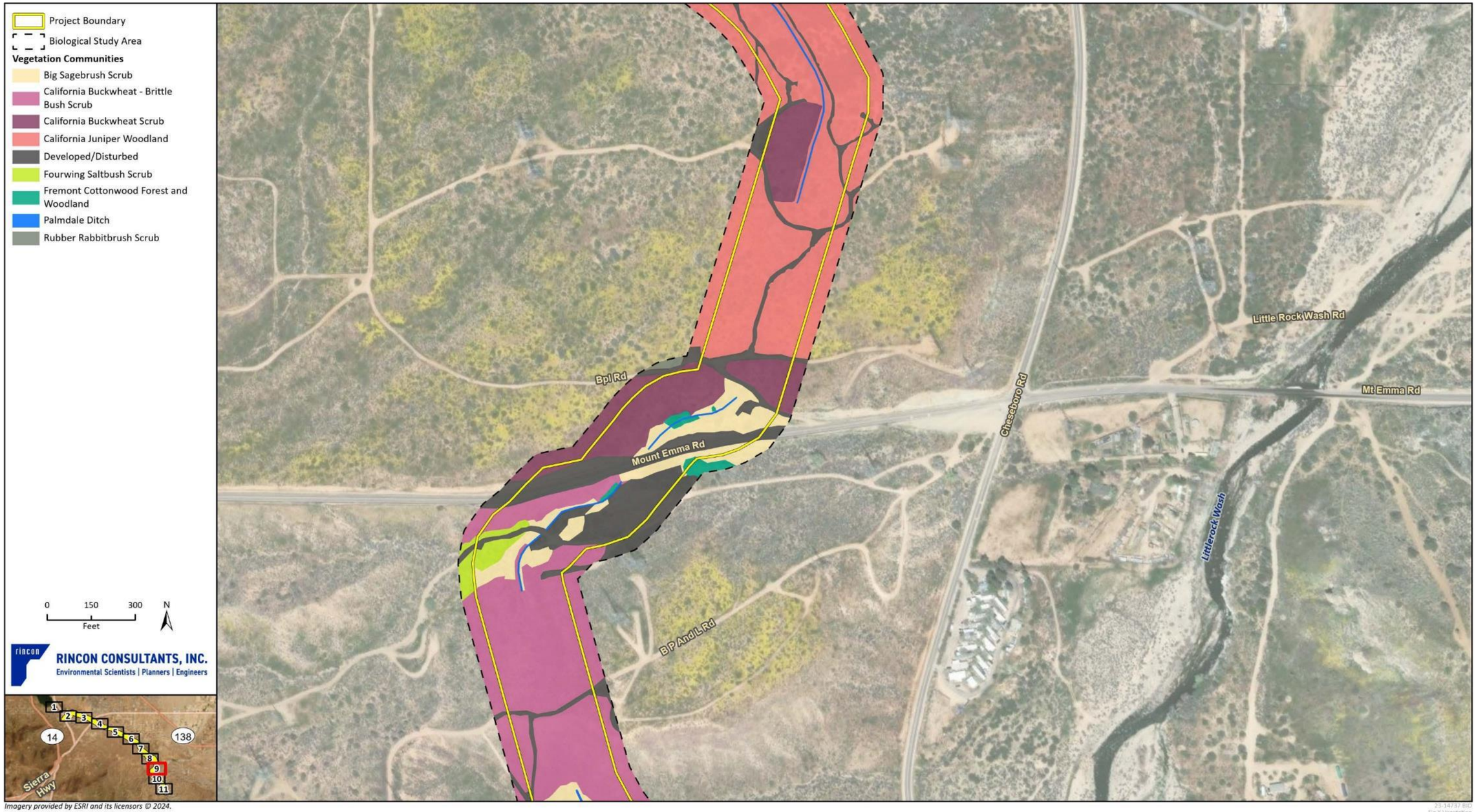

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Fig X Vegetation

Figure 4k Vegetation Communities and Land Cover (Map 10 of 11)

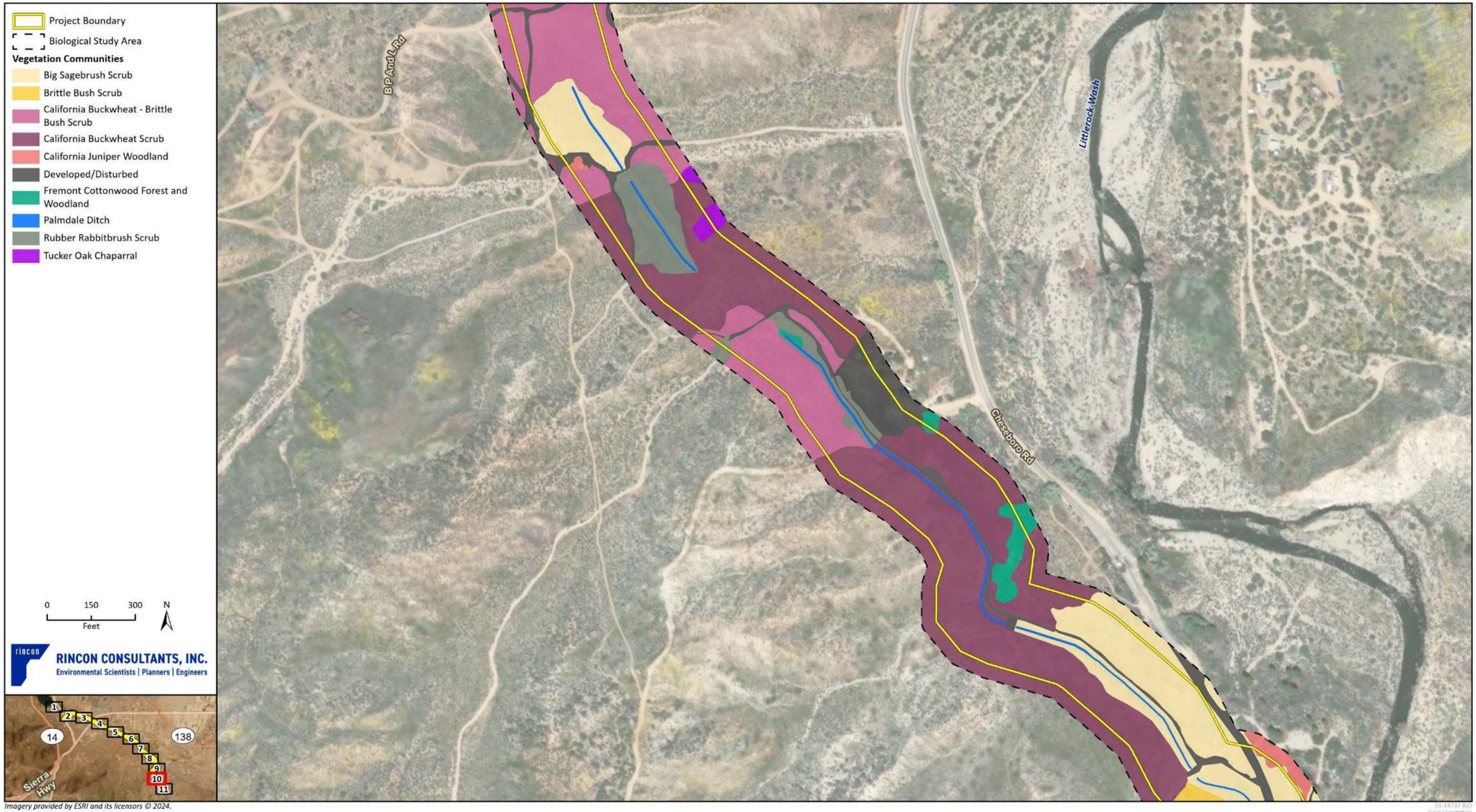
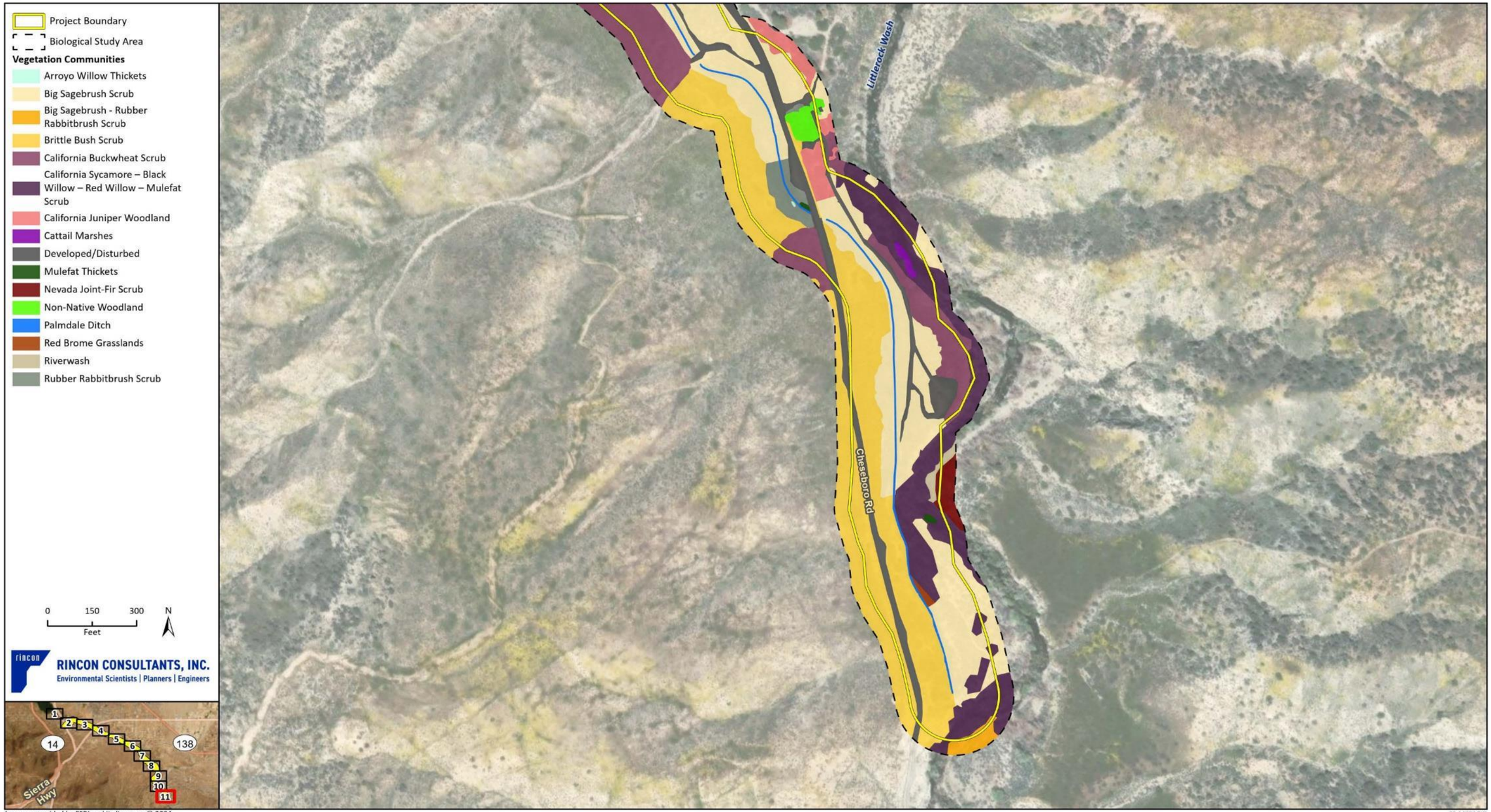


Figure 4I Vegetation Communities and Land Cover (Map 11 of 11)



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23-14737 BIO
Fig X Vegetation

Appendix B

Regulatory Setting

Regulatory Setting

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. A number of federal and state statutes provide a regulatory structure that guides the protection of biological resources. Agencies with the responsibility for protection of biological resources within the Biological Study Area include the following:

- United States Army Corps of Engineers (wetlands and other waters of the United States)
- Lahontan Regional Water Quality Control Board (waters of the State)
- United States Fish and Wildlife Service (federally listed species and migratory birds)
- National Marine Fisheries Service (marine wildlife and anadromous fishes)
- United States Forest Service (sensitive and federally listed species and migratory birds, invasive species management, wildlife management)
- California Department Fish and Wildlife (riparian areas, streambeds, and lakes; state-listed species; nesting birds, marine resources)
- City of Palmdale
- County of Los Angeles

United States Army Corps of Engineers

The United States Army Corps of Engineers (USACE) is responsible for administering several federal programs related to ensuring the quality and navigability of the nation's waters.

Clean Water Act Section 404

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the CWA authorizes the Secretary of the Army, acting through the USACE, to issue permits regulating the discharge of dredged or fill materials into the "navigable waters at specified disposal sites."

Section 502 of the CWA further defines "navigable waters" as "waters of the United States, including the territorial seas." "Waters of the United States" are broadly defined at 33 Code of Federal Regulations (CFR) Part 328.3 to include navigable waters, perennial and intermittent streams, lakes, rivers, and ponds as well as wetlands, marshes, and wet meadows. In recent years, the USACE and United States Environmental Protection Agency (USEPA) have undertaken several efforts to modernize their regulations defining "waters of the United States" (e.g., the 2015 Clean Water Rule and 2023 Navigable Waters Protection Rule), but these efforts have been frustrated by legal challenges which have invalidated the updated regulations. Thus, the agencies' longstanding definition of "waters of the United States," which dates from 1986, remains in effect albeit with supplemental guidance interpreting applicable court decisions as described below.

Waters of the U.S.

In summary, USACE and USEPA regulations define "waters of the United States" as follows:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States;
5. Tributaries of waters identified in items 1 through 4 above;
6. The territorial sea; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in items 1 through 6 above.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the USEPA.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA, are not waters of the United States.

The lateral limits of USACE jurisdiction in non-tidal waters are defined by the "ordinary high-water mark" (OHWM) unless adjacent wetlands are present. The OHWM is a line on the shore or edge of a channel established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed upon the bank, shelving, changes in the character of soil, destruction of vegetation, or the presence of debris (33 CFR 328.3[e]). As such, waters are recognized in the field by the presence of a defined watercourse with appropriate physical and topographic features. If wetlands occur within, or adjacent to, waters of the United States, the lateral limits of USACE jurisdiction extend beyond the OHWM to the outer edge of the wetlands (33 CFR 328.4[c]). The upstream limit of jurisdiction in the absence of adjacent wetlands is the point beyond which the OHWM is no longer perceptible (33 CFR 328.4; see also 51 Federal Register 41217).

Wetlands

The USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3). The USACE's delineation procedures identify wetlands in the field based on indicators of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. The following is a discussion of each of these parameters.

Hydrophytic Vegetation

Hydrophytic vegetation dominates areas where frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of them occurring in wetlands. More than 50 percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. The USACE published the National Wetland Plant List (USACE 2018), which separates vascular plants into the following four basic categories based on plant species' frequency of occurrence in wetlands:

- **Obligate Wetland (OBL).** Almost always occur in wetlands
- **Facultative Wetland (FACW).** Usually occur in wetlands, but occasionally found in non-wetlands
- **Facultative (FAC).** Occur in wetlands or non-wetlands
- **Facultative Upland (FACU).** Usually occur in non-wetlands, but may occur in wetlands
- **Obligate Upland (UPL).** Almost never occur in wetlands

The USACE considers OBL, FACW and FAC species to be indicators of wetlands. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not appearing on the USACE's list is assumed to be an upland species, almost never occurring in wetlands. In addition, an area needs to contain at least five percent vegetative cover to be considered as a vegetated wetland.

Hydric Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of wetland soils include observations of ponding, inundation, saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), gleying (indicates reducing conditions by a blue-grey color), or accumulation of organic material. Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soils survey, both of which must be verified in the field.

Wetland Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by field indicators, such as water marks, drift lines, sediment deposits, or drainage patterns in wetlands.

Limitations on Jurisdiction Based on Sackett v. USEPA Supreme Court

On May 25, 2023, the Supreme Court issued its decision on the petition from the Sacketts, a family in Idaho that was subject to a compliance order from the USEPA for backfilling their lot near Priest Lake, which the USEPA claimed contained federally regulated wetlands. The wetlands in question were adjacent to a ditch that fed a creek that ultimately drained into Priest Lake, a navigable water body. The USEPA asserted the Sacketts had violated the law by filling the wetlands on their property without a permit. The Court's decision addressed controversy over whether, and under what

conditions, the CWA reaches the tributaries or adjacent wetlands of navigable waters. The Supreme Court's decision in *Sackett* provides definitive guidance to the agencies in determining the limits of their CWA authority. Major tenets of the decision have been incorporated into the agencies' current regulations through the September 2023 Conforming Rule.

The Court decided:

- "Adjacent wetlands" are waters of the United States only if there is a continuous surface connection between the wetland and a navigable or relatively permanent water body, such that it is difficult to determine the boundary between the wetland and the water body. The opinion notes that "temporary interruptions to surface connection may sometimes occur because of phenomena like low tides or dry spells." The agencies addressed this element by defining the term "adjacent" to mean "having a continuous surface connection" in the Conforming Rule.
- The Significant Nexus Standard, introduced by the Court in prior decisions, is not mentioned in the Clean Water Act and should not be used. The Court determined that the standard applies ecological factors whose use in determining jurisdiction is not supported by the statute. The Conforming Rule removed significant nexus considerations from the definition.
- Although jurisdiction over tributaries was not addressed by the Court, the decision stated "…the [Clean Water Act's] use of "waters" encompasses only those relatively permanent, standing or continuously flowing bodies of water forming geographical features that are described in ordinary parlance as streams, oceans, rivers, and lakes." The Conforming Rule makes clear that only relatively permanent tributaries qualify as "waters of the United States."

Rivers and Harbors Act Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from USACE for the construction of any structure in or over any navigable water of the United States. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, re-channelization, or any other modification of a navigable water of the United States and applies to all structures and work. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent or semi-permanent obstacle or obstruction. It is important to note that Section 10 applies only to navigable waters and thus does not apply to work in non-navigable wetlands or tributaries. In some cases, Section 10 authorization is issued by USACE concurrently with CWA Section 404 authorization, such as when certain Nationwide Permits are used.

Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code sec. 13050(e)). These agencies also have responsibilities for administering portions of the CWA.

Clean Water Act Section 401

Section 401 of the CWA requires an applicant requesting a federal license or permit for an activity that may result in any discharge into navigable waters (such as a Section 404 Permit) to provide state certification that the proposed activity will not violate state and federal water quality standards. In California, CWA Section 401 Water Quality Certification (Section 401 Certification) is issued by the RWQCBs and by the SWRCB for multi-region projects. The process begins when an applicant submits an application to the RWQCB and informs the USACE (or the applicable agency from which a license or permit was requested) that an application has been submitted. The USACE will then determine a "reasonable period of time" for the RWQCB to act on the application; this is typically 60 days for routine projects and longer for complex projects but may not exceed one year. When the period has elapsed, if the RWQCB has not either issued or denied the application for Section 401 Certification, the USACE may determine that Certification has been waived and issue the requested permit. If a Section 401 Certification is issued it may include binding conditions, imposed either through the Certification itself or through the requested federal license or permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code section 13000 et seq.), the policy of the State is as follows:

- The quality of all the waters of the State shall be protected
- All activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason
- The State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation

The Porter-Cologne Act established nine RWQCBs (based on watershed boundaries) and the SWRCB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. In addition, the SWRCB allocates rights to the use of surface water. The RWQCBs have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The SWRCB and RWQCBs have numerous nonpoint source related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

Section 13260 of the Porter-Cologne Act requires any person discharging or proposing to discharge waste that could affect the quality of waters of the State to file a Report of Waste Discharge with the appropriate RWQCB. The RWQCB may then authorize the discharge, subject to conditions, by issuing Waste Discharge Requirements (WDRs). While this requirement was historically applied primarily to outfalls and similar point source discharges, the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, effective May 2023, make it clear that the agency will apply the Porter-Cologne Act's requirements to discharges of dredge and fill material as well. The *Procedures* state that they are to be used in issuing CWA Section 401 Certifications and WDRs, and largely mirror the existing review requirements for CWA Section 404 Permits and Section 401 Certifications, incorporating most elements of the USEPA's

Section 404(b)(1) Guidelines. Following issuance of the *Procedures*, the SWRCB produced a consolidated application form for dredge/fill discharges that can be used to obtain a CWA Section 401 Water Quality Certification, WDRs, or both.

Non-Wetland Waters of the State

The SWRCB and RWQCBs have not established regulations for field determinations of waters of the state except for wetlands currently. In many cases the RWQCBs interpret the limits of waters of the State to be bounded by the OHWM unless isolated conditions or ephemeral waters are present. However, in the absence of statewide guidance each RWQCB may interpret jurisdictional boundaries within their region and the SWRCB has encouraged applicants to confirm jurisdictional limits with their RWQCB before submitting applications. As determined by the RWQCB, waters of the State may include riparian areas or other locations outside the OHWM, leading to a larger jurisdictional area over a given water body compared to the USACE.

Wetland Waters of the State

Procedures for defining wetland waters of the State pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* went into effect May 28, 2020. The SWRCB defines an area as wetland if, under normal circumstances:

(i) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;

(ii) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and

(iii) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The SWRCB's *Implementation Guidance for the Wetland Definition and Procedures for Discharges of Dredge and Fill Material to Waters of the State* (2023), states that waters of the U.S. and waters of the State should be delineated using the standard USACE delineation procedures, taking into consideration that the methods shall be modified only to allow for the fact that a lack of vegetation does not preclude an area from meeting the definition of a wetland.

United States Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) implements several laws protecting the Nation's fish and wildlife resources, including the Endangered Species Act (ESA; 16 United States Code [USC] Sections 153 et seq.), the Migratory Bird Treaty Act (MBTA; 16 USC Sections 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668).

Endangered Species Act

The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. Generally, the USFWS implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in "take" of any threatened or endangered wildlife species, or a threatened or endangered plant species if occurring on federal land, are required to obtain permits from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of the ESA, depending on the involvement by the federal government in funding, authorizing, or

carrying out the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. “Take” under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of the ESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

Migratory Bird Treaty Act

The MBTA of 1918 implements four international conservation treaties that the U.S. entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species. The law has been amended with the signing of each treaty, as well as when any of the treaties were amended, such as with Mexico in 1976 and Canada in 1995. The MBTA prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS.

The list of migratory bird species protected by the law, in regulations at 50 CFR Part 10.13, is primarily based on bird families and species included in the four international treaties. A migratory bird species is included on the list if it meets one or more of the following criteria:

1. It occurs in the United States or U.S. territories as the result of natural biological or ecological processes and is currently, or was previously listed as, a species or part of a family protected by one of the four international treaties or their amendments.
2. Revised taxonomy results in it being newly split from a species that was previously on the list, and the new species occurs in the United States or U.S. territories as the result of natural biological or ecological processes.
3. New evidence exists for its natural occurrence in the United States or U.S. territories resulting from natural distributional changes and the species occurs in a protected family.

In 2004, the Migratory Bird Treaty Reform Act limited the scope of the MBTA by stating the MBTA applies only to migratory bird species that are native to the United States or U.S. territories, and that a native migratory bird species is one that is present as a result of natural biological or ecological processes. The MBTRA requires the USFWS to publish a list of all nonnative, human-introduced bird species to which the MBTA does not apply, and an updated list was published in 2023. The 2023 update identifies species belonging to biological families referred to in treaties the MBTA implements but are not protected because their presence in the United States or U.S. territories is solely the result of intentional or unintentional human-assisted introductions.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits anyone, without a permit issued by the USFWS, from “taking” bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

“Disturb” means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its

productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

United States Forest Service

The United States Forest Service (USFS) is responsible for managing the National Forest System in accordance with the National Forest Management Act (NFMA), USFS Manual, and management plans prepared for specific National Forests, as follows:

National Forest Management Act

NFMA of 1976 states that "fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired nonnative vertebrate species in the planning area". For planning purposes, a viable population shall be regarded as one which has the estimated numbers, and distribution of reproductive individuals to ensure its continued existence is well distributed in the planning area. In order to ensure that viable populations will be maintained, habitat must be provided to support at least a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area (36 CFR 219.19).

The regulations also mandate that "all management prescriptions shall provide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species and provide that habitat for species chosen under 219.19 is maintained and improved to the degree consistent with multiple-use objectives established in the plan" (36 CFR 219.27[a][6]).

Diversity states in part: "Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species" (36 CFR 219.27[g]).

USFS Manual

Direction for management of wildlife and botany resources included in the USFS Manual includes the following:

- Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.
- Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with states, the USFWS, and other federal agencies.
- Through the Biological Assessment process, review actions and programs authorized, funded, or carried out by the USFS to determine their potential for effect on threatened and endangered species and species proposed for listing.

- Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effects totally through alternatives identified in a biological opinion rendered by USFWS, when an exemption has been granted under the National Forest Management Act, or when the USFWS biological opinion recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their federal status is being determined.
- Initiate consultation or conference with USFWS or NMFS when USFS determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when USFS projects are for the specific benefit of a threatened or endangered species.
- Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

Angeles National Forest Land Management Plan and San Gabriel Mountains National Monument Management Plan

Management direction for federally threatened, endangered, proposed, candidate, and Forest Service Sensitive (FSS) plant and animal species on the Angeles National Forest (ANF) comes from the ANF Land Management Plan adopted by the Record of Decision signed on September 20, 2005 (USDA, USFS 2005). Strategic Goals, Program Strategies and Tactics, Standards, and Appendices A-J provide guidance on management of wildlife and botany resources. Specific direction related to protection of federally threatened, endangered, proposed, candidate, and FSS plant and animal species comes from Standards 11-44 (LMP- Design Criteria, Part 3, pages 6-10). Appendices in LMP-Part 3 that are of particular relevance include Appendix D (Adaptive Mitigation for Recreation Uses), Appendix E (Five-Step Project Screening Process for Riparian Conservation Areas), and Appendix H (Species Guidance Summary).

In addition, the ANF Land Management Plan divides USFS lands on the ANF into Land Use Zones, which identify appropriate management types of uses that are consistent with the desired conditions of each place within the ANF. The Project occurs within the Developed Area Interface zone, defined as an area adjacent to communities and developed sites, including developed recreation facilities and infrastructure. This zone allows a variety of uses and is one of the least restrictive zones described in the ANF Land Management Plan.

The ANF Land Management Plan includes objectives and direction for managing resources on the ANF, including plant and wildlife species that are federally listed and/or FSS. The Plan outlines program strategies and tactics relevant to biological resources, including:

- **WL-1 – Threatened, Endangered, Proposed, Candidate, and Sensitive Species Management.** Requires USFS to manage habitat to move listed species toward recovery and de-listing and to prevent listing of proposed and sensitive species.
- **WL-2 - Management of Species of Concern.** Directs USFS to maintain and improve habitat for fish, wildlife, and plants, including those designated as game species, harvest species, and watch list species.
- **IS-1 – Invasive Species Prevention and Control.** Directs USFS management activities to prevent the introduction of new invaders, to conduct early treatment on new infestations, and contain and control established infestation of invasive species.

- **FH-1 – Vegetation Restoration.** Requires USFS to restore vegetation after events or activities that degrade or cause a loss of plant communities.

The San Gabriel Mountains National Monument was established on October 10, 2014, under the President's Antiquities Act authority, on National Forest System Lands administered by the ANF. The San Gabriel Mountains National Monument Management Plan (USDA, USFS 2018) contains the following desired conditions for biological resources:

- Habitat conditions are stable or improving over time as indicated by the 2016 Angeles Land Management Plan Monitoring Strategy.
- Habitats of special status species (threatened and endangered and FSS) in the Monument are managed to preserve and protect these species.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) derives its authority from the Fish and Game Code of California and administers several State laws protecting fish and wildlife resources and the habitats upon which they depend.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et. seq.) prohibits take of state listed threatened or endangered. Take under CESA is defined as "Hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code sec. 86). This definition does not prohibit indirect harm by way of habitat modification, except where such harm is the proximate cause of death of a listed species. Where incidental take would occur during construction or other lawful activities, CESA allows the CDFW to issue an Incidental Take Permit upon finding, among other requirements, that impacts to the species have been minimized and fully mitigated. Unlike the federal ESA, CESA's protections extend to candidate species during the period (typically one year) while the California Fish and Game Commission decides whether the species warrants CESA listing.

Native Plant Protection Act

The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (Fish and Game Code Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare, and prohibits the take of listed plant species. Effective in 2015, CDFW promulgated regulations (14 California Code of Regulations 786.9) under the authority of the NPPA, establishing that the CESA's permitting procedures would be applied to plants listed under the NPPA as "Rare." With this change, there is little practical difference for the regulated public between plants listed under CESA and those listed under the NPPA.

Fully Protected Species Laws

The CDFW enforces Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code, which prohibit take of species designated as Fully Protected. The CDFW is not allowed to issue an Incidental Take Permit for Fully Protected species; therefore, impacts to these species must be avoided. The

exception is situations where a Natural Community Conservation Plan (NCCP) is in place that authorizes take of the fully protected species.

Avian Protection Laws

California Fish and Game Code sections 3503, 3503.5, and 3513 describe unlawful take, possession, or destruction of native birds, nests, and eggs. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Section 3513 makes it a state-level offense to take any bird in violation of the federal Migratory Bird Treaty Act.

Protection of Lakes and Streambeds

California Fish and Game Code section 1602 states that it is unlawful for any person to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying the California Department of Fish and Wildlife (CDFW) of that activity. Thereafter, if CDFW determines and informs the entity that the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFW determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity may be required to obtain from CDFW a Streambed Alteration Agreement (SAA), which will include reasonable measures necessary to protect the affected resource(s), before the entity may conduct the activity described in the notification. Upon receiving a complete Notification of Lake/Streambed Alteration, CDFW has 60 days to present the entity with a Draft SAA. Upon review of the Draft SAA by the applicant, any problematic terms are negotiated with CDFW and a final SAA is executed.

The CDFW has not defined the term "stream" for the purposes of implementing its regulatory program under Section 1602, and the agency has not promulgated regulations directing how jurisdictional streambeds may be identified, or how their limits should be delineated. However, four relevant sources of information offer insight as to the appropriate limits of CDFW jurisdiction as discussed below.

- **The plain language of Section 1602 of CFGC** establishes the following general concepts:
  - References "river," "stream," and "lake"
  - References "natural flow"
  - References "bed," "bank," and "channel"
- **Applicable court decisions**, in particular *Rutherford v. State of California* (188 Cal App. 3d 1276 (1987), which interpreted Section 1602's use of "stream" to be as defined in common law. The Court indicated that a "stream" is commonly understood to:
  - Have a source and a terminus
  - Have banks and a channel
  - Convey flow at least periodically, but need not flow continuously and may at times appear outwardly dry
  - Represent the depression between the banks worn by the regular and usual flow of the water
  - Include the area between the opposing banks measured from the foot of the banks from the top of the water at its ordinary stage, including intervening sand bars
  - Include the land that is covered by the water in its ordinary low stage

  - Include lands below the OHWM

- **CDFW regulations** defining "stream" for other purposes, including sport fishing (14 California Code of Regulations 1.72) and streambed alterations associated with cannabis production (14 California Code of Regulations 722(c)(21)), which indicate that a stream:
  - Flows at least periodically or intermittently
  - Flows through a bed or channel having banks
  - Supports fish or aquatic life
  - Can be dry for a period of time
  - Includes watercourses where surface or subsurface flow supports or has supported riparian vegetation

- **Guidance documents**, *including A Field Guide to Lake and Streambed Alteration Agreements* (California Department of Fish and Game 1994) and *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which suggest the following:
  - A stream may flow perennially or episodically
  - A stream is defined by the course in which water currently flows, or has flowed during the historic hydrologic course regime (approximately the last 200 years)
  - Width of a stream course can reasonably be identified by physical or biological indicators
  - A stream may have one or more channels (single thread vs. compound form)
  - Features such as braided channels, low-flow channels, active channels, banks associated with secondary channels, floodplains, islands, and stream-associated vegetation, are interconnected parts of the watercourse
  - Canals, aqueducts, irrigation ditches, and other means of water conveyance can be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife
  - Biologic components of a stream may include aquatic and riparian vegetation, all aquatic wildlife including fish, amphibians, reptiles, invertebrates, and terrestrial species which derive benefits from the stream system
  - The lateral extent of a stream can be measured in different ways depending on the particular situation and the type of fish or wildlife resource at risk

The tenets listed above, among others, are applied to establish the boundaries of streambeds in various environments. The importance of each factor may be weighted based on site-specific considerations and the applicability of the indicators to the streambed at hand.

Local Jurisdiction

California Government Code Section 53091 exempts Palmdale Water District from compliance with local zoning and building ordinances for projects involving the construction of facilities for the production, generation, storage, treatment, or transmission of water. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential impacts on the environment, relevant City of Palmdale and County of Los Angeles policies and ordinances are summarized below.

Los Angeles County, California

Los Angeles County General Plan and Significant Ecological Areas

The Los Angeles County 2035 General Plan (2022) includes policies that address biological resources within the county. Policies that seek to preserve biological resources are contained in Chapter 9 of the Conservation and Natural Resources Element of the General Plan. The following policies are relevant to the Project:

Policy C/NR 3.6: Assist state and federal agencies and other agencies, as appropriate, with the preservation of special status species and their associated habitat and wildlife movement corridors through the administration of the SEAs and other programs.

Policy C/NR 3.8: Discourage development in areas with identified significant biological resources, such as SEAs.

Policy C/NR 3.10: Require environmentally superior mitigation for unavoidable impacts on biologically sensitive areas, and permanently preserve mitigation sites.

The SEA Program is a tool that helps guide land development to avoid conflicts with important and irreplaceable biological resources within Los Angeles County. An SEA is an officially designated area within Los Angeles County that contains irreplaceable biological resources. The SEA Ordinance, which is a part of the Los Angeles County Planning and Zoning Code (Los Angeles County Code of Ordinances Section 22.102 et seq.), establishes the permitting, design standards, and SEA Technical Advisory Committee review process for development within SEAs.

Los Angeles County Code of Ordinances

The Los Angeles County Oak Tree Ordinance is part of the Los Angeles County Planning and Zoning Code (County Code of Ordinances Section 22.174 et seq.). Pursuant to the ordinance, an oak tree permit must be obtained prior to damaging or removing any tree of the oak genus (*Quercus* spp.) that is:

- Eight inches or more in diameter (25 inches in circumference), as measured 4.5 feet above mean natural grade,
- Oaks with multiple trunks, where the combined diameter of any two trunks is 12 inches (38 inches in circumference) or more, or
- Provided as a replacement tree (pursuant to Los Angeles County Code Section 22.174.020).

Los Angeles County Oak Woodland Management Plan and Guide

The objectives of the Los Angeles County Oak Woodlands Conservation Management Plan (Woodland Plan) (County of Los Angeles 2011) are to prioritize the preservation of oak woodlands, promote conservation by integrating oak woodlands into the development process in a sustainable manner, and effectively mitigate the loss of oak woodlands. The Woodland Plan was prepared by the County pursuant to the California Oak Woodlands Conservation Act (Assembly Bill 242) to qualify for funding to preserve oak woodlands through the Oak Woodlands Conservation Fund; the County Board of Supervisors adopted the Woodland Plan on August 23, 2011 (County of Los Angeles 2024). The accompanying Oak Woodlands Conservation Management Plan Guide (Woodland Guide) (County of Los Angeles 2014) implements portions of the Woodland Plan and focuses on potential

impacts to oak woodlands from proposed developments. The Woodland Guide defines oak woodlands as:

An oak stand, including its understory, which consists of two or more oak trees (all native trees of the genus Quercus) of at least five inches in diameter (of the largest trunk) measured at 4.5' above mean natural grade, with greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover as early as January 1, 2005 (effective date of California Public Resources Code Section 21083.4).

City of Palmdale, California

Palmdale 2045 General Plan

Within the Environmental Resources Element of the City of Palmdale General Plan, the policies applicable to the proposed project include the following:

- **CON-1.1 Endangered species protection.** Ensure local compliance with the CESA and FESA.
- **CON-1.2 Joshua and Juniper trees.** Continue enforcing the City's Native Vegetation Ordinance to protect western Joshua trees and Juniper trees.
- **CON-1.3 West Mojave Plan.** Comply with the required implementation of the West Mojave Plan for protection of desert tortoise and Mohave ground squirrel.
- **CON-1.4 Significant ecological areas**. Identify and preserve to the greatest extent feasible significant ecological areas (SEA's). Areas to consider for open space preservation include, but are not limited to, Tejon Park, Barrel Springs Southern Trailhead, and the Una Lake area.
- **CON-1.5 Preserve ecological resource areas.** Preserve natural drainage courses and riparian areas where ecological resources exist in significant concentrations.
- **CON-1.6 Increase conservation areas**. Coordinate with state agencies to help achieve the goals of 30x30: to protect 30 percent of California's land by 2030 by identifying optimal sites for land conservation.
- **CON-1.7 Wetland and floodplain areas.** Solicit and utilize all available sources of local, regional, state, and federal funds to acquire significant wetland areas and floodplains to minimize disturbance and prevent damage from erosion, turbidity, siltation, loss of wildlife and vegetation, or the destruction of the natural habitat.

City of Palmdale Municipal Code

Chapter 14.04, *Joshua Tree and Native Desert Vegetation Preservation* is intended to protect and preserve desert vegetation, which specifically includes western Joshua trees and California juniper trees, in a manner that is consistent with the City's General Plan and CEQA. This regulation outlines avoidance, minimization, and mitigation of impacts to both species.

Appendix C

USFWS Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To: 06/08/2024 00:15:19 UTC
Project Code: 2024-0101448
Project Name: Palmdale Ditch Conversion Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A biological assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a biological assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a biological assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found at the Fish and Wildlife Service's Endangered Species Consultation website at:

https://www.fws.gov/service/esa-section-7-consultation

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2024-0101448
Project Name: Palmdale Ditch Conversion Project
Project Type: Water Supply Facility - Maintenance / Modification
Project Description: Conversion of the Palmdale Ditch to a buried pipeline.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.5171246,-118.04166152927618,14z

Counties: Los Angeles County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
California Condor *Gymnogyps californianus* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

REPTILES

NAME	STATUS
Desert Tortoise *Gopherus agassizii* Population: Wherever found, except AZ south and east of Colorado R., and Mexico There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4481	Threatened
Southwestern Pond Turtle *Actinemys pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4768	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad *Anaxyrus californicus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3762	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Brenna Vredeveld
Address: 250 E 1st St
Address Line 2: Suite 1400
City: Los Angeles
State: CA
Zip: 90012
Email bvredeveld@rinconconsultants.com
Phone: 3235384950

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Reclamation

Appendix D

Floral and Faunal Compendium

Plant Species Observed Within the Biological Survey Area during Field Reconnaissance Surveys (November 13 to 17 and December 11 to 15, 2023)

Scientific Name	Common Name	Status	Native or Introduced
Shrubs			
Acmispon glaber	deerweed	–	Native
Ambrosia salsola	cheesebush	–	Native
Artemisia tridentata	big sagebrush	–	Native
Atriplex canescens	fourwing saltbush	–	Native
Atriplex lentiformis	quailbush	–	Native
Ericameria nauseosa	rubber rabbitbrush	–	Native
Baccharis salicifolia	mulefat	–	Native
Baccharis sarothroides	broom baccharis	–	Native
Calochortus spp.	mariposa lily	–	Native
Cylindropuntia echinocarpa	silver cholla	–	Native
Encelia actonii	Acton encelia (brittlebush)	–	Native
Ephedra nevadensis	Nevada ephedra	–	Native
Eriastrum densifolium	giant eriastrum	–	Native
Eriastrum sapphirinum	sapphire eriastrum	–	Native
Ericameria linearifolia	narrow leaf goldenbush	–	Native
Eriogonum deflexum	flatcrown buckwheat	–	Native
Eriogonum elongatum var. *elongatum*	long-stemmed buckwheat	–	Native
Eriogonum fasciculatum	California buckwheat	–	Native
Eriogonum wrightii	Wright's buckwheat	–	Native
Ericameria linearifolia	interior goldenbush	–	Native
Eriodictyon crassifolium	hick-leaved yerba santa	–	Native
Eriodictyon trichocalyx var. *trichocalyx*	hairy yerba santa	–	Native
Fremontodendron californicum	California flannelbush	–	Native
Forestiera pubescens	desert olive	–	Native
Grayia spinosa	spiny hop sage	–	Native
Gutierrezia sarothraei	snakeweed	–	Native
Juniperus californica	California juniper	–	Native
Hesperoyucca whipplei	chapparal yucca	–	Native
Krascheninnikovia lanata	winterfat	–	Native
Larrea tridentata	creosote bush	–	Native
Lepidospartum squamatum	California broomesage	–	Native
Lycium cooperi	Cooper's boxthorn	–	Native
Juniperus osteosperma	Utah juniper	–	Native
Opuntia basilaris	beavertail cactus	–	Native
Opuntia spp.	beavertail cactus	Unconfirmed	Unconfirmed
Purshia stansburyana	Stansbury's antelope brush	–	Native
Quercus john-tuckeri	Tucker oak	–	Native

Scientific Name	Common Name	Status	Native or Introduced
Rhus ovata	sugarbush	–	Native
Rosmarinus officinalis	rosemary	–	Non-native
Salvia dorrii	Dorr's sage	–	Native
Sambucus mexicana	blue elderberry	–	Native
Scutellaria mexicana	paperbag bush	–	Native
Senecio flaccidus	shrubby ragwort	–	Native
Stanleya pinnata	prince's plume	–	Native
Streptanthus tortuosus	mountain jewelflower	–	Native
Tamarix ramosissima	tamarisk	–	Non-native; Cal-IPC High
Herbs			
Amaranthus spp.	amaranth	–	Non-native
Ambrosia acanthicarpa	annual burweed	–	Native
Amsinckia tessellata	bristly fiddleneck	–	Native
Amsinckia spp.	fiddleneck	–	Native
Asclepias fascicularis	narrowleaf milkweed	–	Native
Artemisia dracunculus	tarragon	–	Native
Brassica nigra	black mustard	–	Non-native; Cal-IPC Moderate
Erigeron canadensis	horseweed	–	Non-native
Erodium cicutarium	common storks-bill	–	Native
Euphorbia micromera	Sonoran sandmat	–	Native
Calochortus spp.	mariposa-lily	Unconfirmed	Native
Carduus pycnocephalus	Italian thistle	–	Non-native; Cal-IPC Moderate
Carex praegracilis	clustered field sedge	–	Native
Centrostegia thurberi	red triangles	–	Native
Chorizanthe staticoides	Turkish rugging	–	Native
Cryptantha spp.	cryptantha	–	Native
Cyperus eragrostis	tall-flat sedge	–	Native
Datura wrightii	sacred datura	–	Non-native
Dichelostemma capitatum ssp. *capitatum*	blue dicks	–	Native
Distichlis spicata	saltgrass	–	Non-native
Epilobium brachycarpum	panicled willowherb	–	Native
Helianthus annuus	common sunflower	–	Native
Hirschfeldia incana	short-podded mustard	–	Non-native; Cal-IPC Moderate
Juncus balticus	Baltic rush	–	Native
Lasthenia californica	California goldfields	–	Native
Layia platyglossa	tidy tips	–	Native
Leptosyne bigelovi	Bigelow coreopsis	–	Native
Lessingia glandulifera	sticky lessingia	–	Native

Scientific Name	Common Name	Status	Native or Introduced
Malacothrix californica	desert dandelion	–	Native
Marrubium vulgare	white horehound	–	Non-native; Cal-PIC Moderate
Mirabilis laevis	desert wishbone bush	–	Native
Oenothera californica	California primrose	–	Native
Phacelia tanacetifolia	lacy phacelia	–	Native
Pseudognaphalium luteoalbum	Jersey cudweed	–	Non-native
Rumex crispus	curly dock	–	Non-native; Cal-IPC Limited
Salsola tragus	Russian thistle	–	Non-native; Cal-IPC Limited
Salvia columbariae	chia sage	–	Native
Senecio flaccidus	shrubby ragwort	–	Native
Sisymbrium orientale	Indian hedge mustard	–	Non-native
Sisymbrium irio	London rocket	–	Non-native; Cal-IPC Limited
Sorghum bicolor	sorghum	–	Non-native
Streptanthus tortuosus	mountain jewelflower	–	Native
Symphyotrichum chilense	California aster	–	Native
Tamarix aphylla	Athel tamarisk	–	Non-Native; Cal-IPC Limited
Typha domingensis	narrowleaf cattail	–	Native
Typha spp.	cattail	–	Native
Urtica dioica	stinging nettle	–	Native
Xanthium strumarium	common cocklebur	–	Native
Grasses			
Avena barbata	slender wild out	–	Non-native; Cal-IPC High
Bromus diandrus	ripgut brome	–	Non-native; Cal-IPC Moderate
Bromus madritensis	red brome	–	Non-native; Cal-IPC High
Bromus tectorum	cheatgrass	–	Non-native; Cal-IPC High
Cortaderia selloana	pampas grass	–	Non-native; Cal-IPC High
Cynosurus echinatus	bristly dogtail grass	–	Non-native; Cal-IPC Moderate
Muhlenbergia rigens	deergrass	–	Native
Polypogon monspeliensis	rabbitsfoot grass	–	Non-native
Panicum urvilleanum	desert panicgrass	–	Native
Pennisetum setaceum	fountain grass	–	Non-native; Cal-IPC Moderate
Polypogon monspeliensis	rabbitsfoot grass	–	Non-native; Cal-IPC Limited
Schismus arabicus	Mediterranean grass	–	Non-native; Cal-IPC Limited

Scientific Name	Common Name	Status	Native or Introduced
Trees			
Acacia spp.	acacia	–	Non-native
Cupressus arizonica	Arizona cypress	–	Native
Salix exigua	sandbar willow	–	Native
Salix laevigata	red willow	–	Native
Salix lasiolepis	arroyo willow	–	Native
Salix gooddingii	Goodding's black willow	–	Native
Platanus racemosa	California sycamore	–	Native
Pinus halepensis	Aleppo pine	–	Non-native
Populus fremontii	Fremont cottonwood	–	Native
Robinia pseudoacacia	black locust	–	Non-native; Cal-IPC Limited
Yucca brevifolia	Joshua tree	CESA Candidate; WJTCA	Native
Hesperoyucca whipplei	chapparal yucca	–	Native

Sources: California Native Plant Society 2023 and California Invasive Plant Council (Cal-IPC) 2023

Status (Federal/State)

CESA = California Endangered Species Act

WJTCA = Protected in California under the Western Joshua Tree Conservation Act

Wildlife Species Observed Within the Biological Survey Area (November 13 to 17 and December 11 to 15, 2023)

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Accipiter cooperii	Cooper's hawk	WL	Native
Accipiter striatus	sharp-shinned hawk	WL	Native
Agelaius phoeniceus	red-winged blackbird	–	Native
Anthus rubescens	American pipit	–	Native
Aphelocoma californica	California scrub-jay	–	Native
Ardea herodias	great-blue heron	–	Native
Bubo virginianus	great-horned owl	–	Native
Bucephala albeola	bufflehead	–	Native
Buteo lineatus	red-shouldered hawk	–	Native
Buteo jamaicensis	red-tailed hawk	–	Native
Callipepla californica	California quail	–	Native
Calypte anna	Anna's hummingbird	–	Native
Cathartes aura	turkey vulture	–	Native
Chamaea fasciata	wrentit	–	Native
Circus hudsonius	northern harrier	SSC	Native
Columba livia	rock pigeon	–	Non-native
Colaptes auratus	northern flicker	–	Native
Corthylio calendula	ruby-crowned kinglet	–	Native
Corvus corax	common raven	–	Native
Dryobates scalaris	ladder-backed woodpecker	–	Native
Falco columbarius	merlin	WL	Native
Falco sparverius	American kestrel	–	Native
Fulica americana	American coot	–	Native
Haemorhous mexicanus	house finch	–	Native
Junco hyemalis	dark-eyed junco	–	Native
Leiothlypis celata	orange-crowned warbler	–	Native
Melospiza melodia	song sparrow	–	Native
Melozone crissalis	California towhee	–	Native
Mimus polyglottos	northern mockingbird	–	Native
Oxyura jamaicensis	ruddy duck	–	Native
Passer domesticus	house sparrow	–	Native
Passerculus sandwichensis	Savannah sparrow	–	Native
Phainopepla nitens	phainopepla	–	Native
Pipilo maculatus	spotted towhee	–	Native
Poecile gambeli	mountain chickadee	–	Native
Podilymbus podiceps	pied-billed grebe	–	Native
Polioptila caerulea	blue-gray gnatcatcher	–	Native

Scientific Name	Common Name	Status	Native or Introduced
Psaltriparus minimus	bushtit	–	Native
Sayornis nigricans	black phoebe	–	Native
Setophaga coronata	yellow-rumped warbler	–	Native
Streptopelia decaocto	Eurasian-collared dove	–	Non-native
Sturnella neglecta	western meadowlark	–	Native
Thryomanes bewickii	Bewick's wren	–	Native
Spinus psaltria	lesser goldfinch	–	Native
Spizella brewer	Brewer's sparrow	–	Native
Zenaida macroura	mourning dove	–	Native
Zonotrichia leucophrys	white-crowned sparrow	–	Native
Mammals			
Canis latrans	coyote (scat/tracks)	–	Native
Canis familiaris	domestic dog	–	Non-native
Felis catus	domestic cat	–	Non-native
Lynx rufus	bobcat (scat)	–	Native
Neotoma spp.	woodrat (middens/nests)	–	Native
Sylvilagus audubonii	desert cottontail	–	Native
Otospermophilus beecheyi	California ground squirrel	–	Native
Reptiles			
Sceloporus occidentalist lonipes	Great Basin fence lizard	–	Native
Uta stansburiana	common side-blotched lizard	–	Native
Invertebrates			
Apoidea spp.	bee	–	Native
Coccinella septempunctata	seven-spotted ladybeetle	–	Native
Chlosyne acastus	sagebrush checkerspot	–	Native
Danaus plexippus	monarch butterfly	FCS	Native
Eleodes armata	armored stink beetle	–	Native
Pontia protodice	checkered white butterfly	–	Native
Trimerotropis pallidipennis	pallid-winged grasshopper	–	Native
Vanessa atalanta	red admiral	–	Native
Vanessa cardui	painted lady	–	Native

Status (Federal/State)
SSC = CDFW Species of Special Concern
WL = CDFW Watch List
FCS = Federal Candidate Species

Appendix E

Site Photographs

Photograph 1. View of southernmost extent of Palmdale Ditch, California sycamore woodlands and surrounding vegetation, Cheseboro Road, and Littlerock Dam, facing east. November 13, 2023.

Photograph 2. View of potential staging area with active bee hives, California sycamore woodland habitat, Cheseboro Road, and Littlerock Dam beyond, facing southeast. November 13, 2023.

Photograph 3. View of Palmdale Ditch, surrounding Fremont Cottonwood, and upland scrub vegetation within the BSA, located west of Littlerock Reservoir access gate. November 14, 2023.

Photograph 4. East-facing view of Palmdale Ditch, surrounding vegetation, and Tucker oak population within the BSA, south of Mt. Emma Road. November 14, 2023.

Photograph 5. View of Mt. Emma Road with Palmdale Ditch to the right and surrounding trees and vegetation and disturbed roads within the BSA, facing south. December 11, 2023.

Photograph 6. Representative view of Palmdale Ditch and surrounding vegetation comprised of California juniper woodland, western Joshua tree, and intermixed upland vegetation in the south-central extent of the BSA, facing east. November 16, 2023.

Photograph 7. View of woodrat midden at the base of a California juniper shrub along the Palmdale Ditch within the BSA, facing northwest. November 16, 2023.

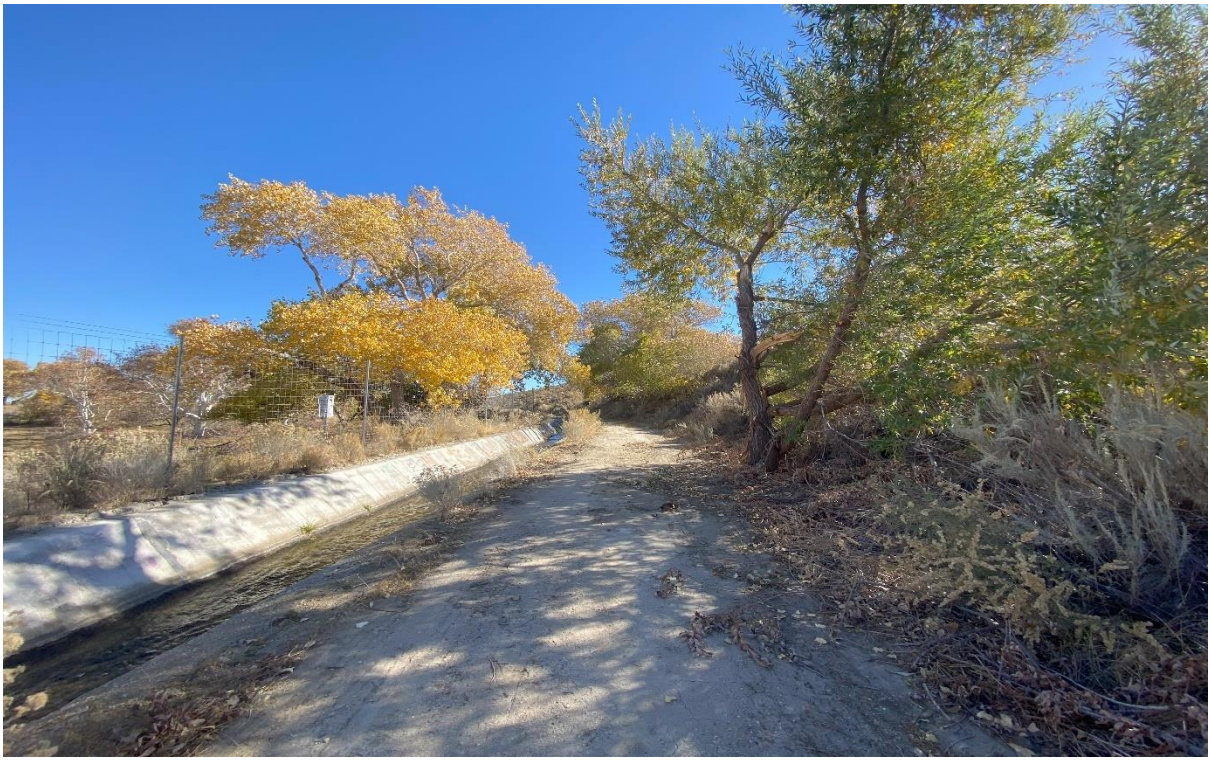
Photograph 8. View of Palmdale Ditch and representative transitional habitats of California juniper woodland, upland shrublands, and Joshua tree woodland, facing southeast. November 17, 2023.

Photograph 9. View of Barrel Springs Road access and off-highway vehicle trail, trash dumping, and disturbed areas with surrounding California juniper woodland and upland shrubland vegetation within the BSA. November 16, 2023.

Photograph 10. View of undergrounding Ditch along Barrel Springs Road within the BSA, facing south. December 12, 2023.

Photograph 11. View of upland shrub vegetation, California junipers, and Ditch along Bear Creek Road, facing west. December 12, 2023.

Photograph 12. View of Ditch crossing California Aqueduct, facing east. December 12, 2023.



Photograph 13. View of Ditch, cottonwood and willow trees, and adjacent fenced private property (left), facing northeast. December 12, 2023.

Photograph 14. View of Ditch with dense rubber rabbitbrush, California junipers, and western Joshua trees along Bear Creek Road, east of Barrel Springs Road, facing west. December 12, 2023.

Photograph 15. View of Ditch at undergrounding location with surrounding rubber rabbitbrush shrub and disturbed areas, near the intersection of Barrel Springs Road and Pearblossom Highway. December 13, 2023.

Photograph 16. View of Ditch and start of California juniper woodland near the public trail access parking lot at Barrel Springs Road and East Barrel Springs Road, facing east. December 13, 2023.

Photograph 17. Representative photo of earthen Ditch flowing through dense California juniper woodland habitat, facing northeast. December 13, 2023.

Photograph 18. View of concrete Ditch conveyance structure, small drainages, and surrounding California juniper woodland habitat, facing northeast. December 13, 2023.

Photograph 19. View of small wetland seep adjacent to the Ditch and surrounding California juniper woodland, facing south. December 13, 2023.

Photograph 20. View of California ground squirrel burrow complex near the Barrel Springs public access trail, with California buckwheat scrub and juniper woodland, facing southwest. December 13, 2023.

Photograph 21. View of Barrel Springs public access trail along the Ditch, facing northwest. December 13, 2023.

Photograph 22. Representative photo of furthest southwestern end of Ditch, east of Alpine community and Sierra Highway, facing north. December 13, 2023.

Photograph 23. View of end of the above-ground Ditch within the BSA, showing scrub vegetation, railroad tracks, adjacent development, and the Sierra Highway, facing southwest. December 13, 2023.

Photograph 23. View of southern fenceline for the Lake Palmdale portion of the BSA, facing northwest. December 15, 2023.

Photograph 24. View of westernmost portion of Ditch with mature cottonwoods, disturbed open lot, adjacent California juniper woodland, emergent western Joshua trees, and rubber rabbitbrush scrub. December 15, 2023.

Photograph 2. View of western outfall of Ditch into Lake Palmdale with cattails, mature cottonwoods, and dense riparian and wetland vegetation beyond the BSA. December 15, 2023.

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Appendix F

Special Status Species Evaluation Tables

Special Status Plant Species in the Regional Vicinity in the BSA

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Acanthoscyphus parishii var. *abramsii* Abrams' oxytheca	None/None FSS G4T1T2/S1S2 1B.2	Annual herb. Chaparral. Shale or sandy places. Elevations: 3750-6750ft. (1143-2057m.) Blooms Jun-Aug.	Not Expected	The BSA is outside the known elevation range for this species.
Arctostaphylos glandulosa ssp. *gabrielensis* San Gabriel manzanita	None/None FSS G5T3/S3 1B.2	Perennial evergreen shrub. Chaparral. Rocky outcrops; can be dominant shrub where it occurs. Elevations: 1950-4920ft. (595-1500m.) Blooms Mar.	Low Potential	The BSA contains rocky outcrops and patches of suitable perennial evergreen shrub habitat. However, the highest elevation of the BSA is at the lowest elevational range of this species (Jepson 2023). No CNDDB occurrences have been recorded within 5 miles of the BSA. The nearest known occurrences are approximately 7 miles southwest and 300 feet (91 meters) higher in elevation than the southern and highest extent of the BSA. This species was not observed during field reconnaissance surveys,
Arctostaphylos parryana ssp. *Tumescens* interior manzanita	None/None FSS G4T3T4/S3S4 4.3	Perennial evergreen shrub. Chaparral, cismontane woodland. Montane chaparral or foothill woodland. Elevations: 6890-7580ft. (2100-2310m.) Blooms Feb-Apr.	Not Expected	The BSA is outside the known elevation range for this species.
Astragalus hornii var. *hornii* Horn's milk-vetch	None/None GUT1/S1 1B.1	Annual herb. Meadows and seeps, playas. Alkaline, lake margins. Elevations: 195-2790ft. (60-850m.) Blooms May-Oct.	High Potential	Suitable habitat including lake edges exist near the Lake Palmdale reservoir. One historical CNDDB record from 1929 includes the northern end of the BSA.
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	None/None G4T2/S1 1B.1	Perennial herb. Chenopod scrub. Alkaline clay flats or gravelly or sandy washes and along draws in gullied badlands in California. Elevations: 2295-2295ft. (700-700m.) Blooms Mar-May.	Low Potential	Chenopod scrub and alkali flats are not present in the BSA.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Calochortus palmeri var. *palmeri* Palmer's mariposa-lily	None/None FSS G3T2/S2 1B.2	Perennial bulbiferous herb. Chaparral, Lower montane coniferous forest, meadows and seeps. Mesic. Elevations: 2330-7840ft. (710-2390m.) Blooms Apr-Jul.	Moderate Potential	Suitable meadows and seeps are present in the BSA and within the elevational range of the species. No CNDDB occurrences have been recorded within 5 miles of the BSA. The nearest known CNDDB occurrences are approximately 7.5 miles southeast of the BSA at a similar elevation to the southern portion of the BSA and in a pinyon and juniper woodland habitat. Senescent, unidentifiable *Calochortus* spp. were observed during the reconnaissance surveys.
Calochortus striatus alkali mariposa-lily	None/None FSS G3/S2S3 1B.2	Perennial bulbiferous herb. Chaparral, chenopod scrub, meadows and seeps, Mojavean desert scrub. Alkaline, mesic. Elevations: 230-5235ft. (70-1595m.) Blooms Apr-Jun.	Moderate Potential	Suitable Mojave Desert scrub, meadows, seeps, and soils are present within the BSA. The BSA is within the elevational range of the species. Several *Calochortus* spp. were observed during the field reconnaissance survey but were outside of the blooming period. No CNDDB occurrences have been recorded within 5 miles of the BSA. However, numerous observations of this species have been reported within the city of Lancaster, the unincorporated Lake Los Angeles community, and south of the BSA at the higher elevational extent of this species near Waterman Mountain and Chilao Flat in the ANF (Calflora 2024)
Canbya candida white pygmy-poppy	None/None FSS G3G4/S3S4 4.2	Annual herb. Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Granitic, gravelly, sandy. Elevations: 1970-4790ft. (600-1460m.) Blooms Mar-Jun.	High Potential	Suitable Joshua tree woodland, Mojave Desert scrub and juniper woodland with gravelly and sandy substrate are present within the BSA. The BSA is within elevational range of this species. The nearest CNDDB records are historical observations from 1921 and 1926 upstream of Littlerock Reservoir, on the southern end of the reservoir and within Littlerock Creek approximately one mile from BSA.
Castilleja gleasoni Mount Gleason paintbrush	None/SR FSS G2/S2 1B.2	Perennial herb (hemiparasitic). Chaparral, Lower montane coniferous forest, pinyon and juniper woodland. Granitic. Elevations: 3805-7120ft. (1160-2170m.) Blooms May-Jun(Sep).	Not Expected	Suitable juniper woodlands are present, however, the BSA occurs outside the elevation range of the species. The only known occurrences area near Mount Gleason peak above 3900 feet (1200 meters).

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Castilleja plagiotoma Mojave paintbrush	None/None FSS G4/S4 4.3	Perennial herb (hemiparasitic). Great basin scrub, Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland. Alluvial fans. Elevations: 985-8205ft. (300-2500m.) Blooms Apr-Jun.	Moderate Potential	This species is not included in the CNDDB search based on the G4/S4 status; however, it was assessed based on its potential to occur within ANF lands. Suitable sage scrub, Joshua tree woodland, and Juniper woodland habitats occur within the BSA, including areas within ANF boundaries. No CNDDB records of this species occur within 5 miles of the BSA.
Chorizanthe parryi var. *parryi* Parry's spineflower	None/None FSS G3T2/S2 1B.1	Annual herb. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Openings, Rocky (sometimes), sandy (sometimes). Elevations: 900-4005ft. (275-1220m.) Blooms Apr-Jun.	Not Expected	The majority of the known occurrences are south of the San Gabrial and San Berardino Mountains. The only CNDDB record is from 1892 and likely a misidentification.
Claytonia peirsonii ssp. *peirsonii* Peirson's spring beauty	None/None FSS G2G3T2/S2 1B.2	Perennial herb. Subalpine coniferous forest, upper montane coniferous forest. Granitic, metamorphic, scree, talus. Elevations: 4955-9005ft. (1510-2745m.) Blooms (Mar) May-Jun.	Not Expected	Subalpine coniferous forests and upper montane forests are not present in the BSA. The BSA occurs outside of the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA. All known occurrences are east of Juniper Hills and the nearest known CNDDB record is approximately 9.5 miles away.
Eriastrum rosamondense Rosamond eriastrum	None/None G1?/S1? 1B.1	Annual herb. Chenopod scrub, vernal pools. Alkali pool beds separated by very Low hummocks with open chenopod scrub. Often sandy soil. Elevations: 2295-3855ft. (700-1175m.) Blooms Apr-May (Jun-Jul).	Not Expected	No suitable alkali pool beds or vernal pools are present in the BSA. No CNDDB occurrences have been documented within 5 miles of the BSA. The nearest CNDDB record is approximately 13 miles north of the BSA.
Heuchera caespitosa urn-flowered alumroot	None/None FSS G3/S3 4.3	Perennial rhizomatous herb. Cismontane woodland, lower montane coniferous forest, riparian forest, upper montane coniferous forest. Rocky sites. Elevations: 3790-8695ft. (1155-2650m.) Blooms May-Aug.	Not Expected	The BSA is outside the known elevation range for this species.
Hulsea vestita ssp. gabrielensis San Gabriel Mountains hulsea	None/None FSS G5T3/S3 4.3	Perennial herb. Lower montane coniferous forest, upper montane coniferous forest. Rocky sites. Elevations: 4920-8205ft. (1500-2500m.) Blooms May-Jul.	Not Expected	The BSA is outside the known elevation range for this species.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Lepechinia fragrans fragrant pitcher sage	None/None FSS G3/S3 4.2	Perennial shrub. Chaparral. Elevations: 65-4300ft. (20-1310m.) Blooms Mar-Oct.	Not Expected	This species was assessed based on its potential to occur within ANF lands. The portion of ANF land the BSA overlaps lacks suitable chapparal, ridgetops, or dry ravine habitats this species is typically found in.
Lilium parryi lemon lily	None/None FSS G3/S3 1B.2	Perennial bulbiferous herb. Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest. Wet, mountainous terrain; generally, in forested areas; on shady edges of streams, in open boggy meadows and seeps. Elevations: 4005-9005ft. (1220-2745m.) Blooms Jul-Aug.	Not Expected	The BSA is outside the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA.
Linanthus concinnus San Gabriel linanthus	None/None FSS G2/S2 1B.2	Annual herb. Chaparral, Lower montane coniferous forest, upper montane coniferous forest. Dry rocky slopes, often in Jeffrey pine/canyon oak forest. Elevations: 4985-9185ft. (1520-2800m.) Blooms Apr-Jul.	Not Expected	No suitable lower or upper montane coniferous forests are present in the BSA. The BSA is outside the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA.
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	None/None G5T3/S2 2B.2	Annual herb. Desert dunes, Great Basin scrub, Sonoran desert scrub. Sandy flats and dunes. Sandy areas around clay slicks w/ Sarcobatus, Atriplex, Tetradymia, etc. Elevations: 2295-5300ft. (700-1615m.) Blooms Apr-May.	Not Expected	Suitable desert dunes, Great Basin scrub, Sonoran Desert scrub, or sandy areas around clay slicks are not present within the BSA. One CNDDB occurrence was recorded within 5 miles near a gravel quarry off Pear blossom Highway in 2005.
Lupinus peirsonii Peirson's lupine	None/None FSS G3/S3 1B.3	Perennial herb. Joshua tree woodland, Lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest. Decomposed granite slide and talus, on slopes and ridges. Elevations: 3280-8205ft. (1000-2500m.) Blooms Apr-Jun.	Low Potential	Suitable Joshua tree and juniper woodland habitats are present, however decomposed granite slides and talus along slopes and ridges do not occur within the BSA.
Monardella australis ssp. *gabrielensis* San Gabriel Mountains monardella	None/None G4T2/S2 1B.2	Broadleaved upland forest, chaparral (montane), Lower montane coniferous forest. Granitic openings, outcrops. Elevations: 5250-7220ft. (1600-2200m.) Blooms Jul-Sep.	Not Expected	Chaparral habitat is present, however granitic outcrops, openings, broadleaf upland forests and lower montane coniferous forest habitats are not present. The BSA is outside the known elevation range for this species.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Nemacladus secundiflorus var. *robbinsii* Robbins' nemacladus	None/None FSS G3T2/S2 1B.2	Annual herb. Chaparral, valley and foothill grassland. Dry, sandy or gravelly slopes. Openings. Elevations: 1150-5580ft. (350-1700m.) Blooms Apr-Jun.	Low Potential	The presence of high quality, suitable chaparral habitat, valley foothill, or grassland are not present. However, big sagebrush scrub, California juniper woodland, and coarse, gravelly soil are present within the BSA. No CNDDB occurrences have been documented within 5 miles of the BSA.
Opuntia basilaris var. *brachyclada* short-joint beavertail	None/None FSS G5T3/S3 1B.2	Perennial stem. Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Sandy soil or coarse, granitic loam. Elevations: 1395-5905ft. (425-1800m.) Blooms Apr-Jun (Aug).	High Potential	Suitable chapparal, Joshua tree woodland, and juniper woodland habitats are present in the BSA. Suitable sandy soil and granitic loam are also present. Numerous *Opuntia basilaris* (beavertail cactus) were observed during the field reconnaissance survey. There are 61 known records in the *Palmdale* and *Pacifico Mountain* quadrangles and surrounding quadrangles with approximately 23 CNDDB occurrences recorded within 5 miles of the BSA, and 5 records within one mile of the BSA. Occurrences were recorded in the southern extent of the BSA near Littlerock Reservoir, southeast of Barrel Springs and Pear Blossom Highway, and west of Lake Palmdale.
Oreonana vestita woolly mountain-parsley	None/None FSS G3/S3 1B.3	Perennial herb. Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest. High ridges; on scree, talus, or gravel. Elevations: 5300-11485ft. (1615-3500m.) Blooms Mar-Sep.	Not Expected	The BSA is outside the elevation range for this species.
Sidotheca caryophylloides chickweed oxytheca	None/None FSS G4/S4 4.3	Annual herb. Lower montane coniferous forest. Sandy sites. Elevations: 3655-8530ft. (1114-2600m.) Blooms Jul-Sep(Oct).	Not Expected	The BSA is outside the elevation range for this species.
Stylocline masonii Mason's neststraw	None/None G1/S1 1B.1	Annual herb. Chenopod scrub, pinyon and juniper woodland. Sandy washes. Elevations: 330-3935ft. (100-1200m.) Blooms Mar-May.	Low Potential	Potentially suitable juniper woodland is present within the BSA; however, chenopod scrub does not occur. No CNDDB occurrences have been recorded within 5 miles of the BSA.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Symphyotrichum greatae Greata's aster	None/None G2/S2 1B.3	Perennial rhizomatous herb. Broadleafed upland forest, chaparral, cismontane woodland, Lower montane coniferous forest, riparian woodland. Mesic canyons. Elevations: 985-6595ft. (300-2010m.) Blooms Jun-Oct.	Moderate Potential	Potentially suitable chaparral and riparian woodland habitat is present within the BSA. Historical CNDDB occurrence were recorded 5 miles upstream of Littlerock Creek in 1994 and 1995.
Thysanocarpus rigidus rigid fringepod	None/None FSS G2/S2 1B.2	Annual herb. Pinyon and juniper woodland. Dry, rocky slopes and ridges of oak and pine woodland in arid mountain ranges. Elevations: 1970-7220ft. (600-2200m.) Blooms Feb-May.	Low Potential	Potentially suitable juniper woodland habitat is present within the BSA. Oak and pine woodland do not occur, and much of the BSA is not along ridgelines or rocky slopes. The only CNDDB occurrence for this species occurs greater than 5 miles from the BSA.
Yucca brevifolia western Joshua tree	None/None G3G4 SCT	Perennial Broadleaf evergreen. Joshua tree woodland, montane chaparral, pinyon and juniper woodland, Sonoran and Mojavean desert scrub. Elevation:1600-7200ft (490-823m. Blooms Mar - May.	Present	Western Joshua trees are present throughout the BSA. A WJT CDFW Population Census survey was conducted by Rincon in November to December 2023 and mapped approximately 3,469 trees (alive/dead). Approximately 7.20 acres of Joshua tree woodland occurs in one location along the Ditch, near the intersection of 47th Street East and Barrel Springs Road.

Regional Vicinity refers to within a 9-quad search radius of site.

Status (Federal/State)

SCT = State Candidate Threatened

FSS = United States Forest Service Sensitive

CRPR (CNPS California Rare Plant Rank)

1B = Rare, Threatened, or Endangered in California and elsewhere

2B= Rare, Threatened, or Endangered in California, but more common elsewhere

4 = Limited Distribution (Watch List)

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)

.2 = Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat)

.3 = Not very endangered in California (<20% of occurrences threatened/low degree and immediacy of threat)

Other Statuses

G1 or S1 Critically Imperiled Globally or Subnationally (state)

G2 or S2 Imperiled Globally or Subnationally (state)

G3 or S3 Vulnerable to extirpation or extinction Globally or Subnationally (state)

G4/5 or S4/5 Apparently secure, common and abundant

GH or SH Possibly Extirpated – missing; known from only historical occurrences but still some hope of rediscovery

Additional notations may be provided as follows

T – Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)

Q – Questionable taxonomy that may reduce conservation priority

? – Inexact numeric rank

Special Status Wildlife Species in the Regional Vicinity of the BSA

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Invertebrates				
Bombus crotchii Crotch's bumble bee	None/SCE G2/S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.*	High Potential	Open foraging and potential nesting shrub and scrub habitats such as California buckwheat scrub (multiple species of *Erioginum*), yerba santa scrub, rubber rabbit brush, big sagebrush, brittle bush scrub, and Joshua tree woodland occur within the BSA. Rodent burrows, stick piles, and sources of nectar from plant species were observed within the BSA. Historical CNDDB occurrences are within 5 miles of the BSA, with the closest near the Littlerock Dam in 1970 and 1999, and Little Rock in 1945. There were multiple CNDDB occurrences recorded greater than 5 miles from the BSA, to the northeast and east. Recent observations of verified Crotch's bumble bees were documented in the San Gabriel Mountains (2018), near Mount Gleason and along the Santa Clara River near Lang, in May and August 2023 (California Bumble Bee Atlas 2024).
Bombus pensylvanicus American bumble bee	None/None G3G4/S2	Long-tongued; forages on a wide variety of flowers including vetches (*Vicia*), clovers (*Trifolium*), thistles (*Cirsium*), sunflowers (*Helianthus*), etc. Nests above ground under long grass or underground. Queens overwinter in rotten wood or underground.	Low Potential	The BSA contains some floral resources such as thistles and sunflowers and potential nesting habitat that could be utilized by this species. One historical CNDDB occurrence of a specimen collected in 1982 was recorded in an approximate location north of Littlerock Dam.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Danaus plexippus plexippus pop. 1 Monarch – California overwintering population	FCS/None FSS G4T1T2Q/S2	This species is a winter migrant to coastal areas in California and Mexico. This species is known to occur during fall, spring, and migrations in the high desert and mountain regions. The primary host plant for this species is milkweed (*Asclepias spp.*).	Present (migration) Not Expected (overwintering)	Several individuals were observed in the southernmost portion of the BSA in the ANF. Monarchs were observed foraging within big sagebrush and rubber rabbitbrush scrub vegetation within the understory of riparian corridor. This species host plants (*Asclepias* spp.) were not observed in this area during field reconnaissance surveys. Suitable foraging shrubs occur throughout the BSA, but the area lacks large populations of suitable host plants. Potentially suitable overwintering trees such as western sycamore occur in the southern portion of the BSA, specifically along Little Rock Wash. The BSA does not contain large groves of suitable overwintering trees. Monarch butterflies may move through the BSA during migration to the California coast. However, the BSA is over 40 miles from the California coast and known overwintering sites.
Euphydryas editha quino quino checkerspot butterfly	FE/None G4G5T1T2/S1S2	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 *Plantago erecta*, *P. insularis*, and *Orthocarpus purpurescens*.	Not Expected	No CNDDB occurrences were recorded within 5 miles of the BSA. This species is considered extirpated from the area.
Helminthoglypta fontiphila Soledad shoulderband	None/None G1/S1	Air-breathing terrestrial snail. Known from type locality, Littlerock Creek Cyn on north side of San Gabriels; west to Santa Clarita in Soledad Cyn; east to the vicinity of Big Rock Creek; and north to Elizabeth Lake Cyn in the Sierra Pelona Mtns. Frequently found in riparian habitat (springs, seeps, along streams). May be found in rock piles, flood-borne debris, or under dead yuccas where other cover is not available.	Moderate Potential	Potentially suitable riparian habitat (springs, seeps) yuccas, rock piles, and woody debris for cover, occurs within the BSA. CNDDB occurrences were recorded just downstream of Littlerock Dam in 1931, 1943, 1949, 1950, 1955, and most recently 3 shells were collected along a spring in 2016 approximately 0.5 mile downstream.
Helminthoglypta traskii pacoimensis Pacoima shoulderband	None/None G1G2T1/S1	Air-breathing terrestrial snail. Known from type locality, Pacoima Canyon on the west side of the San Gabriel Mountains. Additional specimens from Elizabeth Lake Canyon in the Sierra Pelona Mountains may merit review. Found mostly under bark and fragments of rotten logs.	Not Expected	This species known range found locally in the Pacoima Canyon in Angeles National Forest, which is not within the BSA.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Reptiles				
Actinemys pallida southwestern pond turtle	FPT/None FSS G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation Ditches, usually with aquatic vegetation, below 6000 ft. (1800m.) elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Moderate Potential	Suitable riparian, marsh, irrigation ditches, and ponded habitats are present. The highest-quality suitable habitat for this species occurs within Little Rock Wash in the southeastern portion of the BSA on ANF land. Suitable habitat is comprised of deeper pooling areas with pockets of cattail marsh, river wash, and within the breaks in cover and part of the understory of the California sycamore woodland vegetation community that occurs in the wash .No CNDDB occurrences were recorded within 5 miles of the BSA. This species was observed downstream of Littlerock Dam during field surveys conducted in 2012 for the preparation of the Littlerock Reservoir Sediment Removal Project Environmental Impact Report (PWD 2017). This detection was made outside of the current project's BSA boundaries.
Anniella pulchra Northern California legless lizard	None/None FSS G3/S2S3 SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Moderate Potential	Suitable sandy, loose, loamy soils and saturated soils, including natural and artificial cover (trash), California juniper and western Joshua tree woodlands with associated drainages from the Ditch occur within the BSA. One CNDDB occurrence in 2017 recorded four individuals discovered under artificial cover in the Juniper Hills area, which is located within the BSA. Five additional CNDDB occurrences were recorded within 5 miles north of the BSA in 2006, 2007, and 2017.
Anniella spp. California legless lizard	None/None G3G4/S3S4 SSC	Contra Costa County south to San Diego, within a variety of open habitats. This element represents California records of *Anniella* not yet assigned to new species within the *Anniella pulchra* complex. Variety of habitats; generally, in moist, loose soil. They prefer soils with a high moisture content.	Moderate Potential	The northern California legless lizard (*Anniella pulchra)* is part of a distinct Mojave Desert population within the Tehachapis and north of the San Gabriel Mountains, however both *A. pulchra and A. stebbinsi* species are considered SSC. One CNDDB occurrence of an adult *Aniella* spp. recorded in 2015 near Rocky Point picnic day use area, on the north end of Littlerock Reservoir. The species of *Anniella* was unconfirmed for this occurrence.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Low Potential	Potentially suitable scrub habitats with loose sandy soils occur within the BSA. Three historical CNDDB occurrences within 5 miles of the BSA in 1937 and 1946, with a potential sub species confirmation in 2015 near Little Rock. These occurrences were recorded near Littlerock and Vincent. This species was not detected during the field reconnaissance survey.
Gopherus agassizii desert tortoise	FT/ST G3/S2S3	Most common in desert scrub, desert wash, and Joshua tree habitats; occurs in almost every desert habitat. Require friable soil for burrow and nest construction. Creosote bush habitat with large annual wildflower blooms preferred.	Not Expected	The BSA contains potentially suitable desert scrub, wash, juniper and Joshua tree woodland and foraging habitats, however, it lacks sparse cover as much of the BSA contains dense vegetation or has been impacted by OHV, human disturbances, or surrounding development. The BSA does not contain critical habitat for this species.
Phrynosoma blainvillii coast horned lizard	None/None G4/S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Moderate Potential	Potentially suitable sandy, wash, upland scrub, and transitional chapparal habitats occur throughout the BSA. Four historical CNDDB occurrences, primarily specimen collections, were recorded within 5 miles of the BSA, with the most recent being 1990. This species was also detected during biological surveys in 2012 within a sandy drainage adjacent to the main access road to Littlerock Reservoir for the Littlerock Reservoir Sediment Removal Project (PWD 2017).
Thamnophis hammondii two-striped gartersnake	None/None FSS G4/S3S4 SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft (2130m.) elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	Moderate Potential	Suitable perennial pools, rocky beds, and riparian vegetation occur within the BSA, specifically along Little Rock Wash. It should be noted that the flow of water within the wash is intermittent, but pooling areas and otherwise suitable habitat within the BSA occur. Historical CNDDB occurrences were recorded upstream of the Littlerock Dam in Littlerock Creek in 1991, 1995, and 1997. This species was documented in Little Rock Wash during surveys conducted in 2012 as part of the Littlerock Reservoir Sediment Removal Project; however, it was detected outside of the BSA.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Amphibians				
Anaxyrus californicus arroyo toad	FE/None G2G3/S2 SSC	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	Low Potential	Suitable habitat comprised sandy washes, intermittent streams, gravelly areas, sandy washes, and riparian habitats are present within the BSA. One historical CNDDB record in 1970 of 1 individual was recorded within the BSA. CDBBD records from 1996, 1999, and 2001 indicate a population exists within designated critical habitat further upstream from Littlerock Reservoir in Littlerock Creek, and within Santiago Creek.
Rana draytonii California red-legged frog	FT/None G2G3/S2S3 SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Low Potential	The BSA contains potentially suitable habitat, foothills, permanent sources of deep water (Lake Palmdale), and riparian vegetation. Known CNDDB occurrences are recorded within Aliso Canyon and Angeles National Forest, but none within 5 miles. The BSA lacks permanent sources of deep water, as the flow of the water is regularly controlled by PWD and is thus intermittent. Additionally, the BSA is outside of the known range of this species.
Rana muscosa southern mountain yellow-legged frog	FE/SE G1/S2 WL	Disjunct populations known from southern Sierras (northern DPS) and San Gabriel, San Bernardino, and San Jacinto Mtns (southern DPS). Found at 1,000 to 12,000 ft (300-3650m.) in lakes and creeks that stem from springs and snowmelt. May overwinter under frozen lakes. Often encountered within a few feet of water. Tadpoles may require 2 – 4 years to complete their aquatic development.	Not Expected	The BSA contains pockets areas of suitable habitat, which likely occurs only when flows create pools or shallow streams are flowing. Rocky and sandy substrate are present. The area specifically with these elements occurs within portions of Littlerock Creek, downstream of Littlerock Dam. The largest known population occurs within the upper portions of Littlerock Creek and watershed. The dam serves as a significant obstacle from individuals or populations moving downstream. CNDDB occurrences within 5 miles upstream Littlerock Creek in 1951, 1953, 1959 were recorded.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Birds				
Accipiter cooperii Cooper's hawk	None/None G5/S4 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Present (Foraging, Nesting)	Suitable riparian, California juniper, and Joshua tree woodlands provide quality opportunities for foraging and nesting opportunities throughout the BSA. Residential areas adjacent to the BSA along public roadways also likely provide shelter, nesting, and foraging habitat. This species was detected during field reconnaissance surveys, flushing from a perch on a large California juniper shrub within the dense woodland area between Pearblossom highway and Sierra Highway to the west. The presence of preferred prey animals, such as small songbirds and rodents, was observed throughout the various habitats within the BSA.
Agelaius tricolor tricolored blackbird	None/ST G1G2/S2 SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Moderate Potential (Foraging)	Suitable open water wetland habitat with tules and sparse cattails are present near the outfall of the Ditch to Lake Palmdale within the BSA. Denser, more suitable nesting habitat occurs outside the BSA, to the north of the outfall. This species was not detected during the field reconnaissance survey; however, red-winged blackbirds were observed. CNDDB occurrences were recorded in both Lake Palmdale and adjacent Una Lake in 1990, 1991 to 1993, 1994, 1995 to 1996, 1998, 2004, 2005, 2008, 2009, and most recently in 2011.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/None G5T3/S4 WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	Moderate Potential (Foraging, Nesting)	Suitable sage scrub, chapparal, and juniper woodland habitats occur within the BSA. No CNDDB occurrences were recorded within 5 miles of the BSA; however, this species was detected during surveys conducted in 2012 in support of the Littlerock Reservoir Sediment Removal Project. The detection occurred outside of the BSA.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Aquila chrysaetos golden eagle	None/None G5/S3 FP WL	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Moderate Potential (Foraging)	Open scrub habitats such as those found in the BSA are potentially suitable foraging habitat that supports a prey base (i.e., California ground squirrels). Small mammal burrows were observed throughout the BSA, but known California ground squirrel colonies were only noted in three areas: just south of Mt. Emma Road; on either side of 47th Street East near the intersection of Barrel Springs Road; and in the western portion of the BSA east of Sierra Highway where the highest level of ground squirrel, rabbit, and other small mammal activity was observed. Based on the lack of suitable cliff nesting habitat, which is typically the preferred nesting habitat for this species, golden eagles are not expected to nest within the BSA. However, large trees, transmission towers, and two large bodies of water (Lake Palmdale and Littlerock Reservoir) could provide high quality nesting and foraging habitat. No CNDDB occurrences were recorded within five miles, and only one historical record was documented in Aliso/Soledad Canyon within the ANF
Artemisiospiza belli belli Bell's sparrow	None/None G5T2T3/S3 WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Moderate Potential (Foraging)	Suitable chapparal and coastal sage scrub habitats occur throughout the BSA, which includes along the edges of the Ditch. The BSA lacks dense stands of chamise, which is preferred nesting habitat. No CNDDB occurrences were recorded within 5 miles of the BSA. One CNDDB record from 2005 is located 7 miles west in a recent burn area – Ritter Canyon.
Athene cunicularia burrowing owl	None/None G4/S2 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Moderate Potential (Foraging, Nesting)	Variable foraging and nesting opportunities exist throughout the BSA, but more specifically in the western and southwestern portions where California ground squirrel colonies and potentially suitable burrows were detected during the field reconnaissance surveys. Two CNDDB occurrences, in 2000 and 2006, were recorded within 5 miles of the BSA. Neither burrowing owl individuals or their sign were observed during the field reconnaissance surveys.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Buteo regalis ferruginous hawk	None/None G4/S3S4 WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Moderate Potential (Foraging)	Suitable low foothill, sagebrush, and juniper woodland habitats occur within the BSA. Nesting is not expected in the BSA because the species is a winter migrant and/or resident in California. Prey species such as rabbits, ground squirrels, and other small rodent species are present, but are more concentrated in the western portion of the BSA where there is open habitat and juniper woodlands. No CNDDB occurrences were recorded within 5 miles; however, two were recorded in 2011 approximately 5.5 miles west of the Lake Palmdale portion of the BSA.
Buteo swainsoni Swainson's hawk	None/ST G5/S4	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Moderate Potential (Foraging, Nesting)	Cottonwood trees, juniper woodlands, western Joshua trees, and riparian woodland suitable for nesting and adjacent to open lands suitable for foraging occur within the BSA. In the Antelope Valley, the species has a predilection to nest in non-native or unidentified deciduous trees. The BSA lacks preferred foraging habitat such as alfalfa and grain fields; however, prey species such as rodents were present. The closest agricultural fields to the BSA are approximately 5.5 miles to the north/northwest. The BSA would likely be utilized by migrating individuals. One historical CNDDB occurrence was recorded in 1927 within 5 miles of the BSA in an area of Palmdale that has since been developed. All present-day nest sites documented in the Antelope Valley have been observed near active and fallow agricultural fields greater than 5 miles from the BSA.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Circus hudsonius northern harrier	None/None G5/S3 SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Present (Foraging, Nesting)	This species was detected during field reconnaissance surveys, soaring south of where the BSA crosses the California Aqueduct. This species is typically associated with wetlands or marshes, which are present, but not on a large scale. Marsh-like habitat occurs in patches of the BSA and is associated with Lake Palmdale; other low-lying areas are also present. Both areas could potentially be suitable habitat for nesting for this species. Surrounding upland scrub, shrublands, and riparian woodland habitats could potentially be used for foraging.
Charadrius montanus mountain plover	None/None G3/S2 SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Not Expected	The BSA lacks short grasslands, freshly plowed fields, farms, and grain fields. Burrowing rodents are present, however the BSA lacks suitable habitat. CNDDB occurrences for this species were recorded over 5 miles from the BSA within the agricultural areas near Palmdale Regional Airport.
Empidonax traillii extimus southwestern willow flycatcher	FE/SE	Riparian woodlands of California	Moderate Potential (Foraging)	Suitable habitats of riparian woodland comprised of cottonwoods, sycamores, willows, mulefat, and other associated riparian vegetation is present in the BSA, specifically in Little Rock Wash downstream of Littlerock Dam. Surveys for the Littlerock Reservoir Sediment Removal Project conducted in 2012 within the riparian habitat south of Littlerock Dam documented 5 willow flycatchers, but did not confirm if they were southwestern willow flycatchers. Migrating individuals could use the suitable habitat in the southern portion of the BSA at Little Rock Wash during seasonal migration periods. However, there are no known or documented breeding sites within the BSA. The primary flycatcher drainages in California are located within the Kern, Owen's, San Luis Rey, Santa Ana, and Santa Margarita Rivers. There are no known CNDDB occurrences within 5 miles.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Falco columbarius merlin	None/None G5/S3S4 WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	Present (Foraging)	Suitable foraging habitat occurs within the BSA, including a matrix of woodland, upland scrub, and water sources, with expansive open arid habitats where prey (small birds) is available. Merlin is a winter migrant; it is not known to breed in California and is not expected to nest in the BSA. One individual was detected during field reconnaissance surveys flying overhead within the BSA south of 40th Street East and Barrel Springs Road.
Falco mexicanus prairie falcon	None/None G5/S4 WL	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Moderate Potential (Foraging)	Prairie falcon has a moderate potential to forage within the BSA. Marginally suitable foraging habitat includes open areas with mixed upland shrubs, woodlands, and perches; California ground squirrels are also present. However, cliffs for breeding and nesting are not present. No CNDDB records occur within five miles of the BSA.
Gymnogyps californianus California condor	SE/FE	California condors use vast expanses of varying habitats for foraging, roosting, and nesting. Condors roost on large trees or snags, or on rocky outcrops and cliffs. Nests are located in caves and ledges of steep rocky terrain or in cavities and broken tops of old growth conifers created by fire or wind. Foraging habitat includes open grasslands, oak savanna foothills, and beaches adjacent to coastal mountains (USFWS 2023).	Not Expected	The BSA lacks suitable foraging, roosting, and nesting habitat. There are no CNDDB occurrences within 5 miles.
Lanius ludovicianus loggerhead shrike	None/None G4/S4 SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting/foraging, with perches for scanning, and fairly dense shrubs and brush for nesting.	High Potential (Foraging, Nesting)	Potentially suitable riparian woodland, Joshua tree woodlands, desert scrub, and sandy wash habitats, including areas for perching, are present in the BSA. BSA. Prey species, such as insects, lizards, small mammals, and birds also occur throughout the BSA. Four CNDDB occurrences, with the most recent in 2008, were recorded within 5 miles of the BSA. This species was not detected during field reconnaissance surveys.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Toxostoma lecontei Le Conte's thrasher	None/None G4/S3 SSC	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.	Low Potential (Foraging, Nesting)	Marginal suitable desert scrub habitat occurs within the BSA, specifically in the far western portion. This habitat contains suitable characteristics; however, it is very limited in size and is partially disturbed from human activities (e.g., trash, grading/grazing, off road vehicle travel). Three historical CNDDB occurrences were recorded within 5 miles, the most recent in 1978.
Vireo bellii pusillus least Bell's vireo	FE/SE G5T2/S3	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. (600m.). Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	High Potential (Foraging, Nesting)	Suitable riparian habitat occurs within the BSA, specifically in the southern portion in Little Rock Wash, downstream from Littlerock Dam in the ANF. Surveys conducted for the Littlerock Reservoir Sediment Removal Project in 2010, 2012, and 2012 below the dam confirmed occupied habitat with breeding/nesting activity in Little Rock Wash. The surveys documented a breeding pair with an active nest that eventually produced fledglings. One CNDDB record from 2005 documented noted one individual singing near Una Lake, east of Lake Palmdale.
Mammals				
Antrozous pallidus pallid bat	None/None G4/S3 SSC FSS	Found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees which must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	High Potential (Roosting, Foraging)	Suitable riparian, desert scrub, and Joshua tree and juniper woodland foraging habits are present within the BSA. Potential roosting habitat is comprised of rock crevices, mature trees such as cottonwoods, willows, or junipers with exfoliating bark, and other manmade structures. Several old, abandoned, and disturbed structures are located on ANF lands approximately 150 feet outside of the BSA. Evidence of bat guano droppings and urine staining were present at these structures; however, the sign was old and the structure not currently in use. No mines are present in the BSA. This species was detected during acoustic surveys conducted near the Littlerock Reservoir in 2012 for the Littlerock Reservoir Sediment Removal Project (PWD 2017). The species was not detected, and no sign of maternity roosts were observed during the field reconnaissance surveys for the current Project.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Chaetodipus fallax pallidus pallid San Diego pocket mouse	None/None G5T3T4/S3S4	Occurs in desert and arid coastal border areas in eastern San Diego, Riverside, and San Bernardino Counties. Habitats include desert wash, desert scrub, desert succulent scrub, and pinyon-juniper. Prefers sandy soils, usually with rocks or coarse gravel.	Low Potential	Potentially suitable desert scrub and juniper habitats and sandy or gravelly soil occur within the BSA; however, there are no recent CNDDB records within 5 miles.
Corynorhinus townsendii Townsend's big-eared bat	None/None G4/S2 SSC FSS	Occurs throughout California in a wide variety of habitats. Most common in mesic sites, typically coniferous or deciduous forests. Roosts in the open, hanging from walls & ceilings in caves, lava tubes, bridges, and buildings. This species is extremely sensitive to human disturbance.	High Potential (Foraging)	Suitable riparian woodland habitat is present in the BSA. The old, abandoned, and degraded structures observed on ANF lands outside the BSA could provide marginally suitable roosting habitat. Evidence of bat guano droppings and urine staining were present; however, the species is very sensitive to human disturbances, which appeared prevalent within and surrounding the structures. Overall, suitable roosting habitat for the species (including the entrance of caves, buildings, or mines) is absent from the BSA, but could occur near Littlerock Reservoir.
Neotoma lepida intermedia San Diego desert woodrat	None/None G5T3T4/S3S4 SSC	Occurs in scrub habitats of southern California from San Luis Obispo County to San Diego County. In southeastern California, is found from Southern Mono County, south throughout the Mojave Desert and from north-central Tulare county south through Tehachapi and the San Bernadino Mountains	Moderate Potential	Suitable desert scrub, Joshua tree woodland, California juniper woodland are present within the BSA. Numerous woodrat stick nests or "middens" were documented throughout the BSA during the field reconnaissance surveys, although the presence of special status woodrat subspecies was not confirmed. The woodrat middens in the BSA were primarily associated with California juniper woodland habitats near the Ditch, starting north of Mt. Emma Road and west to Sierra Highway. It is unconfirmed if the middens are home to the San Diego desert woodrat subspecies *intermedia* and not the desert woodrat (*Neotoma lepida*); however, based on the presence of middens, suitable habitat, and known range of the species it has a moderate potential to occur.
Perognathus inornatus San Joaquin pocket mouse	None/None G2G3/S2S3	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert. Associated with fine-textured, sandy, friable soils.	Low Potential	The BSA lacks suitable grassland, oak savannah, and arid scrubland habitat, however sandy friable soils are present. One CNDDB occurrence was recorded within 5 miles in 1931 as a museum specimen.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Xerospermophilus mohavensis Mohave ground squirrel	None/ST G3/S2	Open desert scrub, alkali scrub and Joshua tree woodland. Also feeds in annual grasslands. Restricted to Mojave Desert. Prefers sandy to gravelly soils, avoids rocky areas. Uses burrows at base of shrubs for cover. Nests are in burrows.	Moderate Potential	Potentially suitable desert scrub, alkali scrub, and Joshua tree woodland is present within the BSA. Dispersed individual winterfat shrubs and spiny hopsage were observed in the BSA, including in the Joshua tree woodland, but were not concentrated in a single area. The BSA also contains boxthorns dispersed within several vegetation communities, including Joshua tree woodland, rubber rabbitbrush scrub, and California juniper woodland. Clusters of spiny hopsage and winterfat were observed within an open, low vegetated area between stands of California junipers in the northwestern extent of the BSA east of Sierra Highway. Active California ground squirrels and burrow complexes were observed in this area and along a berm and washy channel near 47th Street East and adjacent to dense Joshua tree woodland habitat. The northwestern portion of the BSA is at the southernmost extent of the species' historical range and has been impacted by development. Known current populations occur further north near Edwards Air Force Base in Kern County. Multiple historical CNDDB occurrences were recorded within five miles of the BSA but none within the last five years.

Regional Vicinity refers to within a 9-quad search radius of site.

Status (Federal/State)

FE = Federal Endangered
FT = Federal Threatened
FPT = Federal Proposed Threatened
FCS = Federal Candidate
SE = State Endangered
ST = State Threatened
SCE = State Candidate Endangered
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List
FSS = United States Forest Service Sensitive

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Other Statuses				
G1 or S1	Critically Imperiled Globally or Subnationally (state)			
G2 or S2	Imperiled Globally or Subnationally (state)			
G3 or S3	Vulnerable to extirpation or extinction Globally or Subnationally (state)			
G4/5 or S4/5	Apparently secure, common and abundant			
Additional notations may be provided as follows				
T –	Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)			
Q –	Questionable taxonomy that may reduce conservation priority			

APPENDIX C-2: SPECIAL-STATUS PLANT SPECIES WITH A POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

APPENDIX C-2

SPECIAL-STATUS PLANT POTENTIAL TO OCCUR

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
Abrams' oxytheca *Acanthoscyphus parishii* var. *abramsii*	None	None	1B.2	Chaparral (sandy, shale). Elevation range: 3,750-6,750 feet.	Not Expected. The Project area is outside of the known range for this species (Santa Barbara and Ventura Counties).	Not Expected. The Palmdale Ditch BSA is outside the known elevation range for this species.
San Gabriel manzanita *Arctostaphylos glandulosa* ssp. *gabrielensis*	None	None	1B.2	Chaparral. Rocky outcrops; can be dominant shrub where it occurs. Elevation range: 1,950-4,920 feet.	Low Potential. The nearest known record of this species is located approximately 6 miles southeast of the southernmost Project component, Palmdale Ditch.	Low Potential. The BSA contains rocky outcrops and patches of suitable perennial evergreen shrub habitat. However, the highest elevation of the BSA is at the Lowest elevational range of this species (Jepson 2023). No CNDDB occurrences have been recorded within 5 miles of the BSA. The nearest known occurrences are approximately 7 miles southwest and 300 feet (91 meters) higher in elevation than the southern and highest extent of the BSA. This species was not observed during field reconnaissance surveys.
interior manzanita *Arctostaphylos parryana* ssp. *Tumescens*	None	None	4.3	Perennial evergreen shrub. Chaparral, cismontane woodland. Montane chaparral or foothill woodland. Elevation range: 6,890-7,580 feet.	Not Expected. The Project area is outside the known elevation range for this species.	Not Expected. The BSA is outside the known elevation range for this species.
Horn’s milk-vetch *Astragalus hornii* var. *hornii*	None	None	1B.2	Meadows and seeps, Playas/lake margins, alkaline. Elevation range: 195-2,790 feet.	High Potential. Suitable habitat is present within the Project area including transmontane freshwater marsh and transmontane alkali marsh. Furthermore, this species was documented in the CNDDB in 1929 to occur in the vicinity of Palmdale Lake, which is located within the Project area.	High Potential. Suitable habitat including lake edges exist near the Lake Palmdale reservoir. One historical CNDDB record from 1929 includes the northern end of the BSA.

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
Lancaster milk-vetch *Astragalus preussii* var. *laxiflorus*	None	None	1B.1	Chenopod scrub, alkaline clay flats or gravelly or sandy washes and along draws in gullied badlands. Elevation range: 2,295-2,295 feet.	Not Expected. Although limited suitable habitat is present, the Project area is outside of the known elevation range of this species.	Low Potential. Chenopod scrub and alkali flats are not present in the BSA.
Palmer's mariposa-lily *Calochortus palmeri* var. *palmeri*	None	None	1B.2	Chaparral (openings), cismontane woodland, coastal scrub, valley and foothill grassland, granitic/rocky. Elevation range: 2,330-7,840 feet.	Moderate Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 7.75 miles to the southeast of the southernmost Project component, Palmdale Ditch.	Moderate Potential. Suitable meadows and seeps are present in the BSA and within the elevational range of the species. No CNDDB occurrences have been recorded within 5 miles of the BSA. The nearest known CNDDB occurrences are approximately 7.5 miles southeast of the BSA at a similar elevation to the southern portion of the BSA and in a pinyon and juniper woodland habitat. Senescent, unidentifiable *Calochortus* spp. were observed during the reconnaissance surveys.
Plummer's mariposa-lily *Calochortus plummerae*	None	None	4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland. Elevation range: 330-5,580 feet.	Low Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 6.4 miles southwest of the nearest boundary of the Project area.	N/A

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
alkali mariposa-lily *Calochortus striatus*	None	None	1B.2	Shadscale scrub, chapparal, wetland-riparian in meadows. Elevation range: 230-5,235 feet.	Moderate Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 6.6 miles north of the nearest boundary of the Project area.	Moderate Potential. Suitable Mojave Desert scrub, meadows, seeps, and soils are present within the BSA. The BSA is within the elevational range of the species. Several *Calochortus* spp. were observed during the field reconnaissance survey but were outside of the blooming period. No CNDDB occurrences have been recorded within 5 miles of the BSA. However, numerous observations of this species have been reported within the city of Lancaster, the unincorporated Lake Los Angeles community, and south of the BSA at the higher elevational extent of this species near Waterman Mountain and Chilao Flat in the Angeles National Forest (ANF) (Calflora 2024).
Peirson's morning-glory *Calystegia peirsonii*	None	None	4.2	Chaparral, coastal scrub, chenopod scrub, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation range: 100-4,920 feet.	Moderate Potential. Suitable habitat for this species is present within the Project area. Furthermore, the nearest known occurrence of this species is located along the western boundary of the Project area around Terra Subida and Avenue S in Palmdale.	N/A
white pygmy-poppy *Canbya candida*	None	None	4.2	Creosote Bush Scrub, Joshua Tree Woodland; gravelly, sandy, granitic places. Elevation range: 1,970-4,790 feet.	High Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 5.7 miles north of the northernmost boundary of the Project area.	High Potential. Suitable Joshua tree woodland, Mojave Desert scrub and juniper woodland with gravelly and sandy substrate are present within the BSA. The BSA is within elevational range of this species. The nearest CNDDB records are historical observations from 1921 and 1926 upstream of Littlerock Reservoir, on the southern end of the reservoir and within Littlerock Creek approximately one mile from BSA.

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
Mt. Gleason paintbrush *Castilleja gleasoni*	None	Rare	1B.2	Chaparral, Lower montane coniferous forest, Pinon & juniper woodlands. On open flats or slopes in granitic soil. Restricted to the San Gabriel Mountains. Elevation range: 3,805-7,120 feet.	Not Expected. Although suitable habitat is present, the Project area is outside of the known elevation range of this species.	Not Expected. Suitable juniper woodlands are present, however, the BSA occurs outside the elevation range of the species. The only known occurrences area near Mount Gleason peak above 3900 feet (1200 meters).
Mojave paintbrush *Castilleja plagiotoma*	None	None	4.3	Perennial herb (hemiparasitic). Great basin scrub, Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland. Alluvial fans. Elevation range: 985-8,205 feet.	Moderate Potential. This species is not included in the CNDDB search based on the G4/S4 status; however, it was assessed based on its potential to occur within ANF lands. Suitable sage scrub, Joshua tree woodland, and Juniper woodland habitats occur within the Project area, including areas within ANF boundaries. No CNDDB records of this species occur within 5 miles of the BSA.	Moderate Potential. This species is not included in the CNDDB search based on the G4/S4 status; however, it was assessed based on its potential to occur within ANF lands. Suitable sage scrub, Joshua tree woodland, and Juniper woodland habitats occur within the BSA, including areas within ANF boundaries. No CNDDB records of this species occur within 5 miles of the BSA.
Parry's spineflower *Chorizanthe parryi* var. *parryi*	None	None	1B.1	Openings/clearings in coastal or desert sage scrub, chaparral or interface; dry slopes or flat ground; sandy soils. Elevation range: 900-4,005 feet.	Low Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 5.7 miles north of the northernmost boundary of the Project area.	Not Expected. The majority of the known occurrences are south of the San Gabrial and San Berardino Mountains. The only CNDDB record is from 1892 and likely a misidentification.
Peirson's spring beauty *Claytonia peirsonii* ssp. *peirsonii*	None	None	1B.2	Upper montane coniferous forest, subalpine coniferous forest. Granitic scree slopes, often with a sandy or fine soil component and granitic cobbles. Elevation range: 4,955-9,005 feet.	Not Expected. Although suitable habitat is present, the Project area is outside of the known elevation range of this species.	Not Expected. Subalpine coniferous forests and upper montane forests are not present in the BSA. The BSA occurs outside of the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA. All known occurrences are east of Juniper Hills and the nearest known CNDDB record is approximately 9.5 miles away.

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
Rosamond eriastrum *Eriastrum rosamondense*	None	None	1B.1	Chenopod scrub, vernal pools. Alkali pool beds separated by very low hummocks with open chenopod scrub. Elevation range: 2,295-3,855 feet.	Low Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 9.0 miles north of the northernmost boundary of the Project area.	Not Expected. No suitable alkali pool beds or vernal pools are present in the BSA. No CNDDB occurrences have been documented within 5 miles of the BSA. The nearest CNDDB record is approximately 13 miles north of the BSA.
urn-flowered alumroot *Heuchera caespitosa*	None	None	4.3	Perennial rhizomatous herb. Cismontane woodland, lower montane coniferous forest, riparian forest, upper montane coniferous forest. Rocky sites. Elevation range: 3,790-8,695 feet.	Not Expected. The Project area is outside the known elevation range for this species.	Not Expected. The BSA is outside the known elevation range for this species.
San Gabriel Mountains hulsea *Hulsea vestita* ssp. *gabrielensis*	None	None	4.3	Perennial herb. Lower montane coniferous forest, upper montane coniferous forest. Rocky sites. Elevation range: 4,920-8,205 feet.	Not Expected. The Project area is outside the known elevation range for this species.	Not Expected. The BSA is outside the known elevation range for this species.
fragrant pitcher sage *Lepechinia fragrans*	None	None	4.2	Perennial shrub. Chaparral. Elevation range: 65-4,300 feet.	Not Expected. This species was assessed based on its potential to occur within ANF lands. The portion of ANF land the Project area overlaps lacks suitable chapparal, ridgetops, or dry ravine habitats this species is typically found in.	Not Expected. This species was assessed based on its potential to occur within ANF lands. The portion of ANF land the BSA overlaps lacks suitable chapparal, ridgetops, or dry ravine habitats this species is typically found in.

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
lemon lily *Lilium parryi*	None	None	1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest. Wet, mountainous terrain; generally in forested areas; on shady edges of streams, in open boggy meadows and seeps. Elevation range: 4,005-9,005 feet.	Not Expected. Suitable habitat is not present and the Project area is outside of the known elevation range of this species.	Not Expected. The BSA is outside the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA.
San Gabriel linanthus *Linanthus concinnus*	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest, chaparral. Dry rocky slopes, often in Jeffrey pine/canyon oak forest. Elevation range: 4,985-9,185 feet.	Not Expected. Although limited suitable habitat is present, the project area is outside of the known elevation range of this species.	Not Expected. No suitable lower or upper montane coniferous forests are present in the BSA. The BSA is outside the elevation range for this species. No CNDDB occurrences have been documented within 5 miles of the BSA.
sagebrush loeflingia *Loeflingia squarrosa* var. *artemisiarum*	None	None	2B.2	Great Basin scrub, Sonoran desert scrub, desert dunes. Sandy flats and dunes. Elevation range: 2,295-5,300 feet.	Moderate Potential. Suitable habitat for this species is present within the Project area. Furthermore, the nearest known occurrence of this species is located approximately 0.75 miles east of the eastern boundary of the Project area..	Not Expected. Suitable desert dunes, Great Basin scrub, Sonoran Desert scrub, or sandy areas around clay slicks are not present within the BSA. One CNDDB occurrence was recorded within 5 miles near a gravel quarry off Pear blossom Highway in 2005.
Peirson's lupine *Lupinus peirsonii*	None	None	1B.3	Joshua tree woodland, pinyon and juniper woodland, lower montane coniferous forest, upper montane coniferous forest. Decomposed granite slide and talus, on slopes and ridges. Elevation range: 3,280-8,205 feet.	Low Potential. Although suitable habitat is present within the Project area, the nearest known occurrence of this species is located approximately 9.4 miles southeast of the nearest Project component, Palmdale Ditch.	Low Potential. Suitable Joshua tree and juniper woodland habitats are present, however decomposed granite slides and talus along slopes and ridges do not occur within the BSA.

Common Name ***Scientific Name***	**Federal ESA Status**[1]	**State ESA Status**[1]	**CRPR**[1]	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
San Gabriel Mountains monardella *Monardella australis* ssp. *gabrielensis*	None	None	1B.2	Broadleaved upland forest, chaparral (montane), lower montane coniferous forest. Granitic openings, outcrops. Elevation range: 5,250-7,220 feet.	Not Expected. Suitable habitat is not present and the Project area is outside of the known elevation range of this species.	Not Expected. Chaparral habitat is present, however granitic outcrops, openings, broadleaf upland forests and lower montane coniferous forest habitats are not present. The BSA is outside the known elevation range for this species.
Robbins' nemacladus *Nemacladus secundiflorus* var. *robbinsii*	None	None	1B.2	Chaparral, valley and foothill grassland. Dry, sandy or gravelly slopes. Elevation range: 1,150-5,580 feet.	Moderate Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 7.6 miles southeast of the nearest project component, Palmdale Ditch.	Low Potential. The presence of high quality, suitable chaparral habitat, valley foothill, or grassland are not present. However, big sagebrush scrub, California juniper woodland, and coarse, gravelly soil are present within the BSA. No CNDDB occurrences have been documented within 5 miles of the BSA.
short-joint beavertail *Opuntia basilaris* var. *brachyclada*	None	None	1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon-juniper woodland. Elevation range: 1,395-5,905 feet.	High Potential. Suitable habitat is present within the Project area including juniper woodland. Furthermore, this species is known to occur within and adjacent to the Project area.	High Potential. Suitable chapparal, Joshua tree woodland, and juniper woodland habitats are present in the BSA. Suitable sandy soil and granitic loam are also present. Numerous *Opuntia basilaris* (beavertail cactus) were observed during the field reconnaissance survey. There are 61 known records in the *Palmdale* and *Pacifico Mountain* quadrangles and surrounding quadrangles with approximately 23 CNDDB occurrences recorded within 5 miles of the BSA, and 5 records within one mile of the BSA. Occurrences were recorded in the southern extent of the BSA near Littlerock Reservoir, southeast of Barrel Springs and Pear Blossom Highway, and west of Lake Palmdale.

Common Name ***Scientific Name***	**Federal ESA Status[1]**	**State ESA Status[1]**	**CRPR[1]**	**Preferred Habitat**	**Potential to Occur within the Project Area**	**Potential to Occur at Palmdale Ditch Project Site**
woolly mountain-parsley *Oreonana vestita*	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest, lower montane coniferous forest. High ridges; on scree, talus, or gravel. Elevation range: 5,300-11,485 feet.	Not Expected. Suitable habitat is not present and the Project area is outside of the known elevation range of this species.	Not Expected. The BSA is outside the elevation range for this species.
chickweed oxytheca *Sidotheca caryophylloides*	None	None	4.3	Annual herb. Lower montane coniferous forest. Sandy sites. Elevation range: 3,655-8,530 feet.	Not Expected. The Project area is outside the elevation range for this species.	Not Expected. The BSA is outside the elevation range for this species.
Mason's neststraw *Stylocline masonii*	None	None	1B.1	Chenopod scrub, pinyon and juniper woodland. Sandy washes. Elevation range: 330-3,935 feet.	Low Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 5.1 miles southwest of the Project area.	Low Potential. Potentially suitable juniper woodland is present within the BSA; however, chenopod scrub does not occur. No CNDDB occurrences have been recorded within 5 miles of the BSA.
Greata's aster *Symphyotrichum greatae*	None	None	1B.3	Chaparral, cismontane woodland, broadleafed upland forest, lower montane coniferous forest, riparian woodland. Mesic canyons. Elevation range: 985-6,595 feet.	Moderate Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 3.3 miles south of the nearest Project component, Palmdale Ditch.	Moderate Potential. Potentially suitable chaparral and riparian woodland habitat is present within the BSA. Historical CNDDB occurrence were recorded 5 miles upstream of Littlerock Creek in 1994 and 1995.
rigid fringepod *Thysanocarpus rigidus*	None	None	1B.2	Pinyon and juniper woodland. Dry, rocky slopes and ridges of oak and pine woodland in arid mountain ranges. Elevation range: 1,970-7,220 feet.	Low Potential. Suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 3.3 miles southwest of the nearest Project component, Palmdale Ditch.	Low Potential. Potentially suitable juniper woodland habitat is present within the BSA. Oak and pine woodland do not occur, and much of the BSA is not along ridgelines or rocky slopes. The only CNDDB occurrence for this species occurs greater than 5 miles from the BSA.

Common Name *Scientific Name*	Federal ESA Status[1]	State ESA Status[1]	CRPR[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
western Joshua tree *Yucca brevifolia*	None	SCT	None	Perennial Broadleaf evergreen. Joshua tree woodland, montane chaparral, pinyon and juniper woodland, Sonoran and Mojavean desert scrub. Elevation range:1,600-7,200 feet.	Present. Western Joshua trees are present throughout the Project area.	Present. Western Joshua trees are present throughout the BSA. A WJT CDFW Population Census survey was conducted by Rincon in November to December 2023 and mapped approximately 3,469 trees (alive/dead). Approximately 7.20 acres of Joshua tree woodland occurs in one location along the Ditch, near the intersection of 47th Street East and Barrel Springs Road.

[1] Sensitivity Status

Federal

FE Federally Endangered
FT Federally Threatened
FC Federal Candidate
FPE Federally Proposed as Endangered
FPT Federally Proposed as Threatened
FPD Federally Proposed for Delisting

State

SE State Endangered
ST State Listed as Threatened
SCE State Candidate for Endangered
SCT State Candidate for Threatened
SR State Rare

Local

CRPR *California Rare Plant Ranks:*

California Rare Plant Rank 1A	Plants presumed extirpated in California and either rare or extinct elsewhere
California Rare Plant Rank 1B	Plants rare, threatened, or endangered in California and elsewhere
California Rare Plant Rank 2A	Plants presumed extirpated in California but common elsewhere
California Rare Plant Rank 2B	Plants rare, threatened, or endangered in California, but common elsewhere
California Rare Plant Rank 3	Plants about which more information is needed, a review list
California Rare Plant Rank 4	Plants of limited distribution, a watch list

Threat Code extensions and their meanings:

0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Sources for Preferred Habitat:

Common Name *Scientific Name*	Federal ESA Status[1]	State ESA Status[1]	CRPR[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site

California Native Plant Society. 2024. CNPS Rare Plant Inventory. Available online at: https://rareplants.cnps.org/. Accessed June 21, 2024.
CDFW. 2024a. California Natural Diversity Database (CNDDB). RareFind, Version 5.0 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed June 21, 2024.

APPENDIX C-3: SPECIAL-STATUS WILDLIFE SPECIES WITH A POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

APPENDIX C-3

SPECIAL STATUS WILDLIFE POTENTIAL TO OCCUR

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Invertebrates						
Crotch's bumble bee *Bombus crotchii*	None	SCE	None	Open grassland and scrub habitats that support potential nectar sources.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to historically occur within the Project area.	High Potential. Open foraging and potential nesting shrub and scrub habitats such as California buckwheat scrub (multiple species of *Erioginum*), yerba santa scrub, rubber rabbit brush, big sagebrush, brittle bush scrub, and Joshua tree woodland occur within the Palmdale Ditch BSA. Rodent burrows, stick piles, and sources of nectar from plant species were observed within the BSA. Historical CNDDB occurrences are within 5 miles of the BSA, with the closest near the Littlerock Dam in 1970 and 1999, and Little Rock in 1945. There were multiple CNDDB occurrences recorded greater than 5 miles from the BSA, to the northeast and east. Recent observations of verified Crotch's bumble bees were documented in the San Gabriel Mountains (2018), near Mount Gleason and along the Santa Clara River near Lang, in May and August 2023 (California Bumble Bee Atlas 2024).

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
American bumble bee *Bombus pensylvanicus*	None	None	None	Long-tongued; forages on a wide variety of flowers including vetches (*Vicia*), clovers (*Trifolium*), thistles (*Cirsium*), sunflowers (*Helianthus*), etc. Nests above ground under long grass or underground. Queens overwinter in rotten wood or underground.	Low Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to historically occur within the Project area.	Low Potential. The BSA contains some floral resources such as thistles and sunflowers and potential nesting habitat that could be utilized by this species. One historical CNDDB occurrence of a specimen collected in 1982 was recorded in an approximate location north of Littlerock Dam.
monarch butterfly *Danaus plexippus plexippus pop. 1*	FC	None	None	Closed-cone coniferous forest. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Present (migration), Not Expected (overwintering). Several individuals were observed in the southernmost portion of the Project area within the ANF. The Project area does not contain large groves of suitable overwintering trees. Monarch butterflies may move through the BSA during migration to the California coast.	Present (migration), Not Expected (overwintering). Several individuals were observed in the southernmost portion of the BSA in the ANF. Monarchs were observed foraging within big sagebrush and rubber rabbitbrush scrub vegetation within the understory of riparian corridor. This species host plants (*Asclepias* spp.) were not observed in this area during field reconnaissance surveys. Suitable foraging shrubs occur throughout the BSA, but the area lacks large populations of suitable host plants. Potentially suitable overwintering trees such as western sycamore occur in the southern portion of the BSA, specifically along Little Rock Wash. The BSA does not contain large groves of suitable overwintering trees. Monarch butterflies may move through the BSA during migration to the California coast. However, the BSA is over 40 miles from the California coast and known overwintering sites.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
quino checkerspot butterfly *Euphydryas Editha quino*	FE	None	None	Sunny openings within native and non-native grasslands, coastal sage scrub, open chaparral, and other open plant community types.	Not Expected. The Project area is outside of the known range for this species.	Not Expected. No CNDDB occurrences were recorded within 5 miles of the BSA. This species is considered extirpated from the area.
Soledad shoulderband *Helminthoglypta fontiphila*	None	None	None	Air-breathing terrestrial snail. Known from type locality, Littlerock Creek Cyn on north side of San Gabriels; west to Santa Clarita in Soledad Cyn; east to the vicinity of Big Rock Creek; and north to Elizabeth Lake Cyn in the Sierra Pelona Mtns. Frequently found in riparian habitat (springs, seeps, along streams). May be found in rock piles, flood-borne debris, or under dead yuccas where other cover is not available.	Moderate Potential. Potentially suitable riparian habitat occurs within the Project area, and CNDDB occurrences were recorded 0.5 mile downstream of Littlerock Dam historically and in 2016.	Moderate Potential. Potentially suitable riparian habitat (springs, seeps) yuccas, rock piles, and woody debris for cover, occurs within the BSA. CNDDB occurrences were recorded just downstream of Littlerock Dam in 1931, 1943, 1949, 1950, 1955, and most recently 3 shells were collected along a spring in 2016 approximately 0.5 mile downstream.
Pacoima shoulderband *Helminthoglypta traskii pacoimensis*	None	None	None	Air-breathing terrestrial snail. Known from type locality, Pacoima Canyon on the west side of the San Gabriel Mountains. Additional specimens from Elizabeth Lake Canyon in the Sierra Pelona Mountains may merit review. Found mostly under bark and fragments of rotten logs.	Not Expected. This species known range found locally in the Pacoima Canyon in Angeles National Forest, which is not within the Project area.	Not Expected. This species known range found locally in the Pacoima Canyon in Angeles National Forest, which is not within the BSA.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Fish						
Santa Ana sucker *Catostomus santaanae*	FT	None	SSC	South coast flowing waters, endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	Not Expected. The nearest known occurrence of this species is located approximately 7.1 miles southwest of the Project area in the Santa Clara River.	N/A
unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	FE	SE	FP	South coast flowing waters, Weedy pools, backwaters, and among emergent vegetation at the stream edge in small Southern California streams. Cool (<24 C), clear water with abundant vegetation.	Not Expected. The nearest known occurrence of this species is located approximately 7.1 miles southwest of the Project area in the Santa Clara River.	N/A
Amphibians						
arroyo toad *Anaxyrus californicus*	FE	None	SSC	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	Low to Moderate Potential. Portions of the Little Rock Wash occur in the southeastern corner and central-western edge of the Project area; however, it is believed to be restricted to a 3-mile stretch of stream habitat above Little Rock Reservoir. This population is approximately two miles from the Project area boundary. A historical population, since considered extirpated, did occur in the Little Rock Wash approximately 0.5 miles from the Project area boundary. The reservoir has altered the water flow regime into the wash, reducing the habitat value for the species (ESA 2018a).	Low Potential. Suitable habitat comprised sandy washes, intermittent streams, gravelly areas, sandy washes, and riparian habitats are present within the BSA. One historical CNDDB record in 1970 of 1 individual was recorded within the BSA. CNDDB records from 1996, 1999, and 2001 indicate a population exists within designated critical habitat further upstream from Littlerock Reservoir in Littlerock Creek, and within Santiago Creek.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
California red-legged frog *Rana draytonii*	FT	None	SSC	Aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons.	Low Potential. There is limited suitable habitat is present within the Project area, and the nearest known occurrence of this species is located approximately 4.7 miles southwest of the Project area boundary.	Low Potential. The BSA contains potentially suitable habitat, foothills, permanent sources of deep water (Lake Palmdale), and riparian vegetation. Known CNDDB occurrences are recorded within Aliso Canyon and Angeles National Forest, but none within 5 miles. The BSA lacks permanent sources of deep water, as the flow of the water is regularly controlled by PWD and is thus intermittent. Additionally, the BSA is outside of the known range of this species.
southern mountain yellow-legged frog *Rana muscosa*	FE	SE	WL	Disjunct populations known from southern Sierras (northern DPS) and San Gabriel, San Bernardino, and San Jacinto Mtns (southern DPS). Found at 1,000 to 12,000 ft in lakes and creeks that stem from springs and snowmelt. May overwinter under frozen lakes. Often encountered within a few feet of water. Tadpoles may require 2 - 4 years to complete their aquatic development.	Low Potential. Limited suitable habitat is located within and surrounding the Project area. Furthermore, the nearest known occurrence of this species is located approximately 2.0 miles south of the Project area from 1969 as documented in the CNDDB.	Not Expected. The BSA contains pockets areas of suitable habitat, which likely occurs only when flows create pools or shallow streams are flowing. Rocky and sandy substrate are present. The area specifically with these elements occurs within portions of Littlerock Creek, downstream of Littlerock Dam. The largest known population occurs within the upper portions of Littlerock Creek and watershed. The dam serves as a significant obstacle from individuals or populations moving downstream. CNDDB occurrences within 5 miles upstream Littlerock Creek in 1951, 1953, 1959 were recorded.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Reptiles						
western pond turtle *Actinemys pallida*	FPT	None	SSC	Known to occur in slow-moving permanent or intermittent streams, ponds, small lakes, rivers, streams, marshes, irrigation ditches with abundant vegetation, reservoirs with emergent basking sites, and either rocky or muddy bottoms.	Moderate Potential . Suitable riparian, marsh, irrigation ditches, and ponded habitats are present within the Project area.	Moderate Potential. Suitable riparian, marsh, irrigation ditches, and ponded habitats are present. The highest-quality suitable habitat for this species occurs within Little Rock Wash in the southeastern portion of the BSA on ANF land. Suitable habitat is comprised of deeper pooling areas with pockets of cattail marsh, river wash, and within the breaks in cover and part of the understory of the California sycamore woodland vegetation community that occurs in the wash .No CNDDB occurrences were recorded within 5 miles of the BSA. This species was observed downstream of Littlerock Dam during field surveys conducted in 2012 for the preparation of the Littlerock Reservoir Sediment Removal Project Environmental Impact Report (PWD 2017). This detection was made outside of the current project's BSA boundaries.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Northern California legless lizard *Anniella pulchra*	None	None	SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within the Project area.	Moderate Potential. Suitable sandy, loose, loamy soils and saturated soils, including natural and artificial cover (trash), California juniper and western Joshua tree woodlands with associated drainages from the Ditch occur within the BSA. One CNDDB occurrence in 2017 recorded four individuals discovered under artificial cover in the Juniper Hills area, which is located within the BSA. Five additional CNDDB occurrences were recorded within 5 miles north of the BSA in 2006, 2007, and 2017.
California legless lizard *Anniella* spp.	None	None	SSC	Occurs in sparsely vegetated areas of beach/coastal dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within Little Rock Reservoir which is adjacent to the southernmost portion of the Palmdale Ditch project.	Moderate Potential. The northern California legless lizard (*Anniella pulchra)* is part of a distinct Mojave Desert population within the Tehachapis and north of the San Gabrial Mountains, however both *A. pulchra and A. stebbinsi* species are considered SSC. One CNDDB occurrence of an adult *Aniella* spp. recorded in 2015 near Rocky Point picnic day use area, on the north end of Littlerock Reservoir. The species of *Anniella* was unconfirmed for this occurrence.
California glossy snake *Arizona elegans occidentalis*	None	None	SSC	Inhabits arid scrub, rocky washes, and grasslands, and chaparral habitats.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, the nearest known occurrence of this species is located along the southwestern boundary of the Project area.	Low Potential. Potentially suitable scrub habitats with loose sandy soils occur within the BSA. Three historical CNDDB occurrences within 5 miles of the BSA in 1937 and 1946, with a potential sub species confirmation in 2015 near Little Rock. These occurrences were recorded near Littlerock and Vincent. This species was not detected during the field reconnaissance survey.

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Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
desert tortoise *Gopherus agassizii*	FT	ST	None	Most common in desert scrub, desert wash, and Joshua tree habitats.	Moderate Potential. Suitable habitat is present within the Project area, and the nearest known CNDDB occurrence of this species is located approximately 7.1 miles northeast of the Project area. However, there is an occurrence documented in the citizen science website iNaturalist from April 2020.	Not Expected. The BSA contains potentially suitable desert scrub, wash, juniper and Joshua tree woodland and foraging habitats, however, it lacks sparse cover as much of the BSA contains dense vegetation or has been impacted by OHV, human disturbances, or surrounding development. The BSA does not contain critical habitat for this species.
coast horned lizard *Phrynosoma blainvillii*	None	None	SSC	Prefers sandy riparian and sage scrub habitats but also occurs in valley-foothill hardwood, conifer, pine-cypress, juniper and annual grassland habitats	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within the Project area.	Moderate Potential. Potentially suitable sandy, wash, upland scrub, and transitional chapparal habitats occur throughout the BSA. Four historical CNDDB occurrences, primarily specimen collections, were recorded within 5 miles of the BSA, with the most recent being 1990. This species was also detected during biological surveys in 2012 within a sandy drainage adjacent to the main access road to Littlerock Reservoir for the Littlerock Reservoir Sediment Removal Project (PWD 2017).

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
two-striped gartersnake *Thamnophis hammondii*	None	None	SSC	Habitat includes marsh and swamp, riparian scrub, riparian woodland, and wetland.	Moderate Potential. Suitable perennial pools, rocky beds, and riparian vegetation occur within the Project area along Little Rock Wash.	Moderate Potential. Suitable perennial pools, rocky beds, and riparian vegetation occur within the BSA, specifically along Little Rock Wash. It should be noted that the flow of water within the wash is intermittent, but pooling areas and otherwise suitable habitat within the BSA occur. Historical CNDDB occurrences were recorded upstream of the Littlerock Dam in Littlerock Creek in 1991, 1995, and 1997. This species was documented in Little Rock Wash during surveys conducted in 2012 as part of the Littlerock Reservoir Sediment Removal Project; however, it was detected outside of the BSA.
Birds						
Cooper's hawk *Accipiter cooperii*	None	None	WL	Inhabits cismontane woodland, riparian forest, riparian woodland, upper montane coniferous forest, or other forest habitats near water.	Present (Foraging, Nesting). Typical nesting habitat for this species is not present within the Project area; however, the species is known to be adapting to urban environments. This species has been known to occur within the Project area.	Present (Foraging, Nesting). Suitable riparian, California juniper, and Joshua tree woodlands provide quality opportunities for foraging and nesting opportunities throughout the BSA. Residential areas adjacent to the BSA along public roadways also likely provide shelter, nesting, and foraging habitat. This species was detected during field reconnaissance surveys, flushing from a perch on a large California juniper shrub within the dense woodland area between Pearblossom highway and Sierra Highway to the west. The presence of preferred prey animals, such as small songbirds and rodents, was observed throughout the various habitats within the BSA.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
sharp-shinned hawk *Accipiter striatus*	None	None	WL	Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes with plucking perches are critical requirements. Nests usually within 275 ft of water.	Present (Foraging). This species was detected during field reconnaissance surveys for the Palmdale Ditch Project.	Present (Foraging). This species was detected during field reconnaissance surveys.
tricolored blackbird *Agelaius tricolor*	None	ST	SSC	Known to occur in freshwater marsh, marsh, swap, and wetland.	High Potential. This species is known to nest at Lake Palmdale and Una Lake in cattails (*Typha* sp.) and tule (*Schoenoplectus acutus).*	Moderate Potential (Foraging). Suitable open water wetland habitat with tules and sparse cattails are present near the outfall of the Ditch to Lake Palmdale within the BSA. Denser, more suitable nesting habitat occurs outside the BSA, to the north of the outfall. This species was not detected during the field reconnaissance survey; however, red-winged blackbirds were observed. CNDDB occurrences were recorded in both Lake Palmdale and adjacent Una Lake in 1990, 1991 to 1993, 1994, 1995 to 1996, 1998, 2004, 2005, 2008, 2009, and most recently in 2011.
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	None	None	WL	Known to frequent relatively steep, often rocky hillsides with grass and forb species. Resident in Southern California coastal sage scrub and sparse mixed chaparral.	Moderate Potential. Minimal suitable habitat for this species is present within the Project area. The nearest known occurrence of this species is located approximately 2.2 miles east of the Project area.	Moderate Potential (Foraging, Nesting). Suitable sage scrub, chapparal, and juniper woodland habitats occur within the BSA. No CNDDB occurrences were recorded within 5 miles of the BSA; however, this species was detected during surveys conducted in 2012 in support of the Littlerock Reservoir Sediment Removal Project. The detection occurred outside of the BSA.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
bald eagle *Haliaeetus leucocephalus*	None	SE	FP	Lower montane coniferous forest (old growth). Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Moderate Potential (foraging). Suitable foraging habitat for this species is present within the Project area (e.g., Lake Palmdale). The nearest known CNDDB occurrence of this species is located approximately 14 miles west of the Project area, but there are recent occurrences of this species observed in eBird in January 2023 and August 2023. Absent (nesting). Typical nesting habitat is not present within the Project area. Therefore, this species is not expected to nest within the Project area.	N/A

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
golden eagle *Aquila chrysaetos*	None	None	FP, WL	Broadleaved upland forest, cismontane woodland, coastal prairie, great basin grassland, great basin scrub, lower montane coniferous forest, pinon and juniper woodlands, upper montane coniferous forest, valley and foothill grassland. Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Moderate Potential (foraging). Suitable foraging habitat for this species is present within the Project area. Furthermore, the nearest known occurrence of this species is located approximately 3.7 miles southwest of the Project area. Absent (nesting). Typical nesting habitat is not present within the Project area. Therefore, this species is not expected to nest within the Project area.	Moderate Potential (Foraging). Open scrub habitats such as those found in the BSA are potentially suitable foraging habitat that supports a prey base (i.e., California ground squirrels). Small mammal burrows were observed throughout the BSA, but known California ground squirrel colonies were only noted in three areas: just south of Mt. Emma Road; on either side of 47th Street East near the intersection of Barrel Springs Road; and in the western portion of the BSA east of Sierra Highway where the highest level of ground squirrel, rabbit, and other small mammal activity was observed. Based on the lack of suitable cliff nesting habitat, which is typically the preferred nesting habitat for this species, golden eagles are not expected to nest within the BSA. However, large trees, transmission towers, and two large bodies of water (Lake Palmdale and Littlerock Reservoir) could provide high quality nesting and foraging habitat. No CNDDB occurrences were recorded within five miles, and only one historical record was documented in Aliso/Soledad Canyon within the ANF.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Bell's sparrow *Artemisiospiza belli belli*	None	None	WL	Inhabits large, unfragmented blocks of coastal sage scrub, southern mixed chaparral habitats.	Low to moderate. Suitable large, unfragmented blocks of coastal sage scrub are present within the Project area. However, the nearest known occurrence of this species is located approximately 5.1 miles east of the Project area boundary.	Moderate Potential (Foraging). Suitable chapparal and coastal sage scrub habitats occur throughout the BSA, which includes along the edges of the Ditch. The BSA lacks dense stands of chamise, which is preferred nesting habitat. No CNDDB occurrences were recorded within 5 miles of the BSA. One CNDDB record from 2005 is located 7 miles west in a recent burn area – Ritter Canyon.
burrowing owl *Athene cunicularia*	None	None	SSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	High potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within and in the areas surrounding the Project area..	Moderate Potential (Foraging, Nesting). Variable foraging and nesting opportunities exist throughout the BSA, but more specifically in the western and southwestern portions where California ground squirrel colonies and potentially suitable burrows were detected during the field reconnaissance surveys. Two CNDDB occurrences, in 2000 and 2006, were recorded within 5 miles of the BSA. Neither burrowing owl individuals or their sign were observed during the field reconnaissance surveys.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
ferruginous hawk *Buteo regalis*	None	None	WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Breeds from Oregon to Canada; no breeding records from California.	High potential (foraging). Suitable foraging habitat is present within the Project area. Furthermore, the nearest known occurrence of this species is located approximately 3.5 miles east of the Project area. Absent (nesting). This species is not expected to nest within the Project area, which is outside of its known breeding range.	Moderate Potential (Foraging). Suitable low foothill, sagebrush, and juniper woodland habitats occur within the BSA. Nesting is not expected in the BSA because the species is a winter migrant and/or resident in California. Prey species such as rabbits, ground squirrels, and other small rodent species are present, but are more concentrated in the western portion of the BSA where there is open habitat and juniper woodlands. No CNDDB occurrences were recorded within 5 miles; however, two were recorded in 2011 approximately 5.5 miles west of the Lake Palmdale portion of the BSA.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Swainson's hawk *Buteo swainsoni*	None	ST	None	Found in Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland.	Moderate potential (foraging). Limited habitat for this species is present within the Project area. Furthermore, although this species has been historically observed within the Project area, the nearest recent observation of this species (recorded in 2020) is located 1.7 miles north of the project area. Absent (nesting). The Project area is outside of the known nesting range for this species. Therefore, this species is not expected to nest within the Project area.	Moderate Potential (Foraging, Nesting). Cottonwood trees, juniper woodlands, western Joshua trees, and riparian woodland suitable for nesting and adjacent to open lands suitable for foraging occur within the BSA. In the Antelope Valley, the species has a predilection to nest in non-native or unidentified deciduous trees. The BSA lacks preferred foraging habitat such as alfalfa and grain fields; however, prey species such as rodents were present. The closest agricultural fields to the BSA are approximately 5.5 miles to the north/northwest. The BSA would likely be utilized by migrating individuals. One historical CNDDB occurrence was recorded in 1927 within 5 miles of the BSA in an area of Palmdale that has since been developed. All present-day nest sites documented in the Antelope Valley have been observed near active and fallow agricultural fields greater than 5 miles from the BSA.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
northern harrier *Circus hudsonius*	None	None	SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Present (Foraging, Nesting). This species was detected during field reconnaissance surveys within the Project area by the California Aqueduct.	Present (Foraging, Nesting). This species was detected during field reconnaissance surveys, soaring south of where the BSA crosses the California Aqueduct. This species is typically associated with wetlands or marshes, which are present, but not on a large scale. Marsh-like habitat occurs in patches of the BSA and is associated with Lake Palmdale; other low-lying areas are also present. Both areas could potentially be suitable habitat for nesting for this species. Surrounding upland scrub, shrublands, and riparian woodland habitats could potentially be used for foraging.
mountain plover *Charadrius montanus*	None	None	SSC	Found in chenopod scrub, valley and foothill grassland. Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms.	Low Potential. Limited suitable habitat is present within the Project area. The nearest known occurrence of this species is located less than one mile north of the Project area.	Not Expected. The BSA lacks short grasslands, freshly plowed fields, farms, and grain fields. Burrowing rodents are present, however the BSA lacks suitable habitat. CNDDB occurrences for this species were recorded over 5 miles from the BSA within the agricultural areas near Palmdale Regional Airport.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
southwestern willow flycatcher *Empidonax traillii extimus*	FE	SE	None	Riparian woodland	Moderate Potential (Foraging). Although suitable habitat for this species is present within the Project area, there are no known occurrences of this species within the vicinity.	Moderate Potential (Foraging). Suitable habitats of riparian woodland comprised of cottonwoods, sycamores, willows, mulefat, and other associated riparian vegetation is present in the BSA, specifically in Little Rock Wash downstream of Littlerock Dam. Surveys for the Littlerock Reservoir Sediment Removal Project conducted in 2012 within the riparian habitat south of Littlerock Dam documented 5 willow flycatchers, but did not confirm if they were southwestern willow flycatchers. Migrating individuals could use the suitable habitat in the southern portion of the BSA at Little Rock Wash during seasonal migration periods. However, there are no known or documented breeding sites within the BSA. The primary flycatcher drainages in California are located within the Kern, Owen's, San Luis Rey, Santa Ana, and Santa Margarita Rivers. There are no known CNDDB occurrences within 5 miles.
merlin *Falco columbarius*	None	None	WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches.	Present (foraging). Suitable foraging habitat for this species is present within the Project area. Absent (nesting). Suitable nesting habitat is not present within the Project area. Therefore, this species is not expected to nest within the Project area.	Present (Foraging). Suitable foraging habitat occurs within the BSA, including a matrix of woodland, upland scrub, and water sources, with expansive open arid habitats where prey (small birds) is available. Merlin is a winter migrant; it is not known to breed in California and is not expected to nest in the BSA. One individual was detected during field reconnaissance surveys flying overhead within the BSA south of 40th Street East and Barrel Springs Road.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
prairie falcon *Falco mexicanus*	None	None	WL	Inhabits dry, open terrain, either level or hilly such as grassland, rangeland, agriculture, desert scrub, and alpine meadows.	High Potential (foraging). Suitable habitat is present within the Project area. Furthermore, the nearest known occurrence of this species is located approximately 1.1 miles southeast of the Project area. Absent (nesting). Suitable nesting habitat is not present within the Project area. Therefore, this species is not expected to nest within the Project area.	Moderate Potential (Foraging). Prairie falcon has a moderate potential to forage within the BSA. Marginally suitable foraging habitat includes open areas with mixed upland shrubs, woodlands, and perches; California ground squirrels are also present. However, cliffs for breeding and nesting are not present. No CNDDB records occur within five miles of the BSA.
California condor *Gymnogyps californianus*	FE	SE	SFP	Chaparral, valley and foothill grassland. Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Nests in deep canyons containing clefts in rocky walls for nesting sites. Forages up to 100 miles from roost/nest.	Not Expected. Although suitable foraging habitat for this species is present within the Project area, the Project area does not support suitable nesting habitat and there are no known occurrences of this species within the vicinity.	Not Expected. The BSA lacks suitable foraging, roosting, and nesting habitat. There are no CNDDB occurrences within 5 miles.
loggerhead shrike *Lanius ludovicianus*	None	None	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur approximately 2.0 miles east of the Project area.	High Potential (Foraging, Nesting). Potentially suitable riparian woodland, Joshua tree woodlands, desert scrub, and sandy wash habitats, including areas for perching, are present in the BSA. BSA. Prey species, such as insects, lizards, small mammals, and birds also occur throughout the BSA. Four CNDDB occurrences, with the most recent in 2008, were recorded within 5 miles of the BSA. This species was not detected during field reconnaissance surveys.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Le Conte's thrasher *Toxostoma lecontei*	None	None	SSC	Found in desert wash, Mojavean desert scrub, Sonoran desert scrub.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within the Project area.	Low Potential (Foraging, Nesting). Marginal suitable desert scrub habitat occurs within the BSA, specifically in the far western portion. This habitat contains suitable characteristics; however, it is very limited in size and is partially disturbed from human activities (e.g., trash, grading/grazing, off road vehicle travel). Three historical CNDDB occurrences were recorded within 5 miles, the most recent in 1978.
least Bell's vireo *Vireo bellii pusillus*	FE	SE	SSC	Known to occur in riparian forest, scrub, and woodland habitats. Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms.	High Potential. Suitable habitat for this species is present within the Project area. Furthermore, this species has been known to occur within the Project area near Lake Palmdale and Una Lake.	High Potential (Foraging, Nesting). Suitable riparian habitat occurs within the BSA, specifically in the southern portion in Little Rock Wash, downstream from Littlerock Dam in the ANF. Surveys conducted for the Littlerock Reservoir Sediment Removal Project in 2010, 2012, and 2012 below the dam confirmed occupied habitat with breeding/nesting activity in Little Rock Wash. The surveys documented a breeding pair with an active nest that eventually produced fledglings. One CNDDB record from 2005 documented noted one individual singing near Una Lake, east of Lake Palmdale.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Mammals						
pallid bat *Antrozous pallidus*	None	None	SSC	Chaparral, coastal scrub, desert wash, great basin grassland, great basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest, valley and foothill grassland, Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	High Potential. Suitable riparian, desert scrub, and Joshua tree and juniper woodland foraging and roosting habitats are present within the Project area.	High Potential (Roosting, Foraging). Suitable riparian, desert scrub, and Joshua tree and juniper woodland foraging habitats are present within the BSA. Potential roosting habitat is comprised of rock crevices, mature trees such as cottonwoods, willows, or junipers with exfoliating bark, and other manmade structures. Several old, abandoned, and disturbed structures are located on ANF lands approximately 150 feet outside of the BSA. Evidence of bat guano droppings and urine staining were present at these structures; however, the sign was old and the structure not currently in use. No mines are present in the BSA. This species was detected during acoustic surveys conducted near the Littlerock Reservoir in 2012 for the Littlerock Reservoir Sediment Removal Project (PWD 2017). The species was not detected, and no sign of maternity roosts were observed during the field reconnaissance surveys for the current Palmdale Ditch Project.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Townsend's big-eared bat *Corynorhinus townsendii*	None	None	SSC	Broadleaved upland forest, chaparral, chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, meadow and seep, Mojavean desert scrub, riparian forest, riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, upper montane coniferous forest, valley and foothill grassland. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	High Potential (Foraging). Suitable riparian woodland habitat is present in the Project area. Typical roosting habitat is not present within the Project area. This species may occur as a transient during migration or foraging activities. The nearest known occurrence of this species is located approximately 4.7 miles southwest of the Project area.	High Potential (Foraging). Suitable riparian woodland habitat is present in the BSA. The old, abandoned, and degraded structures observed on ANF lands outside the BSA could provide marginally suitable roosting habitat. Evidence of bat guano droppings and urine staining were present; however, the species is very sensitive to human disturbances, which appeared prevalent within and surrounding the structures. Overall, suitable roosting habitat for the species (including the entrance of caves, buildings, or mines) is absent from the BSA, but could occur near Littlerock Reservoir.
Yuma myotis *Myotis yumanensis*	None	None	None	Lower montane coniferous forest, riparian forest, riparian woodland, upper montane coniferous forest. Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Low to Moderate Potential. Typical roosting habitat is not present within the Project area. This species may occur as a transient during migration or foraging activities. The nearest known occurrence is within the project area just north of Little Rock Reservoir; however, this occurrence was recorded in 1999 and no other occurrences have been recorded within the vicinity.	N/A
pallid San Diego pocket mouse *Chaetodipus fallax pallidus*	None	None	None	Desert border areas of San Diego, Riverside, San Bernardino, and Los Angeles counties in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Low Potential. Suitable habitat for this species is present within the Project area. However, the nearest known historic occurrence of this species is located approximately 6.2 miles southeast of the Project area.	Low Potential. Potentially suitable desert scrub and juniper habitats and sandy or gravelly soil occur within the BSA; however, there are no recent CNDDB records within 5 miles.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
San Joaquin pocket mouse *Perognathus inornatus*	None	None	None	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert.	Low Potential. Limited suitable habitat for this species is present within the Project area. However, the only known record of this species within the vicinity was recorded in 1931 and its identification as the species is questionable (per CNDDB record).	Low Potential. The BSA lacks suitable grassland, oak savannah, and arid scrubland habitat, however sandy friable soils are present. One CNDDB occurrence was recorded within 5 miles in 1931 as a museum specimen.
San Diego desert woodrat *Neotoma lepida intermedia*	None	None	SSC	Occurs in scrub habitats of southern California from San Luis Obispo County to San Diego County. In southeastern California, is found from Southern Mono County, south throughout the Mojave Desert and from north-central Tulare county south through Tehachapi and the San Bernadino Mountains.	Moderate Potential. Suitable desert scrub, Joshua tree woodland, California juniper woodland are present within the Project area.	Moderate Potential. Suitable desert scrub, Joshua tree woodland, California juniper woodland are present within the BSA. Numerous woodrat stick nests or "middens" were documented throughout the BSA during the field reconnaissance surveys, although the presence of special status woodrat subspecies was not confirmed. The woodrat middens in the BSA were primarily associated with California juniper woodland habitats near the Ditch, starting north of Mt. Emma Road and west to Sierra Highway. It is unconfirmed if the middens are home to the San Diego desert woodrat subspecies *intermedia* and not the desert woodrat (*Neotoma lepida*); however, based on the presence of middens, suitable habitat, and known range of the species it has a moderate potential to occur.

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
Mohave ground squirrel *Xerospermophilus mohavensis*	None	ST	None	Occurs in open desert scrub, alkali scrub and Joshua tree woodland.	Low to Moderate Potential. Although this species has been historically recorded within the Project area, the most recent observation was recorded in 2005. Protocol trapping efforts in northeastern Los Angeles County from 2008-2012 have failed to find the species. The only positive identifications were recorded at several sites within or very close to Edwards Air Force Base. This species is believed to be extirpated from the Project area and the southwestern Antelope Valley (Leitner 2015). However, there are occurrences documented in iNaturalist (two from May 2020 and one from April 2022), with the nearest occurrence from 2020 that was 12.0 miles to the northeast of the Project area.	Moderate Potential. Potentially suitable desert scrub, alkali scrub, and Joshua tree woodland is present within the BSA. Dispersed individual winterfat shrubs and spiny hopsage were observed in the BSA, including in the Joshua tree woodland, but were not concentrated in a single area. The BSA also contains boxthorns dispersed within several vegetation communities, including Joshua tree woodland, rubber rabbitbrush scrub, and California juniper woodland. Clusters of spiny hopsage and winterfat were observed within an open, low vegetated area between stands of California junipers in the northwestern extent of the BSA east of Sierra Highway. Active California ground squirrels and burrow complexes were observed in this area and along a berm and washy channel near 47th Street East and adjacent to dense Joshua tree woodland habitat. The northwestern portion of the BSA is at the southernmost extent of the species' historical range and has been impacted by development. Known current populations occur further north near Edwards Air Force Base in Kern County. Multiple historical CNDDB occurrences were recorded within five miles of the BSA but none within the last five years.

[1] **Sensitivity Status**

Federal (USFWS)

BGEPA	*Bald and Golden Eagle Protection Act*
FE	*Federally Endangered*
FT	*Federally Threatened*

Common Name Scientific Name	Federal ESA Status[1]	State ESA Status[1]	CDFW[1]	Preferred Habitat	Potential to Occur within the Project Area	Potential to Occur at Palmdale Ditch Project Site
FPE	*Federally Proposed as Endangered*					
FPT	*Federally Proposed as Threatened*					
State						
FP	*Fully Protected*					
SE	*State Endangered*					
ST	*State Threatened*					
SCE	*State Candidate as Endangered*					
SCT	*State Candidate as Threatened*					
SSC	*State Species of Special Concern*					
WL	*Watch List*					
WBWG	*Western Bat Working Group Regional Priority Matrix Species*					

Sources for Preferred Habitat:

CDFW. 2024a. California Natural Diversity Database (CNDDB). RareFind, Version 5.0 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Available online at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed June 21, 2024.

CDFW. 2024b. California Wildlife Habitat Relationships. Available online at: https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range. Accessed July 7, 2024.

Leitner, P. 2015. Current Status of the Mohave Ground Squirrel (*Xerospermophilus mohavensis*): A Five-Year Update (2008–2012). Western Wildlife 2:9–22.

APPENDIX C-4: PALMDALE DITCH CONVERSION PROJECT JURISDICTIONAL DELINEATION REPORT

Palmdale Ditch Conversion Project

Jurisdictional Delineation Report

prepared for
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June 2024

RINCON CONSULTANTS, INC. SINCE 1994

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Executive Summary

Rincon Consultants, Inc. performed a jurisdictional delineation for the Palmdale Water District's Palmdale Ditch Conversion Project (Project). The Project would involve the conversion of approximately 7.2 miles of open portions of the Palmdale Ditch to a buried 48-inch diameter pipeline and potential installation of a new turnout to the California Aqueduct. The Project site includes the existing Palmdale Ditch (Ditch) and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment). The jurisdictional delineation was performed within the Project site and a 50-foot buffer, herein referred to as the Biological Study Area (BSA). The delineation began with a literature review of existing studies, maps, and other publications. After completion of the literature review, a field delineation was completed to identify, describe, and map all potential jurisdictional waters within the BSA.

This jurisdictional delineation summarizes the existing conditions within the BSA, the methodologies utilized to determine presence and absence of waters, including wetlands, and provides an assessment of jurisdictional boundaries of the United States Army Corps of Engineers (USACE), Lahontan Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW) within the BSA. The delineation concluded that a minimum of 41 potentially jurisdictional features occur in the BSA, including the Palmdale Ditch, Lake Palmdale, Little Rock Wash, the California Aqueduct, one unnamed pond, 20 unnamed drainages, and 16 wetlands. Two additional potentially jurisdictional wetlands may also be present, but due to access limitations, jurisdictional boundaries could not be confirmed. The delineated features included natural and man-made perennial, intermittent, and ephemeral streams; culverts; a pond; a lake; and isolated wetlands that may be subject to USACE, RWQCB, and/or CDFW jurisdictions. A summary of potential jurisdictional waters identified within the BSA is shown by agency in Table 1.

Table 1 Potential Jurisdictional Waters within the BSA

Jurisdictional Water Type	Amount (acres)
USACE Jurisdiction	
Non-Wetland Waters of the U.S.	7.60
Culverted Non-Wetland Waters of the U.S.	0.51
Wetland Waters of the U.S.	0.15
Total Waters of the U.S.	8.26
RWQCB Jurisdiction	
Non-Wetland Waters of the State	9.48
Culverted Non-Wetland Waters of the State	0.54
Wetland Waters of the State	5.13
Total Waters of the State	15.15
CDFW Jurisdiction	
CDFW-Jurisdictional Streambed	21.64
CDFW-Jurisdictional Lake	4.34
Total CDFW Jurisdiction	25.98
Potentially Jurisdictional	
Not Accessible	0.16

1 Introduction

Rincon Consultants, Inc. (Rincon) conducted a jurisdictional waters and wetlands delineation for the Palmdale Water District's (PWD) Palmdale Ditch Conversion Project (Project), located in the city of Palmdale and unincorporated Los Angeles County, California (Appendix A: Figure 1). The delineation was performed to determine the location and extent of waters, including wetlands, within the Project site that are potentially subject to the jurisdiction of the United States Army Corps of Engineers (USACE), Lahontan Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW).

Any proposed development in areas identified as jurisdictional waters, including wetlands, may be subject to the permit requirements of USACE under Section 404 of the Clean Water Act (CWA), RWQCB under Section 401 of the CWA and Porter-Cologne Water Quality Control Act, and CDFW pursuant to Sections 1600 et. seq. of the California Fish and Game Code (CFGC). Final jurisdictional boundaries are confirmed by state and federal authorities at the time permits are requested.

1.1 Project Location

The Project site consists of an approximately 7.2-mile-long corridor that overlaps 88 parcels in the city of Palmdale and unincorporated Los Angeles County (Appendix A: Figure 2a to Figure 2d). The Project site extends generally southeast to northwest from Littlerock Reservoir in Angeles National Forest (managed by the United States Forest Service) to Lake Palmdale in unincorporated Los Angeles County. The Project site includes the existing Palmdale Ditch (Ditch) and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment). The buffer is intended to encapsulate the existing Ditch, areas where the Ditch may be re-aligned as compared to its current alignment, and potential temporary access, staging, and stockpiling areas. In total, the Project site encompasses approximately 309 acres. The Project site has variable topography, ranging from approximately 3,200 feet above mean sea level (amsl) in the Angeles National Forest to approximately 2,815 feet amsl at Lake Palmdale.

The Project site consists of two discontinuous areas. The largest area covers approximately 7.0 miles of continuous Ditch from Littlerock Reservoir to the Los Angeles County Metropolitan Transportation Authority rail tracks, while the second area covers approximately 0.2 mile of existing Ditch where it outfalls into Lake Palmdale. These two sections of the Ditch are connected by a segment where the water flows through an underground pipeline.

The southeastern end of the Project site begins at the terminus of an existing pipeline that currently feeds into the Palmdale Ditch approximately 0.3 mile downstream of Littlerock Reservoir within the San Gabriel Mountains National Monument in the Angeles National Forest (Appendix A: Figure 2d). From Littlerock Reservoir, the Project site extends northwest, parallel to Cheseboro Road and within the Angeles National Forest, for approximately 4,000 linear feet. After exiting the Angeles National Forest, the Project site continues to proceed north for approximately one mile, then curves to the northwest and proceeds in a northwesterly direction for approximately 6.2 miles, generally parallel to Barrel Springs Road, until the intersection of Sierra Hills Lane and Sierra Highway (Appendix A: Figure 2b to Figure 2c). Along this 7.0-mile stretch, the Project site crosses the Governor Edmund G. Brown California Aqueduct (California Aqueduct), Pearblossom Highway, and the Los Angeles County Metropolitan Transportation Authority rail tracks. This portion of the Project site terminates

at an existing pipeline that proceeds generally northwest for approximately 0.6 mile. This pipeline discharges into the remaining 0.2-mile stretch of the Ditch that proceeds from a point east of existing residences on Rozalee Drive to the northwest where it ends at Lake Palmdale (Appendix A: Figure 2b). The BSA analyzed in this report includes the Project site and a 50-foot buffer. The BSA is depicted on the *Pacifico Mountain* and *Palmdale, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangles (USGS 2024a; Appendix A: Figure 3).

1.2 Project Description

Project Background

The Ditch was constructed in the 1880s and has been owned and operated by PWD since its completion. The Ditch is approximately 8.5 miles long and is used to convey raw water from Littlerock Reservoir to Lake Palmdale for treatment and beneficial use as potable supply within PWD's service area. PWD operates the Ditch intermittently in accordance with seasonal availability and PWD water allocations.

In 1995, approximately 1,900 feet of the Ditch, starting from the debris basin downstream of Littlerock Dam, was converted to a 54-inch diameter pipeline. In 2010, approximately 3,800 feet of the Ditch from Lake Palmdale to Sierra Highway was replaced with a 48-inch diameter pipeline. In total, approximately 30 percent of the Ditch is either lined with concrete or utilizes culverts and tunnels to cross through steep terrain and beneath roadways, while almost 70 percent of its total length remains an unlined, open earthen ditch. In addition, geotextile clay liners have been installed under certain segments of the earthen-bottomed Ditch to reduce water losses. These segments consist of approximately 1,200 linear feet immediately east of the Ditch's undercrossing of Barrel Springs Road near Pearblossom Highway, approximately 1,000 linear feet immediately north of the Ditch's undercrossing of Edison Road, approximately 400 linear feet between the Ditch's undercrossing of Edison Road and Mt. Emma Road, and approximately 600 linear feet immediately south of the Ditch's undercrossing of Mt. Emma Road. There is also one remaining aerial flume supported by a steel trestle located approximately midway between Sierra Highway and Pearblossom Highway.

In 2021, PWD completed a feasibility study evaluating the potential water savings that could be achieved by replacing the remaining open channel segments with a buried pipeline and increasing the design flow from 30 cubic feet per second (cfs) to 60 cfs. The study concluded that water savings of approximately 1,450 acre-feet per year could be achieved.

To date, PWD has received grant funding from both the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (USBR) to support the proposed Project.

Project Components

The proposed Project would involve the conversion of approximately 7.2 miles of the Ditch with a buried 48-inch diameter pipeline made from reinforced concrete or high-density polyethylene. Of the 7.2-mile length, approximately 6.4 miles is currently open-channel with a mixture of concrete-lined and earthen-bottomed segments, which would be converted to pipeline. Approximately 0.5 mile of the Ditch is currently within pipelines, specifically at its overcrossing of the California Aqueduct and below Los Angeles Department of Water and Power electrical lines, or concrete tunnels. These pipelines and tunnels would be inspected and rehabilitated as part of the proposed Project. Approximately 0.1 mile of the Ditch currently feeds through road culvert crossings under

various City of Palmdale (City) and County roads. The proposed Project involves inspection, rehabilitation, and replacement of these crossings, as needed. Along open-channel segments of the Ditch where the proposed pipeline is placed directly in the existing Ditch alignment, the Ditch would be backfilled following pipeline installation. Along open-channel segments of the Ditch where the proposed pipeline is placed outside the existing alignment, the Ditch would either be left in its current condition or filled in depending on the results of ongoing discussions with interested parties and regulatory agencies.

The proposed Project would increase the hydraulic capacity of the Ditch from 20 cfs to approximately 60 cfs. In addition, any buried pipelines or tunnels expected to remain in service as part of the completed Project would also be inspected and rehabilitated, as necessary, to ensure a fully functioning system upon Project completion. Project components would be located primarily underground. Minor aboveground facilities, such as blow-off and air release assemblies and flumes approximately two to three feet in height, may be installed for proper pipeline operation. To the extent feasible, these facilities would be sited outside of the public's line of sight. No new permanent sources of lighting, noise, or air pollution would be installed as part of the proposed Project.

The proposed project may also include installation of a new turnout[1] on the north side of the California Aqueduct where it transects the Project site. The turnout would be sized to convey up to approximately 30 cfs of water from the California Aqueduct to the proposed pipeline. The turnout would include a connection to the proposed pipeline, a new headwall,[2] a fish screen, a meter, an emergency generator, and other required appurtenances. The turnout may also include a one-story controls/electrical building that would have a footprint of approximately 100 square feet. The building would likely be constructed with masonry block walls and a sheet metal roof, or equivalent. The turnout and associated components would be designed and implemented in accordance with DWR's Division of Operations and Maintenance's General Components for New Turnouts guidance. The turnout would provide PWD with improved redundancy and reliability in accessing its existing State Water Project allocation and would not result in additional water supplies.

Construction

Construction of the proposed Project would occur over an approximately 10-month period between approximately March 2025 and December 2025 and would involve clearing/grubbing, demolition, excavation, pipeline installation, paving, and site restoration. Construction is expected to proceed linearly along the alignment, beginning with clearing/grubbing, followed by demolition and pipeline installation at a rate of approximately 200 linear feet per day. Asphalt paving at roadway crossings disturbed by construction would be accomplished initially with temporary paving and ultimately with permanent paving once all road crossings have been completed. Depending on schedule constraints, construction may occur simultaneously at multiple locations along the alignment at any given time.

A more detailed Project description is available in the Biological Resources Assessment (BRA) report prepared for the Project (Rincon 2024).

[1] A turnout refers to a structure that allows water to be conveyed from the California Aqueduct.

[2] A headwall is a wall that is placed at the entrance or outlet of a drainage pipe to prevent erosion.

2 Methodology

The delineation study began with a literature review of existing studies, maps, and other publications. After completion of the literature review, a field delineation was completed to identify, describe, and map all potential jurisdictional waters within the BSA. See Figure 2a to Figure 2d in Appendix A for maps depicting an overview of the BSA. The delineation has been prepared in accordance with current USACE, RWQCB and CDFW procedures, as outlined below.

2.1 Literature Review

Prior to the field survey, Rincon reviewed aerial imagery depicting the BSA (Google Earth Pro 2024), the *Pacifico Mountain* and *Palmdale, California* USGS 7.5-minute topographic quadrangles (USGS 2024a), and the Web Soil Survey (United States Department of Agriculture, Natural Resources Conservation Service [USDA, NRCS] 2024a) to better characterize the site and its surroundings from a hydrologic and geologic/topographical perspective.

Additionally, the Hydrologic Unit Code Maps (USGS 2024b), National Wetlands Inventory (NWI) (United States Fish and Wildlife Service [USFWS] 2024), and the National Hydrography Dataset (NHD; USGS 2024b) were reviewed to determine if wetlands or other waters had been previously documented and mapped in or near the BSA. The National Hydric Soils List by State: California (USDA, NRCS 2024b) was also reviewed to determine if soil map units mapped in the BSA were classified as hydric. Additionally, the Climate Analysis for Wetlands (WETS) table was reviewed to define the normal range for monthly precipitation and growing season required to assess the climatic characteristics for a geographic area over a representative period of time (USDA, NRCS 2024c) in the vicinity of the BSA.

2.2 Field Survey

After completion of the literature review, Rincon biologists Kyle Gern and/or Casey Clark performed a field delineation between December 18, 2023 and January 2, 2024, and on May 2, 2024, as summarized in Table 2. Each section of the BSA was surveyed on foot where access was granted. A majority of the BSA was accessible on foot, with the exception of fenced private property immediately north of the California Aqueduct. For this area, biologists utilized binoculars, aerial interpretation, and the results of the literature review to characterize and map potentially jurisdictional waters. The BSA was surveyed for potential wetlands and non-wetland aquatic resources including streams and ephemeral drainages that might exhibit an ordinary high water mark (OHWM) and that might constitute waters of the U.S. and/or State. General site characteristics and vegetation, soils, and hydrology present on-site were noted. Current federal and state policies, methods and guidelines were used to identify and delineate potential jurisdictional waters and are described below. For a more detailed description of the applicable jurisdictional regulations, see Appendix B. Representative site photographs were taken throughout the BSA and are included in Appendix C.

Table 2 Field Survey Summary

Survey Date	Personnel	Location
December 18, 2023	Casey Clark, Kyle Gern	Southern Extent
December 19, 2023	Casey Clark, Kyle Gern	Southern/Central Extent
December 20, 2023	Casey Clark, Kyle Gern	Central Extent
December 21, 2023	Casey Clark, Kyle Gern	Northern Extent
January 2, 2024	Casey Clark, Kyle Gern	Northern Extent
May 2, 2024	Kyle Gern	Central Extent

Vegetation Community and Land Cover Mapping

Extents of vegetation communities, land cover types, and sensitive vegetation communities were mapped using a Geode Geographic Positioning System (GPS) capable of sub-meter accuracy and plotted on aerial imagery. Vegetation community classification was conducted using the systems provided in *A Manual of California Vegetation, Second Edition* (MCV2) (Sawyer et al. 2009), in conjunction with the CDFW *California Natural Community List* (CDFW 2023). Updates to the MCV2 provided in the online database (CNPS 2023) were taken into account. Vegetation communities or land cover types not described in *A Manual of California Vegetation, Second Edition* were classified using conventional naming practices (i.e., developed) or were defined by the dominant species. Land covers were characterized in areas which are unvegetated or dominated by ornamental vegetation (e.g., disturbed/developed).

Non-Wetland Waters of the United States

The lateral limits of USACE jurisdiction (i.e., width) for non-wetland waters were determined by the presence of physical characteristics indicative of the OHWM. The OHWM was identified in accordance with the applicable Code of Federal Regulations (CFR) sections (33 CFR 328.3 and 33 CFR 328.4) and Regulatory Guidance Letter 05-05 (USACE 2005), as well as in reference to various relevant technical publications, including, but not limited to: *Review of Ordinary High Water Mark Indicators for Delineating Arid Streams in the Southwestern United States* (USACE 2004), *Distribution of Ordinary High Water Mark (OHWM) Indicators and Their Reliability in Identifying the Limits of "Waters of the United States" in Arid Southwestern Channels (*USACE 2006*),* and *A Field Guide to Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States* (USACE 2008a), and *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010).

Rincon evaluated sources of water, potential connections and distances to Traditional Navigable Waters (TNWs), stream flow duration and other factors that affect whether waters qualify as "waters of the U.S." under current USACE regulations (33 CFR 328.3), including, but not limited to, the recent *Sackett v. USEPA* court ruling and the conforming *Revised Definition of Waters of the United States* (United States Environmental Protection Agency [USEPA] 2023). A more detailed regulatory definition of USACE jurisdiction can be found in Appendix B. Completed OHWM datasheets are available in Appendix D.

Wetland Waters of the United States

Potential wetland features were evaluated for presence of wetland indicators; specifically, hydrophytic vegetation, hydric soils, and wetland hydrology, according to routine delineation

procedures within the *Wetlands Delineation Manual* (USACE 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008b). The USACE *Arid West 2020 Regional Wetland Plant List* was used to determine the wetland status of the examined vegetation by the following indicator status categories: Upland (UPL), Facultative Upland (FACU), Facultative (FAC), Facultative Wetland (FACW), and Obligate Wetland (OBL) (USACE 2020a). Representative sample points were sited in areas most likely to exhibit wetland characteristics, such as areas with a prevalence of hydrophytic vegetation and suitable landform, and examined in the field for potential wetland indicators. Sample points were not conducted in areas with an obvious prevalence of upland vegetation or in areas where the landform would not support wetland features (i.e., concrete channels and sloped areas).

Potential wetland waters of the U.S. were evaluated in accordance with the recent *Sackett v. USEPA* court ruling and the conforming *Revised Definition of Waters of the United States* (USEPA 2023). The court ruling and conforming *Revised Definition of Waters of the United States* decided "adjacent wetlands" are waters of the U.S. only if there is a continuous surface connection between the wetland and a navigable or relatively permanent water body, such that it is difficult to determine the boundary between the wetland and the water body. The revised definition notes "temporary interruptions to surface connection may sometimes occur because of phenomena like low tides or dry spells." The Conforming Rule defines the term "adjacent" to mean "having a continuous surface connection." A more detailed regulatory definition of USACE jurisdiction can be found in Appendix B. Completed wetland determination data forms are available in Appendix D.

Waters of the State

The limits of "waters of the State," as defined under the Porter-Cologne Water Quality Control Act, are any surface water or groundwater, including saline waters, within the boundaries of the state. In those areas where an OHWM was present, the OHWM was used to represent the limits of non-wetland waters of the State.

Potential State wetland features were evaluated pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019). Potential state wetlands were evaluated following the SWRCB's definition, which relies on the same three parameters as the USACE definition (hydrophytic vegetation, wetland hydrology, and hydric soils) but allows for naturally unvegetated areas meeting the other two parameters to be considered wetlands. A more detailed regulatory definition of RWQCB jurisdiction can be found in Appendix B.

CDFW Streambeds

The extent of potential streambeds, streambanks, lakes, and riparian habitat subject to CDFW jurisdiction under Sections 1600 et seq. of the CFGC was delineated by reviewing the topography and morphology of potentially jurisdictional features to determine the outer limit of riparian vegetation, where present, or the tops of banks for stream features. A more detailed regulatory definition of CDFW jurisdiction can be found in Appendix B.

2.3 Data Collection and Processing

Data representing top of bank, OHWM, edge or riparian vegetation, and other observation points were mapped using a Juniper Systems® Geode Global Positioning System unit capable of sub-meter accuracy and recent aerial photography (Bing 2023) in ArcCollector on Android-based Samsung

tablets. The data were subsequently transferred to Rincon's geographic information system and used in combination with recent, high resolution aerial photographs, and topographic dataset to map the extent of jurisdictional waters in the BSA.

3 Existing Conditions

3.1 Topography, Land Use and Climate

The BSA is comprised of a combination of undulating and hilly landscape in the southern portion (south of Mount Emma Road) and a relatively flat landscape in the northern portion. The San Gabriel Mountains lie to the south of the BSA, and the southern portion of the BSA is located in the foothills of the mountain range. Elevations range from approximately 3,100 feet amsl to 3,200 feet amsl in the southern portion of the BSA, and elevations gradually decline from 3,170 feet amsl to 2,815 feet amsl as the Ditch meanders northwestward into Lake Palmdale. Land use within the BSA is predominantly open space, and land uses in the vicinity include rural residential, recreational areas, open space, and water infrastructure such as the California Aqueduct and Lake Palmdale. The weather on site was typical for the time of year (USDA, NRCS 2024c). According to the National Oceanic Atmospheric Administration's (NOAA) National Weather Service (NWS), average annual temperatures in the Palmdale area in 2023 ranged between 44 and 86 degrees Fahrenheit, with the warmest temperatures occurring between July and August, and the coldest temperatures occurring between January and February (NOAA, NWS 2024). In December 2023, temperatures ranged between 26 and 75 degrees Fahrenheit. Palmdale receives an average rainfall of approximately 10.78 inches, with the most rain occurring between December and March (NOAA, NWS 2024). In December 2023 during and following the field survey effort, multiple precipitation events occurred, totaling approximately 1.71 inches of rainfall (NOAA, NWS 2024). The rainfall observed during the field surveys was relatively minor and did not influence the results of the delineation.

3.2 Hydrology

The southern portion of the BSA near Little Rock Wash is located within the Little Rock Wash watershed (Hydrologic Unit Code [HUC] 1809020611), and the northern portion of the BSA near the California Aqueduct and Lake Palmdale is within the Lake Palmdale – Piute Ponds watershed (HUC 1809020615) (USGS 2024b) (Appendix A: Figure 4a). Littlerock Creek originates in the upper slopes of the San Gabriel Mountains to the southeast of the BSA and flows into Littlerock Reservoir where the creek is dammed. South of the Littlerock Reservoir, Littlerock Creek turns into Little Rock Wash, which flows adjacent to the Ditch in the BSA near Cheseboro Road. The NHD maps Little Rock Wash as an intermittent stream (USGS 2024b), and the NWI maps Little Rock Wash as a palustrine freshwater forested/shrub wetland (PFOA) and riverine intermittent streambed (RS4BC) in the BSA (USFWS 2024) (Appendix A: Figure 4d).

The above-ground portion of the Ditch, which is the main subject of this report, begins immediately north of the Littlerock Reservoir where surface flows are supplied, and meanders in a northwesterly direction to its terminus at Lake Palmdale. The Ditch is mapped as a canal/ditch by the NHD (USGS 2024b) and as a riverine, intermittent, streambed that is seasonally flooded and excavated (RS4BCx) by the NWI (USFWS 2024) (Appendix A: Figure 4b to Figure 4d). Lake Palmdale is mapped as a lake/pond by the NHD (USGS 2024b) and as a lacustrine, limnetic, diked/impounded lake with an unconsolidated bottom (L1UBHh) by the NWI (USFWS 2024) (Appendix A: Figure 4b).

Lake Palmdale covers approximately 234 acres and receives a majority of its water inputs from the Ditch (USFWS 2024; USGS 2024b). Lake Palmdale is a manmade lake originally constructed for water supply and storage and currently also receives water deliveries from the California State Water

Project under DWR. Although Lake Palmdale does not have a downstream surface connection with the lower Antelope Valley watershed (i.e., isolated), past approved jurisdictional determinations (SPL-2004-00063-AOA, SPL-2004-00073-KW, 2009-00634-PHT) have demonstrated a potential nexus to commerce (i.e., water) through navigation and surface-water-related recreation (i.e., boating); therefore, Lake Palmdale is considered to be a TNW.

The California Aqueduct, which crosses the central portion of the BSA, is mapped as a canal/ditch by the NHD (USGS 2024b), and as a riverine, lower perennial, excavated drainage with an unconsolidated bottom (R2UBHx) by the NWI (USFWS 2024).

In addition to the Ditch, Lake Palmdale, Little Rock Wash, and the California Aqueduct, there are multiple unnamed ephemeral drainages mapped by the NWI and NHD and multiple freshwater emergent wetlands mapped by the NWI in the BSA (USGS 2024b, USFWS 2024). The mapping presented in the NHD and NWI provide useful context but are not a completely accurate depiction of current conditions or extent of aquatic features in the BSA (Appendix A: Figure 4b to Figure 4d).

3.3 Vegetation Communities and Land Covers

The Biological Resources Assessment (BRA) performed for the Project identified 23 natural vegetation communities (alliances and associations), two semi-natural communities, and five land cover types within the BSA. Descriptions of vegetation communities and other land cover types are provided below and shown in Table 3 and Figure 5a through Figure 5l in Appendix A. Included in the description of each association is the Global and State conservation status ranking. Communities dominated by non-native species are considered semi-natural alliances and have no Global and State rankings (ranking denoted as GNA SNA).

Table 3 Summary of Vegetation and Land Cover Types in the BSA[1]

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank
Natural Communities		
Arroyo Willow Thickets Shrubland Alliance	–	G4S4
Arroyo Willow Thickets Shrubland Association	**<0.01**	**G4S4**
Baltic and Mexican Rush Marshes Herbaceous Alliance	–	G5S4
Baltic Rush Marshes Herbaceous Association	1.81	Unranked
Big Sagebrush Scrub Shrubland Alliance	–	G5S5
Big Sagebrush Scrub Shrubland Association	50.79	G5S5
Big Sagebrush – California Buckwheat Scrub Shrubland Association	0.47	Unranked
Big Sagebrush – Rubber Rabbitbrush Scrub Shrubland Association	33.74	Unranked
Brittle Bush Scrub Shrubland Alliance	–	G5S4
Brittle Bush Scrub Shrubland Association	8.20	G5S4
California Buckwheat Scrub Shrubland Alliance	–	G5S5
California Buckwheat Scrub Shrubland Association	27.70	G5S5
California Buckwheat – Brittle Bush Scrub Shrubland Association	11.95	Unranked
California Juniper Woodland Alliance	–	G4S4
California Juniper Woodland/California Buckwheat – California Sage Scrub Association	139.34	Unranked

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank
California Juniper Woodland/California Buckwheat – California Sage Scrub Association (Disturbed)	1.77	Unranked
California Sycamore Woodland Alliance	–	**G3S3**
California Sycamore – Red Willow/Arroyo Willow – Mulefat Scrub Association	**6.10**	**G3S3**
Cattail Marshes Herbaceous Alliance	–	G5S5
Cattail Marshes Herbaceous Association	0.22	Unranked
Creosote Bush Scrub Shrubland Alliance	–	G5S5
Creosote Bush Scrub Shrubland Association	2.51	G5S5
Fiddleneck – Phacelia Fields Herbaceous Alliance	–	G5S5
Fiddleneck Fields Herbaceous Association	0.25	G4S4
Fourwing Saltbush Scrub Shrubland Alliance	–	G5S4
Fourwing Saltbush Scrub Shrubland Association	1.40	G5
Fremont Cottonwood Forest and Woodland Alliance	–	**G4S3**
Fremont Cottonwood Woodland Association	**7.87**	**G2Q**
Goodding's Willow – Red Willow Riparian Woodland and Forest Alliance	–	**G4S3**
Goodding's Willow – Red Willow Riparian Woodland Association	**1.61**	**GNR**
Joshua Tree Woodland Alliance	–	**G4S3**
Western Joshua Tree/California Juniper/Nevada Ephedra Woodland Association	**7.20**	**G3S3**
Mulefat Thickets Shrubland Alliance	–	G5S4
Mulefat Thickets Shrubland Association	0.23	G5S5
Nevada Joint-Fir – Anderson's Boxthorn – Spiny Hop Sage Scrub Shrubland Alliance	–	G5S3S4
Nevada Joint-Fir – Anderson Boxthorn Shrubland Association	0.44	Unranked
Rubber Rabbitbrush Scrub Shrubland Alliance	–	G5S5
Rubber Rabbitbrush Scrub Shrubland Association	34.51	G5S5
Sandbar Willow Thickets Shrubland Alliance	–	G5S4
Sandbar Willow / Mesic Graminoids Thickets Shrubland Association	0.12	Unranked
Tucker Oak Chaparral Shrubland Alliance	–	G4S4
Tucker Oak Chaparral Shrubland Association	0.26	G4S4
Semi-Natural Communities		
Red Brome or Mediterranean Grass Grasslands Herbaceous Semi-Natural Alliance	–	GNASNA
Red Brome Grassland Herbaceous Semi-Natural Association	0.04	GNASNA
Tournefort's Mustard and Other Ruderal Desert Forb Patches Provisional Herbaceous Semi-Natural Alliance	–	GNR
Tournefort's Mustard Patches Herbaceous Semi-Natural Association	0.04	GNASNA
Other Land Cover		
Developed/Disturbed	52.46	N/A
Non-Native Woodland	0.25	N/A
Open Water	2.99	N/A

Vegetation Community or Land Cover Type	Approximate Acreage[2]	Global and State Rank
Palmdale Ditch	5.10	N/A
Riverwash	0.11	N/A
Total	**399.49**	**N/A**

[1] Vegetation community ranks are sourced from CDFW (2023a). Associations are indicated in *italics*. CDFW sensitive natural communities are indicated in **bold**.

[2] Acreages are rounded from GIS calculations

G2 – Imperiled. At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

G3 – Vulnerable. At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

G4 – Apparently Secure. At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

G5 – Secure. At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.

Q – Questionable taxonomy that may reduce conservation priority.

GNA SNA – Not applicable; community is not a suitable target for conservation.

GNR -- Unranked — Global rank not yet assessed.

S3 – Vulnerable. At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 – Apparently Secure. At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 – Secure. At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

N/A – Not a vegetation community

3.3.1 Natural Vegetation Communities

Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance)

Arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance) commonly occur along stream banks and benches, slope seeps, and drainages between sea level and 7,120 feet (2,170 meters) amsl (Sawyer et al. 2009). This native vegetation community is characterized by having arroyo willow (*Salix lasiolepis*) as dominant in the shrub canopy (greater than 50 percent relative cover). In the BSA, the alliance is represented by a single association, described below.

Arroyo Willow Thickets (Salix lasiolepis Shrubland Association)

In the BSA, this community covers less than 0.01 acre. The community occurs in a small cluster along the Ditch near an underground culvert, east of Cheseboro Road in the southern extent of the BSA. This area is surrounded by rubber rabbitbrush scrub (*Ericameria nauseosa* Shrubland Alliance) and adjacent mulefat (*Baccharis salicifolia*) thickets. This vegetation community (ranked G4S4) is a CDFW sensitive natural community (CDFW 2023).

Baltic and Mexican Rush Marshes (*Juncus balticus, mexicanus* Herbaceous Alliance)

This alliance is defined by the dominance of Baltic rush (*Juncus balticus*) or Mexican rush (*Juncus mexicanus*) in the herbaceous layer. It is typically found in seasonally saturated soils on flats, depressions, or gentle slopes including in stock ponds, minor depressions, wet meadows, and seeps

near the coast or farther inland, between sea level and 5,249 feet (1,600 meters), where soils are clayey or silty alluvium. Emergent shrubs, including mulefat and California blackberry (*Rubus ursinus*), may be present at low cover.

Baltic Rush Marshes (Juncus balticus Herbaceous Association)

In the BSA, this association covers approximately 1.81 acres. The association was observed within small wetland seep areas, drainages adjacent to the Ditch, and in habitat occurring between the California Aqueduct and Sierra Highway. Baltic rush was dominant in the herbaceous layer, with clustered field sedge (*Carex praegracilis*), other emergent facultative vegetation, and willow (*Salix* spp.) trees at low cover. The association is surrounded by rubber rabbitbrush (*Ericameria nauseosa*), big sagebrush scrub (*Artemisia tridentata* Shrubland Alliance), and California juniper woodland (*Juniperus californica* Woodland Alliance). This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Big Sagebrush Scrub (*Artemisia tridentata* Shrubland Alliance)

Big sagebrush scrub is typically found within plains, alluvial fans, bajadas, pediments, lower slopes, valley bottoms, hills, ridges, seasonal and perennial stream channels, and dry washes between 984 and 9,840 feet (30 to 3,000 meters) amsl. Big sagebrush (*Artemisia tridentata*) constitutes at least two percent absolute cover in the shrub layer with no other single species with greater cover. Vegetation reaches approximately 6.5 feet (two meters) in height. The alliance forms large, continuous stands on mid-elevation mountain slopes and foothills. Locations are variable and range from flats to steep slopes to ridgetops with deep to shallow rocky soil (Sawyer et al. 2009). In the BSA, the alliance is represented by three associations, described below.

Big Sagebrush Scrub (Artemisia tridentata Shrubland Association)

In the BSA, this is a common association covering approximately 50.79 acres. It is found along the edges of the Ditch throughout the BSA , but increasingly evident from Pearblossom Highway towards Littlerock Reservoir.

Big sagebrush was dominant in the shrub layer, with a diverse array of upland scrub species comprised of rubber rabbitbrush, California buckwheat (*Erioginum fasciculatum*), hairy yerba santa (*Eriodictyon trichocalyx*), brittle bush (*Encelia farinosa),* wild tarragon (*Artemisia dracunculus)*, Nevada ephedra (*Ephedra nevadensis*) and chaparral yucca (*Hesperoyucca whipplei*), with emergent California junipers (*Juniperus californica*) and western Joshua trees (*Yucca brevifolia*) and understories of herbaceous species such as fiddlenecks (*Amsinckia* spp*.)* and nonnative annual grasses and forbs such as bromes (*Bromus* spp.) and mustards *(Brassica* spp.). Approximately 0.13 acre of disturbed big sagebrush scrub occurs within the BSA along the east edge of the southernmost extent of the Ditch.

Throughout the BSA, the big sagebrush scrub shrubland association is crossed by several unpaved off-highway vehicle (OHV) and dirt bike trails. This vegetation community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023).

Big Sagebrush – California Buckwheat Scrub (Artemisia tridentata - Eriogonum fasciculatum Shrubland Association)

In the BSA, this association covers approximately 0.47 acre. It is located along the Ditch and surrounded by dense California juniper woodland between Mt. Emma Road and 47th Street East. Big

sagebrush and California buckwheat are dominant in the shrub layer with emergent western Joshua trees and chapparal yucca. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Big Sagebrush – Rubber Rabbitbrush Scrub (Artemisia tridentata – Ericameria nauseosa Shrubland Association)

In the BSA, this association covers approximately 33.74 acres. Big sagebrush and rubber rabbitbrush were co-dominant in the shrub layer with associative species including California buckwheat, saltbush (*Atriplex* spp.), and prince's plume (*Stanleya pinnata*). Emergent western Joshua trees and California junipers occurred throughout this association. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Brittle Bush Scrub (*Encelia farinosa* Shrubland Alliance)

Brittle bush scrub (*Encelia farinosa* Shrubland Alliance) is typically found on alluvial fans, bajadas, colluvium, rocky hillsides, and slopes of small washes and rills. Soils are well drained, rocky, and may be covered by desert pavement. This alliance is generally found between 246 and 4,594 feet (74 to 1,400 meters) amsl. Brittle bush scrub is characterized by an open to intermittent shrub canopy and a seasonal herbaceous layer. Brittle bush has over one percent absolute cover and 30 percent relative cover in the shrub layer (Sawyer et al. 2009). In the BSA, the alliance is represented by a single association, described below.

Brittle Bush Scrub (Encelia farinosa Association)

In the BSA, this association covers approximately 8.20 acres and was identified in seven locations, occurring primarily on north-facing foothill slopes in the southern extent of the BSA. Brittle bush, was dominant in the shrub layer, with Nevada ephedra and California buckwheat present in the shrub layer at lower cover. Patches of Acton brittlebush (*Encelia actonii*) were also present. The dense herbaceous layer consisted of fiddlenecks, bromes, and mustards. This vegetation community is ranked G5S4 and is not a CDFW sensitive natural community (CDFW 2023).

California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)

California buckwheat scrub (*Eriogonum fasciculatum* Shrubland Alliance) is characterized by dominant or codominant California buckwheat in cismontane stands. California buckwheat scrub is found in upland slopes; intermittently-flooded arroyos, channels and washes; and rarely-flooded low-gradient deposits. Elevations range from sea level to 3,937 feet (1,200 meters) amsl. Soils are typically coarse, well-drained, and moderately acidic to slightly saline. California buckwheat contributes to at least 50 percent relative cover in the shrub layer (Sawyer et al. 2009). This alliance is represented by two associations in the BSA, described below.

California Buckwheat Scrub (Eriogonum fasciculatum Association)

In the BSA, this association covers approximately 27.70 acres. It is mainly found along the north-facing slopes of the foothills in the southern extent of the BSA from Littlerock Reservoir and Cheseboro Road to Mt. Emma Road, but is distributed throughout the mosaic of upland shrubland communities and associations. California buckwheat scrub was dominant in the scrub layer with Nevada ephedra, brittle bush, narrow leaf goldenbush (*Ericameria linearifolia*), and paperbag bush (*Scutellaria mexicana*) with emergent Stansbury's cliffrose (*Purshia mexicana*), California juniper, chollas (*Cylindropuntia* spp.), chapparal yucca, and western Joshua trees present at low cover. Non-

native grasses and bromes were observed within the herbaceous cover. This community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023).

California Buckwheat – Brittle Bush Scrub (Eriogonum fasciculatum – Encelia farinosa Shrubland Association)

In the BSA, this association covers approximately 11.95 acres. This community is found in dense stands occurring along the north-facing slopes of the foothills in the southern extent of the BSA as it transitions to a more California buckwheat-dominant community leading up to Mt. Emma Road. California buckwheat and brittle bush were codominant in the shrub layer, with common species such as Nevada ephedra, paperbag bush, and snakeweed (*Gutierrezia sarothraei*), and emergent chapparal yucca, California juniper, and western Joshua trees. California aster (*Symphyotrichum chilense*), wild chia (*Salvia columbariae*), fiddlenecks, and cheatgrass (*Bromus tectorum)* were found within the herbaceous cover. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

California Juniper Woodland (*Juniperus californica* Woodland Alliance)

California juniper woodland is characterized by dominant or codominant California juniper in the tree canopy with greater than one percent absolute cover and no other tree species with equal or exceeding cover. California juniper woodland is found on ridges, slopes, valleys, alluvial fans, and valley bottoms. Soils are porous, rocky, coarse, sandy, or silty, and are often very shallow and at elevations from 1,969 to 8,038 feet (600 to 2,450 meters) amsl (Sawyer et al. 2009). This alliance is represented by two associations in the BSA, described below.

California Juniper Woodland/California Buckwheat – California Sage Scrub (Juniperus californica/Eriogonum fasciculatum – Artemisia californica Woodland Association)

In the BSA, this association is the most common, covering approximately 139.34 acres. It is located throughout the BSA, primarily from Mt. Emma Road to the community of Alpine. California juniper, California buckwheat, and big sagebrush were commonly found within the woodland community. Additional upland scrub communities such as rubber rabbitbrush scrub, big sagebrush scrub, and California buckwheat scrub as well as emergent western Joshua trees integrate within this community. A diverse suite of additional associated scrub and chaparral species occur within dense patches of woodland or along the Ditch: chapparal yucca, silver cholla (*Cylindropuntia echinocarpa*), buckwheats (including flat topped buckwheat [*Eriogonum deflexum*] and Wright's buckwheat [*Eriogonum wrightii*]), narrow leaf goldenbush, Stansbury's cliffrose, paperbag bush, Nevada ephedra, deerweed (*Acmispon glaber*), boxthorn (*Lycium* spp.), and beavertail cactus (*Opuntia basilaris)*. Emergent western Joshua trees occur throughout this association. Homogeneous patches of narrow leaf goldenbush, yucca spp., and California buckwheat were observed within the north-facing slopes of dense stands of California juniper woodland that occur from Pearblossom Highway to Sierra Highway. This community contained small patches of homogenous narrow leaf goldenbush, which was also a common understory shrub found within the community.

Washy areas with adjacent drainages provide habitat and soil conditions for species such as panicled willowherb (*Epilobium brachycarpum*), California aster, and red triangle (*Centrostegia thurberi*), among many others. Bromes, mustards, and fiddlenecks are present within the variable herbaceous layer. Throughout the BSA, California juniper woodland is crossed by several unpaved OHV and dirt bike trails and has illegal dumping and trash piles near public access roads and where OHV roads

intersect the association. This community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Disturbed California Juniper Woodland/California Buckwheat – California Sage Scrub (Juniperus californica/Eriogonum fasciculatum – Artemisia californica Woodland Association)

In the BSA, this association covers approximately 1.77 acres. It is located in two isolated areas, one north of Barrel Springs Road near a residential area and one approximately 1,500 feet north of Mt. Emma Road and approximately 800 feet west of Cheseboro Road. Evidence of previous fires, trash dumping, and illegal settlements were evident and contributed to the disturbed nature of this community. This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

California Sycamore Woodland (*Platanus racemosa* Woodland Alliance)

California sycamore woodland alliance is typically found in gullies, intermittent and low-elevation streams, springs, seeps, stream banks, and terraces adjacent to floodplains that are subject to high-intensity flooding and consist of rocky or cobbly alluvium with permanent moisture at depth. Elevations range between 2 and 7,874 feet (1 to 2,400 meters) amsl. California sycamores (*Platanus racemosa*) are dominant or codominant in the tree layer with greater than 30 percent relative cover with coast live oak (*Quercus agrifolia*), willows, or cottonwoods (*Populus* spp.) in a riparian woodland setting. The shrub layer is open to intermittent with the herbaceous layer sparse or grassy (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

California Sycamore – Red Willow/Arroyo Willow – Mulefat Scrub (Platanus racemosa – Salix laevigata/Salix lasiolepis – Baccharis salicifolia Association)

In the BSA, this association covers approximately 6.10 acres. It is located in the southeastern portion of the BSA, west of Littlerock Reservoir and east of the southern terminus of the Ditch. Dense canopies of California sycamore, willows, mulefat thickets, and Fremont cottonwood (*Populus fremontii*) occur within the riparian corridor. Upland scrub communities dominant of rubber rabbitbrush, big sagebrush, and California buckwheat occur in the understory along the rocky and cobbly creek bed riparian woodland community. This vegetation community is ranked G3S3 and is a CDFW sensitive natural community (CDFW 2023).

Cattail Marshes (*Typha* [*angustifolia, domingensis, latifolia*]) Herbaceous Alliance)

This herbaceous alliance is found in semi-permanently flooded freshwater or brackish marshes with clayey or silty soils from sea level to 1,150 feet (350 meters) amsl. The community is dominated by cattails (*Typha* spp.*),* with one or more cattail species having over 50 percent cover in the herbaceous layer (Sawyer et al. 2009). This community is represented by a single association, described below.

Cattail Marshes (Typha [latifolia, angustifolia] Herbaceous Association)

This association covers approximately 0.22 acre and occurs in dispersed areas throughout the BSA within the California sycamore woodland habitat along the eastern side of the southernmost extent of the Ditch and along the outfall of the Ditch along the banks of Lake Palmdale. The dominant

species in this area was narrowleaf cattail (*Typha domingensis*). This vegetation community is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance)

This alliance is typically found in alluvial fans, bajadas, upland slopes, and minor intermittent washes between -250 and 4,265 feet (-76 to 1300 meters) amsl. Soils are well-drained, sometimes with desert pavement. This vegetation community contains an intermittent to open shrub canopy dominated by creosote bush (*Larrea tridentata*) with an open to intermittent herbaceous layer with seasonal annuals or perennial grasses (Sawyer et al. 2009). This alliance type is represented by a single association in the BSA, described below.

Creosote Bush Scrub (Larrea tridentata Shrubland Association)

In the BSA, creosote bush scrub association covers approximately 2.51 acres. It is located north along Barrel Springs Road between 42nd Street East and 40th Street East. Disturbed creosote bush scrub was observed in a single location in the BSA and covers approximately 0.29 acre. This disturbed community is located north along Barrel Springs Road between disturbed and developed housing areas. Creosote bush scrub is ranked G5S5 is not a CDFW sensitive natural community (CDFW 2023).

Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii, tessellata*] – *Phacelia* spp. Herbaceous Alliance)

This alliance is found on upland slopes, broad valleys, ocean bluffs, grazed or recently burned hills, and fallow fields, between sea level and 4,921 feet (1,500 meters) amsl, where soils are well drained and loamy, and they are often subject to high levels of bioturbation. It is defined by the dominance or co-dominance of fiddleneck or phacelia species (*Phacelia* spp.) with other grassland or forb species and low emergent shrub cover. This alliance is represented by a single association in the BSA, described below.

Fiddleneck Fields (Amsinckia menziesii, tessellata Herbaceous Association)

In the BSA, this association covers approximately 0.25 acre within an open, previously disturbed or cleared parcel, located north of Edison Road. It is comprised of fiddleneck, California buckwheat, and an herbaceous cover of non-native grasses. This association is ranked G4S4 and is not a CDFW sensitive natural community (CDFW 2023).

Fourwing Saltbush Scrub (*Atriplex canescens* Shrubland Alliance)

Fourwing saltbush scrub (*Atriplex canescens* Shrubland Alliance) is typically found on playas, old beaches and shores, lake deposits, dissected alluvial fans, rolling hills or channel beds at elevations between -246 and 4,921 feet (-75 to 1,500 meters) amsl. Soils are generally carbonate rich, alkaline, sandy, or sandy clay loams. Fourwing saltbush scrub is characterized by an open to intermittent shrub canopy and a variable herbaceous layer composed of seasonal herbs and non-native grasses. Fourwing saltbush (*Atriplex canescens*) has over two percent absolute cover and over 50 percent relative cover in the shrub layer (Sawyer et al 2009).

Fourwing Saltbush Scrub (Atriplex canescens Shrubland Association)

In the BSA, this association covers approximately 1.40 acre. It is located just south of Mt. Emma Road where the Ditch undergrounds. Fourwing saltbush is dominant in the shrub cover with big sagebrush, rubber rabbitbrush, with the invasive grass cheatgrass present in the herbaceous cover. Disturbed fourwing saltbush scrub covers approximately 0.81 acre; it occurs between residential development and appears to have been disturbed from development and maintenance associated with Barrel Springs Road. This community is adjacent to off-road activity and disturbances associated with OHV travel just south of Mt. Emma Road where the Ditch undergrounds. This association is ranked G5 and is not a CDFW sensitive natural community (CDFW 2023).

Fremont Cottonwood Forest and Woodland (*Populus fremontii* Forest and Woodland Alliance)

This alliance can be found on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, springs, in canyons, alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year. It may be found between sea level and 7,974 feet (2,400 meters) amsl in elevation. The tree canopy is typically continuous to open, the shrub layer intermittent to open, and the herbaceous layer variable. This community is characterized by Fremont cottonwood with at least five percent absolute cover or at least 50 percent relative cover in the tree canopy. Fremont cottonwood may have as low as 30 percent relative cover in the tree canopy when other riparian trees such as willows, walnuts (*Juglans* spp.) or box elder (*Acer negundo*) are present. This alliance is represented by a single association in the BSA, described below.

Fremont Cottonwood Woodland (Populus fremontii Woodland Association)

In the BSA, this association covers approximately 7.87 acres. Dominated by Fremont cottonwood trees, this community consists of groves or clusters of large trees along or adjacent to the Ditch, with some occurring in small drainages or in larger, seasonally-flooded or ponded areas such as the community that occurs south of Barrel Springs Road, between 40th Street East and 42nd Street East, and at the Ditch outfall near Lake Palmdale. These communities are surrounded by upland scrub and shrub vegetation, including California juniper woodlands occurring along the Ditch. Individual trees, including both young and mature cottonwoods, occur along the Ditch. Individual trees were not mapped as part of the reconnaissance survey. This association is ranked G2Q and is a CDFW sensitive natural community (CDFW 2023).

Goodding's Willow – Red Willow Riparian Woodland and Forest (*Salix gooddingii – Salix laevigata* Woodland and Forest Alliance)

The Goodding's willow – red willow riparian woodland and forest community is typically found on terraces along large rivers, in canyons, or along the floodplains of streams, seeps, springs, ditches, lakes, or low-gradient depositions between sea level and 6562 feet (2,000 meters) amsl in elevation. This alliance is characterized by an open to continuous tree canopy, a sparse to continuous shrub layer, and a variable herbaceous layer. Goodding's willow (*Salix gooddingii*) and/or red willow (*Salix laevigata*) are dominant in the tree canopy with over 50 percent relative cover in the tree canopy, or with over 30 percent relative cover when other willows are present. This alliance is represented by a single association in the BSA, described below.

Goodding's Willow – Red Willow Riparian Woodland (Salix gooddingii – Salix laevigata Woodland Association)

In the BSA, this association covers 1.61 acres. The community is found in four locations associated with adjacent small drainages and wetland meadows or seasonally-flooded areas within California juniper woodland and big sagebrush habitats. Goodding's willow and red willow are co-dominant in small thickets or large, canopied trees consisting of mostly mature Goodding's willow. A relatively small, isolated willow thicket occurs along a saturated drainage surrounded by dense California juniper woodland. This small stand was comprised of both red and Goodding's willows with sedges, rushes (*Juncus* spp.) and stinging nettle (*Urtica dioica*). These stands occur between Mt. Emma Road and 47th Street East, between Barrel Springs Road and the California Aqueduct, and between Pearblossom Highway and Sierra Highway. The stands were not immediately adjacent to the Ditch. This vegetation community is ranked GNR and is a CDFW sensitive natural community (CDFW 2023).

Joshua Tree Woodland (*Yucca brevifolia* Woodland Alliance)

Joshua tree woodlands (*Yucca brevifolia* Woodland Alliance) are found on sandy, well-drained soils on desert mesas and slopes from the southern part of the Owens Valley to the Little San Bernardino Mountains and are also scattered in the Antelope Valley north of the San Gabriel and San Bernardino Mountains. These woodlands mostly occur at elevations between 2,460 and 5,906 feet (750 and 1600 meters) amsl (Sawyer et al. 2009). Joshua tree woodlands are defined by the presence of western Joshua tree evenly distributed at cover greater than or equal to one percent. The understory of Joshua tree woodland may be comprised of many types of desert scrub communities: Great Basin sagebrush communities, blackbrush scrub communities, saltbush scrub communities, and creosote bush scrub communities. In some areas, western Joshua trees are found to grow with chaparral species. Western Joshua trees are less than one percent cover on average across the entire BSA; however, one area within the BSA has a western Joshua tree density that exceeds one percent cover. The boundaries of the Joshua tree woodland in the BSA were approximated based on the greater-than-one-percent cover that defines the vegetation community. This alliance is represented by a single association in the BSA, described below.

Western Joshua Tree / California Juniper / Nevada Ephedra Woodland (Yucca brevifolia / Juniperus californica / Ephedra nevadensis Woodland Association)

In the BSA, this association covers approximately 7.20 acres and is found in one location along the Ditch, near the intersection of 47th Street East and Barrel Springs Road. Western Joshua tree was dominant in the tree stratum with mixed California junipers and a shrubby understory of big sagebrush, Nevada ephedra, narrow leaf goldenbush, and a suite of other shrub species that included sugarbush (*Rhus ovata*), buckwheat spp., rubber rabbitbrush, Anderson's boxthorn (*Lycium andersonii*), silver cholla, creosote bush, and Dorr's sage (*Salvia dorrii*). Herbaceous covers included bromes, mustards, cheatgrass, fiddlenecks, and redstem filaree (*Erodium cicutarium*). A washy area and a small natural drainage were noted in the western portion of this community, south of the Ditch along 47th Street East. This vegetation community is ranked G3S3 and is a CDFW sensitive natural community (CDFW 2023).

Mulefat Thickets (*Baccharis salicifolia* Shrubland Alliance)

Mulefat thickets (*Baccharis salicifolia* Shrubland Alliance) are characterized by a moderately open shrub layer, dominated by mulefat where it contributes at least 50 percent relative cover in the shrub layer, or at least 30 percent relative cover in the shrub layer with blue elderberry (*Sambucus*

mexicana). Mulefat thickets are typically found in canyon bottoms, floodplains, irrigation ditches, lake margins, and stream channels within mixed alluvial soils between sea level to 4,101 feet (1,250 meters) amsl in elevation (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

Mulefat Thickets (Baccharis salicifolia Shrubland Association)

In the BSA, this association covers approximately 0.23 acre and is found in four locations: two at the southern portion, north of Littlerock Reservoir, and two within a wetland area north of Mt. Emma Road and west of Cheseboro Road. Specifically, clusters of mulefat thickets were found within the California sycamore woodland habitat near Littlerock Reservoir, along an underground culvert off Cheseboro Road, and within off-shooting wetland drainages within California juniper woodland habitat north of Edison Road. This association is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023).

Nevada Joint-Fir — Anderson's boxthorn — Spiny Hop Sage Scrub (*Ephedra nevadensis —Lycium andersonii — Grayia spinosa* Shrubland Alliance)

Nevada ephedra may be found on dry, open slopes, on ridges, or on breaks with southern-exposed canyons, floodplains, and washes between 3,281 and 5,906 feet (1,000 to 1,800 meters) amsl in elevation. This alliance tends to prefer shallower alluvial soils that are well-drained, gravelly, or rocky. The alliance is characterized by shrubs less than six feet (two meters), open to intermittent canopy, and herbaceous layers open with seasonal annuals (Sawyer et. al. 2009). Nevada ephedra is dominant or co-dominant with greater than two percent absolute cover in the shrub layer. This alliance is represented by a single association in the BSA, described below.

Nevada Joint-Fir – Anderson's Box Thorn Scrub (Ephedra nevadensis – Lycium andersonii Shrubland Association)

In the BSA, this association occurs on a south-facing slope in the southeastern extent and covers approximately 0.44 acre. The association was dominated by Nevada ephedra, Anderson's boxthorn, buckwheat, and yuccas. Due to limited access in this area of the BSA, this vegetation community was observed from a distance with binoculars. Greater detail pertaining to the species composition or cover was not recorded. This association is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Rubber Rabbitbrush Scrub (*Ericameria nauseosa* Shrubland Alliance)

Rubber rabbitbrush scrub occurs in all topographic settings, and especially in disturbed settings. Soils are typically well-drained sands and gravels. This alliance is generally found between sea level and 10,500 feet (3,200 meters) amsl. Rubber rabbitbrush scrub is characterized by an open to intermittent shrub canopy and a sparse herbaceous layer. Rubber rabbitbrush has over two percent absolute cover or more than 25 percent relative cover in the shrub layer (Sawyer et al. 2009). In the BSA, this alliance is represented by a single association, defined below.

Rubber Rabbitbrush Scrub (Ericameria nauseosa Shrubland Association)

This association covers approximately 34.51 acres and is present throughout the BSA. Rubber rabbitbrush is dominant in the shrub layer with big sagebrush, California buckwheat, hairy yerba santa, brittle bush, wild tarragon, narrow leaf goldenbush, box thorn, and scattered emergent California juniper, Stansbury's cliffrose, and western Joshua trees. Fiddlenecks, cheatgrass, and

bromes were present throughout the herbaceous understory. Disturbed rubber rabbitbrush occurs within the BSA and was observed near the outfall of the Ditch into Lake Palmdale. This vegetation community is ranked G5S5 and is not a CDFW sensitive natural community (CDFW 2023).

Sandbar Willow Thickets (*Salix exigua* Shrubland Alliance)

Sandbar willow thickets (*Salix exigua* Shrubland Alliance) are typically found on temporarily-flooded floodplains, depositions along rivers and streams, and at springs between sea level and 8,858 feet (2,700 meters) amsl in elevation. This community is characterized by an intermittent to continuous shrub layer and a variable herbaceous layer. Sandbar willow (*Salix exigua*) has at least 30 percent relative cover in the shrub layer. This alliance is represented by a single association in the BSA, described below.

Sandbar Willow / Mesic Graminoids Thickets (Salix exigua / Mesic graminoids Shrubland Association)

Within the BSA, this association covers approximately 0.12 acre. Scattered sprouts occur along the Ditch in wetland areas and near seeps. A small stand of sandbar willows occurs along the Ditch and is located just north of the California Aqueduct, partially within the Ditch and on DWR property. This association is unranked and is not a CDFW sensitive natural community (CDFW 2023).

Tucker Oak Chaparral (*Quercus john-tuckeri* Shrubland Alliance)

This alliance is defined by the dominance of Tucker oak (*Quercus john-tuckeri*) in the shrub layer. It is found on upper slopes and ridge tops, between 984 and 1,500 feet (300 and 1,500 meters) amsl where soils are well- to extensively-drained over bedrock or colluvium. This alliance is represented by a single association in the BSA, described below.

Tucker Oak Chaparral (Quercus john-tuckeri Shrubland Association)

In the BSA, this association covers approximately 0.26 acre. A small population of Tucker oaks occurs approximately 0.3 mile west of the Littlerock Reservoir access gate in unincorporated Los Angeles County, south of a private access gate and northwest of the Ditch at the edge of the BSA. The area is sloped and west-facing, and the cluster of oak trees was surrounded by California buckwheat scrub, rubber rabbitbrush scrub, and emergent western Joshua trees. This vegetation community is ranked G4S4 and is not a CDFW sensitive natural community (CDFW 2023); however, individual trees that meet certain size and spacing thresholds may be regulated by the Los Angeles County Oak Tree Ordinance (Los Angeles County Code of Ordinances Section 22.174 et seq.) and/or the County's Oak Woodlands Conservation Management Plan (County of Los Angeles 2011) and Woodlands Conservation Management Plan Guide (County of Los Angeles 2014), as discussed in the Project's BRA (Rincon 2024).

3.3.2 Semi-Natural Communities

Red Brome or Mediterranean Grass Grasslands (*Bromus rubens* Herbaceous Semi-Natural Alliance)

Red brome grassland (*Bromus rubens* Herbaceous Semi-Natural Alliance) may be found across various topography settings and soil textures, between 0 and 7,218 feet (0 and 2,200 meters) amsl in elevation. This herbaceous community contains open to continuous herbaceous cover with red brome (*Bromus rubens*) making up greater than 80 percent of the herbaceous layer, and emergent

shrubs may be present at low cover (Sawyer et al. 2009). This alliance is represented by a single association in the BSA, described below.

Red Brome Grasslands (Bromus rubens Herbaceous Semi-Natural Association)

This association covers approximately 0.04 acre along a small portion of the Ditch in the southern extent of the BSA. It is ranked GNASNA due to the predominance of non-native species and is not a CDFW sensitive natural community (CDFW 2023).

Tournefort's Mustard and Other Ruderal Desert Forb Patches (*Brassica tournefortii – Strigosella [Malcolmia] africana* Provisional Herbaceous Semi-Natural Alliance)

This provisional alliance is dominated by Tournefort's mustard (*Brassica tournefortii*), African mustard (*Strigosella* [*Malcolmia*] *africana*), and/or London rocket (*Sisymbrium irio*). It is typically found in alluvial fans, roadsides, sand dunes, lake shorelines, and washes and in disturbed areas, at elevations between 0 and 3,937 feet (0 and 1,200 meters) amsl, where soils are sandy to clay loam. This alliance is represented by a single association in the BSA, described below.

Tournefort's Mustard Patches (Brassica tournefortii Herbaceous Semi-Natural Association)

In the BSA, this association covers approximately 0.04 acre in a disturbed area within a large stand of big sagebrush scrub. Disturbances were likely human-caused (e.g., equipment, offroad activity, dumping). This vegetation community is ranked GNASNA and is not a CDFW sensitive natural community (CDFW 2023).

3.3.3 Other Land Cover

Developed/Disturbed

Developed areas consist of paved and unpaved substrates including roadways, parking areas, buildings, canals, and cultivated ornamental vegetation. Disturbed areas are largely unvegetated, except for cultivated vegetation irrigated and maintained by people as well as weedy species.

Unpaved roads and parking areas are present at the north end of the BSA near Lake Palmdale and near the intersection of Barrel Springs Road and Pearblossom Highway. All disturbed areas along roadways, OHV trails, and areas surrounding the Ditch that had been previously disturbed were mapped. Additional developed/disturbed areas include railroad tracks in the Alpine Springs community, residential developments in the Alpine Springs community and along Barrel Springs Road, lawns, buildings, and the banks/edges of the California Aqueduct. In the BSA, developed/disturbed land cover totals approximately 52.46 acres.

Non-native Woodland

Non-native woodland within the BSA consists of a small area near an abandoned structure southeast of the Littlerock Reservoir access gate in the ANF and covers approximately 0.25 acre. It is comprised of non-native trees such as Arizona cypress (*Hesperocyparis arizonica*), Aleppo pines (*Pinus halepensis*), and tamarisk (*Tamarix* spp.) with a sparse shrubby understory of California buckwheat, fiddlenecks, rubber rabbitbrush, and hairy yerba santa. One old, abandoned

recreational structure and two concrete pits occur within this area. This vegetation community is not recognized as a community represented in the MCV2 (Sawyer et. al 2009).

Open Water

Open water occurs as part of Lake Palmdale where the Ditch outfalls into the lake. It contains patchy cattails along the banks and outfall with denser cattail and riparian woodland vegetation extending beyond the BSA. Several small, ponded areas also occur just east of Barrel Springs Road and the bollard access gate near 42nd Street, associated with an isolated patch of Fremont cottonwood woodland and surrounding California junipers and upland vegetation. This land cover includes approximately 2.99 acres in the BSA.

Palmdale Ditch

The Ditch runs down the middle of the BSA from Littlerock Reservoir to Lake Palmdale. The BSA crosses paved roads at Mt. Emma Road, Cheseboro Road, 47th Steet East, Barrel Springs Road, 40th Street East, Pearblossom Highway, and Sierra Highway and through the unincorporated community of Alpine Springs. In the BSA, the Ditch comprises approximately 5.10 acres.

Riverwash

Riverwash is present within the active channel of Little Rock Wash, adjacent to dense California sycamore woodland habitat along the southeastern portion of the BSA, totaling approximately 0.11 acre. This land cover type consists of sand and cobble that has accumulated in the channels and low terraces in the riverbed. Little to no vegetation is present. Riverwash is a naturally dynamic landform and may shift and change position depending on flood volumes and regularity.

3.4 Soils

According to the USDA, NRCS Web Soil Survey of the Angeles National Forest Area and Antelope Valley Area, California, 16 soil map units are mapped within the BSA (USDA, NRCS 2024a) and are shown in Appendix A: Figure 6a to Figure 6e. Eight soil map units are included on the National Hydric Soils List (USDA, NRCS 2024b), as indicated below in Table 4.

Table 4 Soils in the BSA

Soil Map Units	Hydric Soil[1]?	Acres
Amargosa rocky coarse sandy loam, 9 to 55 percent slopes, eroded	No	12.75
Chino loam	Yes	20.68
Gaviota rocky sandy loam, 15 to 30 percent slopes, eroded	Yes	8.96
Gaviota rocky sandy loam, 30 to 50 percent slopes, eroded	Yes	5.05
Greenfield sandy loam, 2 to 9 percent slopes	Yes	18.51
Greenfield sandy loam, 9 to 15 percent slopes, eroded	Yes	24.82
Hanford coarse sandy loam, 2 to 9 percent slopes	No	39.57
Hanford sandy loam, 2 to 9 percent slopes	No	33.13
Las Posas-Toomes rocky loams, 30 to 50 percent slopes	Yes	1.86
Ramona gravelly sandy loam, 2 to 9 percent slopes	No	11.80
Ramona gravelly sandy loam, 9 to 30 percent slopes	Yes	168.16

Soil Map Units	Hydric Soil[1]?	Acres
Riverwash	Yes	27.74
Terrace escarpments	No	3.53
Trigo family, dry-Lithic Xerorthents, warm complex, 50 to 80 percent slopes	No	12.47
Water	No	0.09
Wyman gravelly loam, 2 to 9 percent slopes	No	10.35

[1] Soils listed on the National Hydric Soils List (USDA, NRCS 2024b).

4 Results: Assessment of Jurisdictional Waters

Based upon the findings of Rincon's jurisdictional delineation, 41 features within the BSA are likely subject to USACE, RWQCB, and/or CDFW jurisdiction. Additionally, there are two features (Potential Wetlands 17 and 18) located on private property that were observed from afar in the field. Biologists were not able to access these two potential wetlands to fully evaluate them. Several non-jurisdictional features were also observed in the BSA, where accessible.

The following sections present the results of the jurisdictional delineation and is organized into the following sections: jurisdictional waters, potentially jurisdictional waters, and non-jurisdictional features, followed by a summary of jurisdictional waters. A characterization summary of observed features that are jurisdictional or potentially jurisdictional is presented in Table 5; non-jurisdictional features are not included in this table and are discussed instead in Section 4.3, *Non-Jurisdictional Features*. Jurisdictional waters and potentially jurisdictional waters are identified on Figure 7a to Figure 7j in Appendix A. Representative photographs of the features observed are included in Appendix C.

4.1 Jurisdictional Waters

A total of 43 potentially jurisdictional resources occur in the BSA, including the Ditch, Lake Palmdale, Little Rock Wash, California Aqueduct, Unnamed Drainages 1 to 20, Wetlands 1 to 16, Potential Wetlands 17 and 18, and Unnamed Pond 1. A characterization summary of each of the jurisdictional waters is presented in Table 5, and detailed descriptions of jurisdictional resources are provided below the table.

Table 5 Characterization Summary of Jurisdictional Waters and Potential Jurisdictional Waters

						Wetland Indicators[1]						
Feature ID	Category	Agency Jurisdiction	Feature Type	Soils	Hydrology	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Top of Bank Width	Top of Bank Height	Ordinary High Water Mark Width	Ordinary High Water Mark Height
Palmdale Ditch	Artificial	USACE, RWQCB, CDFW	Ditch/Canal, Riparian Vegetation, Culvert	Sand, Loam, Clay, Concrete-lined	Intermittent, tributary to Lake Palmdale	–	–	–	5-20 ft	3-8 ft	3-10 ft	1-3 ft
Lake Palmdale	Artificial	USACE, RWQCB, CDFW	Lake, Riparian Vegetation	Sand, Loam, Clay	Perennial, isolated	Dominance Test	Other	A1	0.5-0.8 mi	20-30 ft	0.5-0.8 mi	10-15 ft
Little Rock Wash	Natural	RWQCB, CDFW	Streambed, Riparian Vegetation	Sand, Loam	Intermittent, tributary to Rosamond Lake	–	–	–	130-150 ft	10-15 ft	20-60 ft	3-7 ft
California Aqueduct	Artificial	USACE, RWQCB, CDFW	Ditch/Canal	Concrete-lined	Perennial, tributary to Silverwood Lake	–	–	–	175-185 ft	20-25 ft	105-110 ft	10-15 ft
Unnamed Pond 1	Manipulated	RWQCB, CDFW	Isolated Pond	Sand, Loam, Clay	Perennial, isolated	–	Other	A1	6-80 ft	5-20 ft	2-65 ft	5-10 ft
Unnamed Drainage 1	Natural	CDFW	Streambed, Riparian Vegetation	Sand, Loam	Ephemeral, tributary to Little Rock Wash	–	–	–	15-45 ft	5-15 ft	–	–
Unnamed Drainage 2	Natural	RWQCB, CDFW	Streambed, Riparian Vegetation	Sand, Loam	Ephemeral, tributary to Little Rock Wash	–	–	–	2-20 ft	2-3 ft	2-15 ft	0.5-1 ft
Unnamed Drainage 3	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	5-60 ft	1-3 ft	4 ft	0.5-1 ft
Unnamed Drainage 4	Artificial	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	3 ft	1 ft	1.5 ft	0.5 ft
Unnamed Drainage 5	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	2 ft	1 ft	1 ft	0.5 ft
Unnamed Drainage 6	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	2-10 ft	1 ft	1-1.5 ft	0.5 ft
Unnamed Drainage 7	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	4 ft	1-2 ft	2 ft	0.5 ft
Unnamed Drainage 8	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	18 ft	3-6 ft	8 ft	1-2 ft
Unnamed Drainage 9	Artificial	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	10 ft	3-5 ft	3 ft	1-2 ft
Unnamed Drainage 10	Artificial	RWQCB, CDFW	Ditch/Canal	Concrete-lined	Intermittent, isolated	–	–	–	20 ft	15 ft	10 ft	3 ft
Unnamed Drainage 11	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	5 ft	1-2 ft	2 ft	0.5-1 ft
Unnamed Drainage 12	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	5-6 ft	1-2 ft	2 ft	0.5-1 ft
Unnamed Drainage 13	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	4-5 ft	1-2 ft	2 ft	0.5 ft
Unnamed Drainage 14	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	3 ft	1 ft	1 ft	0.5 ft
Unnamed Drainage 15	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	5 ft	1-2 ft	3 ft	0.5-1 ft
Unnamed Drainage 16	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	4-8 ft	2-4 ft	2-4 ft	0.5-2 ft
Unnamed Drainage 17	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	5 ft	1-2 ft	3 ft	0.5-1 ft
Unnamed Drainage 18	Natural	CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	35-115 ft	2-3 ft	-	-
Unnamed Drainage 19	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, isolated	–	–	–	6 ft	1-2 ft	3 ft	0.5-1 ft
Unnamed Drainage 20	Natural	RWQCB, CDFW	Streambed	Sand, Loam	Ephemeral, tributary to Palmdale Ditch	–	–	–	8-15 ft	2-10 ft	1-3 ft	0.5-1.5 ft
Wetland 1	Natural	RWQCB	Isolated Wetland	Silt, Loam, Clay	Perennial, isolated	Dominance Test	A3	A2, A3, B9	–	–	–	–
Wetland 2	Natural	RWQCB	Isolated Wetland	Silt, Sand, Loam, Clay	Perennial, isolated	Dominance Test	A3	A2, A3	–	–	–	–
Wetland 3	Natural	RWQCB	Isolated Wetland	Sand, Loam	Perennial, isolated	Dominance Test	Other	A2, A3	–	–	–	–

Feature ID	Category	Agency Jurisdiction	Feature Type	Soils	Hydrology	Wetland Indicators[1]			Top of Bank Width	Top of Bank Height	Ordinary High Water Mark Width	Ordinary High Water Mark Height
						Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology				
Wetland 4	Natural	RWQCB	Isolated Wetland	Muck, Sand, Loam, Clay	Perennial, isolated	Dominance Test	A9	A1, A2, A3	–	–	–	–
Wetland 5	Natural	RWQCB	Isolated Wetland	Muck, Sand, Loam, Clay	Perennial, isolated	Dominance Test	A4, A9, F8	A2, A3, B1, B9, C1	–	–	–	–
Wetland 6	Natural	RWQCB, CDFW	Isolated Wetland	Sand, Loam, Clay	Perennial, isolated	Dominance Test	F8	A3, B2, B6, B7, B9	–	–	–	–
Wetland 7	Natural	RWQCB	Isolated Wetland	Loam, Clay	Perennial, isolated	Dominance Test	A4	A2, A3, C1	–	–	–	–
Wetland 8	Natural	RWQCB	Isolated Wetland	Sand, Loam, Clay	Perennial, isolated	Dominance Test	Other	A3	–	–	–	–
Wetland 9	Natural	RWQCB	Isolated Wetland	Sand, Loam, Clay	Perennial, isolated	Dominance Test	A4	A3, B9, C1	–	–	–	–
Wetland 10	Natural	RWQCB	Isolated Wetland	Sand, Loam, Clay	Perennial, isolated	Dominance Test	Other	A2, A3	–	–	–	–
Wetland 11	Natural	RWQCB	Isolated Wetland	Muck, Sand, Loam, Clay	Perennial, isolated	Dominance Test	A9	A1, A2, A3	–	–	–	–
Wetland 12	Natural	RWQCB	Isolated Wetland	Silt, Clay	Perennial, isolated	Dominance Test	F8	B1, B6, B9	–	–	–	–
Wetland 13	Natural	RWQCB	Isolated Wetland	Muck, Silt, Sand, Loam, Clay	Perennial, isolated	Dominance Test	A9	A1 A2, A3	–	–	–	–
Wetland 14	Natural	RWQCB	Isolated Wetland	Loam, Clay	Perennial, isolated	Dominance Test	A9	A2, A3	–	–	–	–
Wetland 15	Natural	RWQCB	Isolated Wetland	Muck, Loam, Clay	Perennial, isolated	Dominance Test	A9	A1, A2, A3	–	–	–	–
Wetland 16	Natural	RWQCB	Isolated Wetland	Muck, Sand, Clay	Perennial, isolated	Dominance Test	A4, A9	A2, A3, C1	–	–	–	–
Potential Wetland 17	Natural	RWQCB	Isolated Wetland	NA/ND	Perennial, isolated	NA/ND	NA/ND	NA/ND	–	–	–	–
Potential Wetland 18	Natural	RWQCB	Isolated Wetland	NA/ND	Perennial, isolated	NA/ND	NA/ND	NA/ND	–	–	–	–

USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife; ft = feet; mi = mile; NA/ND = not accessible, could not be determined as described in Section 2.2, *Field Survey*

Note: Non-jurisdictional features are not included and are discussed instead in Section 4.3, *Non-Jurisdictional Waters*.

[1] Wetland indicators are included for Wetlands 1 to 16 and were collected in accordance with the *Wetlands Delineation Manual* (USACE 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008b). Because Potential Wetlands 17 and 18 were inaccessible, wetland indicators are not provided for these features. Completed wetland determination data forms are available in Appendix D, which describe the indicators observed in greater detail.

Palmdale Ditch

The Ditch, which is the main subject of this report, begins immediately north of Littlerock Reservoir where surface flows are supplied, and meanders in a northwesterly direction for approximately 7.2 miles before reaching its terminus at Lake Palmdale (Appendix A, Figure 7a to Figure 7j). As described in Section 3.2, *Hydrology*, Lake Palmdale is assumed to be a TNW based on past approved jurisdictional determinations (SPL-2004-00063-AOA, SPL-2004-00073-KW, 2009-00634-PHT).

The Ditch extends approximately 35,006 linear feet in the BSA, including both above-ground portions of the ditch as well as culverted areas. The open, above-ground portions of the Ditch include both concrete-lined (Appendix C: Photographs 1 and 2) and earthen-bottomed areas (Appendix C: Photograph 3). The earthen-bottomed portions of the Ditch generally occur where topography is flat, and concrete-lined portions of the Ditch generally occur where topography is more variable and hillier, or where the Ditch occurs next to roadways. The above-ground portions of the Ditch contain banks that range from approximately six to 18 feet wide and three to eight feet deep. Some earthen portions of the Ditch contain a riparian overstory in the form of mature Fremont cottonwood trees along the banks; these trees are likely hydrologically connected to the Ditch (Appendix C: Photograph 3). A single OHWM was identifiable within the Ditch and was defined by a change in average sediment texture, a change in vegetation cover, and an identifiable break in bank slope (Appendix D). The OHWM of the Ditch consists of unvegetated coarse sand, cobble, and/or concrete material, and steep manufactured banks. The OHWM of the Ditch varies from approximately three to ten feet wide and two to four feet deep. Culverted portions of the Ditch occur where the Ditch crosses under roads, infrastructure (e.g., railroads), and hilly topography. Culverts associated with the Ditch include concrete box culverts and circular culverts, which range from approximately three feet wide and three feet tall to 12 feet wide and eight feet tall.

The Ditch is an intermittent system; the Ditch is generally dry for most of the year and contains water primarily during scheduled releases from Littlerock Reservoir. Releases typically occur in the spring and summer months (generally March to July), but may occur in the fall and winter months (i.e., October through February) depending on water availability in Littlerock Reservoir. The Ditch typically flows for 90 days per year following scheduled releases. Some portions of the Ditch contained standing surface water during the field surveys (Appendix C: Photographs 2 and 3); however, the majority of the Ditch was dry during the surveys.

Due to the intermittent flow regime of the Ditch resulting from scheduled releases from Littlerock Reservoir and the presence of standing surface water in some sections of the Ditch, this feature is assumed to be a Relatively Permanent Water (RPW) that flows at least seasonally (i.e., three months out of the year). The bed of the Ditch is entirely unvegetated and consists of fill material (e.g., cobbles, concrete), and biologists did not observe potential presence of wetlands within the Ditch. Therefore, wetlands were determined to be absent in the Ditch.

Based on the field surveys, the Ditch is likely subject to USACE, RWQCB, and CDFW jurisdiction. The Ditch constitutes non-wetland waters potentially subject to the jurisdiction of USACE pursuant to Section 404 of the CWA because the Ditch is an RPW that has direct surface connectivity to a TNW (i.e., Lake Palmdale). The extent of non-wetland waters of the U.S. was delineated to the width of the OHWM of the Ditch. The Ditch also constitutes non-wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA. The limits of RWQCB jurisdiction were determined to be coterminous with USACE jurisdiction. The Ditch potentially constitutes a streambed under the jurisdiction of CDFW pursuant to Sections 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of the banks of the Ditch, or the canopy of

riparian vegetation (i.e., Fremont cottonwood trees) extending beyond the top of bank, whichever is greater.

Lake Palmdale

As described in Section 3.2, *Hydrology*, Lake Palmdale covers approximately 234 acres and receives a majority of its water from the Ditch (USFWS 2024; USGS 2024b). Approximately 1.01 acres of Lake Palmdale is within the BSA. Lake Palmdale is a manmade lake originally constructed for water supply and storage and currently also receives water deliveries from the California State Water Project under DWR. Although Lake Palmdale does not have a downstream surface connection with the lower Antelope Valley watershed (i.e., isolated), past approved jurisdictional determinations (SPL-2004-00063-AOA, SPL-2004-00073-KW, 2009-00634-PHT) have demonstrated a potential nexus to commerce (i.e., water); therefore, Lake Palmdale is considered to be a TNW. Lake Palmdale has and currently does support navigation and substantial surface-water-related recreation with the potential for interstate commerce. The surface-water-related commerce includes recreational boating and fishing, further evidenced by the presence of over 65 docks within the lake perimeter, as well as an adjacent upland boat storage/parking area containing over 150 boating vessels (Google Earth 2024).

Lake Palmdale occurs in the northern portion of the BSA at the terminus of the Ditch. The Ditch enters Lake Palmdale via a four-foot wide, four-foot-tall concrete box culvert underneath a dirt access road (Appendix C: Photograph 5). Lake Palmdale contains well-defined banks, above which are disturbed dirt access roads and parking areas (Appendix C: Photograph 4). Within open water associated with Lake Palmdale, emergent cattails and bulrushes (*Schoenoplectus* spp.) occur in more shallow portions of the lake. In addition, some mature Fremont cottonwood trees occur along the banks of the lake. An OHWM was present within the lake and was defined by the presence of water marks, open water, and a break in bank slope. The top of bank of Lake Palmdale occurs approximately two feet upslope of the OHWM and is defined by a manufactured break in slope that separates upland, disturbed areas from open water associated with the lake. Lake Palmdale exhibited wetland characteristics along the lake margin during the field surveys, including a prevalence of hydrophytic vegetation (i.e., cattails and bulrushes) and wetland hydrology (i.e., standing water). Although sample points were not collected along the lake margin due to steep slopes and unsafe hydrologic conditions, it was conservatively determined that hydric soils were present along the margins of Lake Palmdale due to the presence of surface water and therefore anaerobic soil conditions. Based on this assessment, it was conservatively concluded that wetlands are present along the margins of Lake Palmdale.

Based on the field surveys, Lake Palmdale is likely subject to USACE, RWQCB, and CDFW jurisdiction. Lake Palmdale constitutes wetland and non-wetland waters potentially subject to the jurisdiction of USACE pursuant to Section 404 of the CWA. Non-wetland waters were delineated to the OHWM and open water associated with the lake where hydrophytic vegetation was absent, and wetland waters were delineated to the OHWM in areas where hydrophytic vegetation and open water were present. Lake Palmdale also constitutes wetland and non-wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA. The limits of RWQCB jurisdiction were determined to be coterminous with USACE jurisdiction. Lake Palmdale potentially constitutes a lake under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of the banks of the lake, or the canopy of riparian vegetation (i.e., Fremont cottonwood trees) extending beyond the top of bank, whichever is greater.

Little Rock Wash

Little Rock Wash flows from south to north in the southern portion of the BSA (Appendix A: Figure 7j). Little Rock Wash is an intermittent system that conveys flows from Littlerock Reservoir and Littlerock Dam in a northerly direction for more than 25 miles before terminating at Rosamond Lake, a dry lake in the Antelope Valley. Littlerock Creek contains flowing and/or standing water for most of the year, and may experience periods of drying during summer months or during periods of drought when releases from Littlerock Reservoir do not occur. The bed of the creek is wide and characterized by a single active channel in the central portion of the riverbed with inactive secondary channels above the active channel. Flowing water was present within the active channel in the BSA at the time of the field surveys (Appendix C: Photograph 7).

The top of bank of Little Rock Wash is approximately 120 to 135 feet wide and eight to ten feet deep. The OHWM of Little Rock Wash is approximately 20 to 25 feet wide and three to four feet deep, and the OHWM is defined by a change in average sediment texture, a change in vegetation composition, a clearly defined bed and bank, and a break in the associated bank slope (Appendix D). Riparian woodland vegetation occurs within Little Rock Wash and consists of California sycamore woodland dominated by California sycamore in the tree layer with other riparian tree and shrub species such as Fremont cottonwood, willows, and mulefat present as subdominant species. Riparian herbaceous species are also present in the understory, including cattails and rabbitsfoot grass (*Polypogon monspeliensis*). This vegetation community occurs within and above the banks of the wash.

Due to the intermittent flow regime of Little Rock Wash and surface water observed during the field survey, this feature is determined to be an RPW that flows at least seasonally (i.e., three months out of the year). Little Rock Wash did not exhibit wetland characteristics during the field surveys because it is a linear drainage feature with a well-defined low-flow channel and banks that mostly consisted of large cobble material. Therefore, wetlands were determined to be absent from the wash.

Based on the field surveys, Little Rock Wash is potentially subject to RWQCB and CDFW jurisdiction. Little Rock Wash constitutes non-wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA, which was delineated to the well-defined OHWM of the drainage. Little Rock Wash also potentially constitutes a streambed under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of bank or outer edge of riparian vegetation associated with the wash, whichever is greater. Although the Little Rock Wash is an RPW, it does not flow into a TNW. Little Rock Wash flows directly into Rosamond Lake, which is an isolated, non-TNW based on past approved jurisdictional determinations (SPL-2011-01084- SLP, SPL-2012-00214-SLP). Therefore, Little Rock Wash is not anticipated to be regulated by USACE.

California Aqueduct

The California Aqueduct flows from west to east through the northern portion of the BSA. The California Aqueduct is an entirely concrete-lined drainage feature that transports water throughout the state of California. The California Aqueduct is a critical component of the California State Water Project managed by DWR. The California Aqueduct flows for approximately 2,812 linear feet within the BSA and continues in an easterly direction outside of the BSA through Palmdale and Hesperia, draining into Silverwood Lake, then continues south through San Bernardino, Los Angeles, and

Riverside County. The California Aqueduct eventually drains into its terminus at Lake Perris, a TNW, in Riverside County.

Within the BSA, the California Aqueduct contains well-defined concrete banks that are approximately 175 to 185 feet wide and 20 to 25 feet deep (Appendix C: Photograph 8). The OHWM of the California Aqueduct is approximately 105 to 110 feet wide and ten to 15 feet deep, and the OHWM is defined by the presence of open water and water staining along the concrete side-walls. Due to the perennial flow regime of the California Aqueduct, this feature is determined to be an RPW. Because the California Aqueduct is fully concrete-lined and unvegetated, wetlands were determined to be absent from the aqueduct.

Based on the field surveys, the California Aqueduct is likely subject to USACE, RWQCB, and CDFW jurisdiction. The California Aqueduct constitutes non-wetland waters potentially subject to the jurisdiction of USACE pursuant to Section 404 of the CWA because the aqueduct is an RPW that has direct surface connectivity to a TNW (Lake Perris). The extent of non-wetland waters of the U.S. was delineated to the width of the OHWM of the aqueduct. The California Aqueduct also constitutes non-wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA. The limits of RWQCB jurisdiction were determined to be coterminous with USACE jurisdiction. The aqueduct potentially constitutes a streambed under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of the well-defined concrete banks of the aqueduct.

Unnamed Pond 1

Unnamed Pond 1 occurs in the central portion of the BSA, south of the intersection between Barrel Springs Road and 42nd Street East (Appendix A: Figure 7f). Unnamed Pond 1 encompasses approximately 0.10 acre within the BSA and is located immediately south of the Ditch. Unnamed Pond 1 appears to be a natural feature; however, the pond shows signs of human manipulation, as evidenced by steeply-cut banks that appear to have been formed by heavy machinery (Appendix C: Photograph 9). Unnamed Pond 1 occurs immediately south of the San Andreas Fault, which runs in a northwest-to-southeast direction parallel to Barrel Springs Road in the BSA. Of important note, the Historic American Engineering Record for Littlerock Dam describes the natural geological phenomena by which underflows from Littlerock Creek were forced to the surface by the San Andreas Fault, thereby providing consistent sources of water for farmers in the area in the early 1900s (U.S. Department of the Interior 1981).

Within open water associated with Unnamed Pond 1, emergent cattails occur in shallower portions of the pond. In addition, some mature Fremont cottonwood trees occur within the banks of the pond. An OHWM was present within the pond and was defined by the presence of water marks, open water, and a break in bank slope. The top of bank of Unnamed Pond 1 occurs approximately three feet upslope of the OHWM and is defined by a break in slope. Unnamed Pond 1 also includes an artificial, excavated, and linearized northern segment of the feature, which parallels the Ditch for approximately 125 linear feet (Appendix C: Photograph 9). This segment of Unnamed Pond 1 appears to allow excess water from the pond to drain into the Ditch. However, this connection is not relatively permanent and would only occur during severe winter storms when the pond fills to its maximum capacity. Unnamed Pond 1, although primarily unvegetated, contained wetland hydrology indicators (i.e., surface water) as well as anerobic soil conditions that are associated with hydric soils. Therefore, Unnamed Pond 1 meets the definition of a state wetland pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019).

Based on the field surveys, Unnamed Pond 1 is likely subject to RWQCB and CDFW jurisdiction. Unnamed Pond 1 constitutes wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to the Porter-Cologne Water Quality Control Act. The limits of RWQCB jurisdiction were delineated to the OHWM of the pond. Unnamed Pond 1 may constitute a lake under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of the banks of the pond. As Unnamed Pond 1 is an isolated feature that does not contain a relatively permanent connection to the Ditch therefore, this feature is not anticipated to be regulated by USACE pursuant to Section 404 of the CWA.

Unnamed Drainages

A total of 20 unnamed drainages were observed within the BSA (Table 5; Appendix A: Figure 7a to Figure 7I; Appendix C: Photographs 9 through 30, 50). Unnamed drainages in the BSA include 17 natural streambeds (Unnamed Drainages 1 to 3, 5 to 8, and 11 to 20) and three artificial streambeds (Unnamed Drainages 4, 9, and 10). Natural streambeds are characterized as those that largely have natural streambed characteristics, such as morphology, hydrology, vegetation, and natural substrates, including sand, loam, and cobble. For example, the most defined unnamed natural drainage observed within the BSA is Unnamed Drainage 8, which flows in a northeasterly direction immediately north of the California Aqueduct (Appendix C: Photograph 18). Some portions of the natural streambeds may have been manipulated or contain artificial structures, such as culverts under roads, but largely do not contain such elements. Artificial streambeds are characterized as those that have no natural streambed characteristics and are entirely anthropogenically influenced or built, including man-made culverts, ditches/canals, roadside ditches, and/or detention basins. For example, Unnamed Drainage 10 is an unvegetated, concrete-lined drainage ditch that flows in a southeasterly direction immediately south of Lake Palmdale (Appendix C: Photograph 20). This artificial streambed is an entirely manmade feature built to convey surface runoff.

Unnamed Drainages in the BSA are all ephemeral drainage features, with the exception of Unnamed Drainage 10, which is an intermittent drainage feature. The flow regime for these drainages was determined by the field observations of hydrologic indicators, including flowing and/or standing water, as well as vegetation indicators including hydrophytic vegetation. A majority of the unnamed drainages in the BSA are isolated, with the exception of Unnamed Drainages 1 to 4, 8, 13 to 15, and 20. Unnamed Drainages 1 and 2 are tributaries to Little Rock Wash, and Unnamed Drainages 3, 4, 8, 13 to 15, and 20 are tributaries to the Ditch. Although Unnamed Drainages 3, 4, 8, 13 to 15, and 20 are tributaries to the Ditch, these drainages are ephemeral and are not considered RPWs (Table 5).

All of the unnamed drainages in the BSA contained a defined OHWM, bed, and banks, with the exception of Unnamed Drainages 1 and 18, which only contained a defined bed and bank. The OHWMs were defined by a change in sediment texture, change in vegetation species and coverage, and/or a natural break in slope (Appendix D). The OHWM widths ranged from one to 15 feet wide, and the top of bank of these features ranged from two to 115 feet wide. The streambed substrate predominantly consists of sandy to loamy soils within the OHWM and loamy soils above the OHWM (Table 5).

Based on the field surveys, Unnamed Drainages 2 to 17, 19, and 20 are potentially subject to RWQCB and CDFW jurisdiction. These unnamed drainages constitute non-wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to the Porter-Cologne Water Quality Control Act, which was delineated to the OHWM of the drainages. Unnamed Drainages 2 to 17, 19, and 20 also potentially constitute streambeds under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC. The limits of CDFW jurisdiction extend to the top of bank or outer

edge of riparian vegetation associated with the drainages, whichever is greater. Because Unnamed Drainages 1 and 18 did not contain an identifiable OHWM and instead only contained a defined bed and bank, these two drainages likely only constitute CDFW streambeds. Because all of the unnamed drainages are either non-RPWs or are isolated RPWs (i.e., Unnamed Drainage 10), they are not anticipated to be regulated by USACE. Completed OHWM datasheets for all unnamed drainages in the BSA are available in Appendix D and provide a more detailed description of each drainage feature.

Isolated Wetlands

A total of 16 isolated wetlands were observed within the BSA (Table 5; Appendix A: Figure 7a to Figure 7j; Appendix C: Photographs 31 to 49). Isolated wetlands in the BSA include eight palustrine freshwater forested/scrub wetlands (Wetlands 1 to 4, 7 to 9, and 11), seven palustrine freshwater emergent wetlands (Wetlands 6, 10, and 12 to 16), and one lacustrine freshwater forested/scrub wetland (Wetland 5). All of the wetlands observed in the BSA are determined to be isolated because they do not contain surface connectivity to other jurisdictional waters in the BSA (e.g., Lake Palmdale, the Ditch). The isolated wetlands in the BSA occur within close proximity to the San Andreas Fault, which runs in a northwest-to-southeast direction to the north of Barrel Springs Road in the BSA. Of important note, the Historic American Engineering Record for Littlerock Dam describes the natural geological phenomena by which underflows from Littlerock Creek were forced to the surface by the San Andreas Fault, thereby providing consistent sources of water for farmers in the area in the early 1900's (U.S. Department of the Interior 1981).

Palustrine freshwater forested/scrub wetlands are characterized as wetlands without open water that are vegetated with forest and/or scrub vegetation. Forested wetland vegetation includes riparian trees such as Fremont cottonwood and willows, and shrub wetland vegetation includes smaller willows and mulefat, among others. In the palustrine freshwater forested/scrub wetlands, the understory of trees and/or shrubs typically includes herbaceous species such as Baltic rush and clustered field sedge, which are often found in wetlands. Palustrine freshwater emergent wetlands are characterized as wetlands without open water and are vegetated with emergent herbaceous wetland vegetation (e.g., Baltic rush and clustered field sedge) but do not contain an overstory of riparian tree or shrub species (e.g., Fremont cottonwood, willows, mulefat). The single lacustrine forested/scrub wetland in the central portion of the BSA is the largest documented wetland in the BSA and consists of seasonally open/ponded water, emergent herbaceous wetland vegetation, and an overstory of Fremont cottonwoods and willows that occur within the wetland as well as along the banks of the wetland (Appendix C: Photographs 35 and 36).

Wetland sample points were collected within all of the isolated wetlands in the BSA in order to determine their location and extent (Appendix D). Particularly, the wetland sample points were collected in order to document the presence or absence of hydrophytic vegetation, hydric soils, and wetland hydrology. All of the isolated wetlands were dominated by hydrophytic vegetation, including red willow, Goodding's black willow, Fremont cottonwood, athel tamarisk (*Tamarix aphylla*), mulefat, Baltic rush, clustered field sedge, cattails, narrowleaf milkweed (*Asclepias fascicularis*), rabbitsfoot grass, saltgrass (*Distichlis spicata*), Jersey cudweed (*Pseudognaphalium luteoalbum*), and stinging nettle. Hydric soil indicators observed within the isolated wetlands included black histic soils, the presence of muck on the soil surface, hydrogen sulfide odor, and redox depressions as well as naturally problematic hydric soils (Appendix D). Naturally problematic hydric soils occurred in areas where the soils were too saturated with water, thereby preventing the development of redoximorphic features, which requires the periodic wetting and drying of soils.

Additionally, naturally problematic hydric soils occurred in areas where it was determined that wetlands had recently formed and were not developed enough to exhibit hydric soil indicators. Wetland hydrology indicators observed within the isolated wetlands included surface water, a high-water table, saturation, water marks, sediment deposits, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, and hydrogen sulfide odor. Wetland indicators observed at each wetland are summarized in Table 5 and Appendix E.

Based on the field surveys, Wetlands 1 to 16 are potentially subject to RWQCB jurisdiction. These isolated wetlands constitute wetland waters potentially subject to the jurisdiction of the Lahontan RWQCB pursuant to the Porter-Cologne Water Quality Control Act, which was delineated to the extent of the wetlands based on field indicators collected at each wetland sample point. In addition, Wetland 5 also potentially constitutes a lake under the jurisdiction of CDFW pursuant to Section 1600 et seq. of the CFGC because it contained a defined bed and bank and a riparian canopy extending beyond the bank, and appears to function as a seasonal pond. The limits of CDFW jurisdiction extend to the top of bank or outer edge of riparian vegetation associated with Wetland 5, whichever is greater. Because the remainder of the wetlands (Wetlands 1 to 4, 6 to 16) are isolated, do not contain defined bed or banks, and do not function as a lake or pond, they are not anticipated to be regulated by CDFW. Additionally, Wetlands 1 to 16 are not anticipated to be regulated by USACE because they are isolated wetlands that do not contain direct surface connectivity to a TNW. Completed wetland determination datasheets for Wetlands 1 to 16 are available in Appendix D, and wetland indicators observed at each isolated wetland are summarized in Table 5 and Appendix E.

4.2 Potential Jurisdictional Waters

Two potential jurisdictional isolated wetlands may be present as determined by field observations via binoculars from the limits of accessible areas or via the literature review (i.e., aerial imagery, NHD map, or NWI map). These features include Potential Wetlands 17 and 18. These two potential wetlands occur immediately north of the California Aqueduct on inaccessible private property. These features could not be assigned jurisdiction and may be regulated by CDFW and/or RWQCB. These features are not anticipated to be regulated by USACE because they were determined to be isolated features based on observations made from accessible portions of the field as well as the literature review. A summary of these features is presented in Table 6. See Figure 7e in Appendix A for the location of these features.

Table 6 Potential Jurisdictional Wetlands

Feature ID	Hydrology	Portion of Feature with Unknown Jurisdiction
Potential Wetland 17	Ephemeral	Entire
Potential Wetland 18	Ephemeral	Entire

4.3 Non-Jurisdictional Features

Non-jurisdictional features occur throughout the BSA and include roadside ditches, vegetated/unvegetated swales, and erosional features. Non-jurisdictional features did not contain evidence of regular hydrologic activity (e.g., presence of an OHWM or natural streambed characteristics), did not contribute surface flow to TNWs, and did not contain wetland indicators. Therefore, these features were determined to be non-jurisdictional and are not discussed further.

4.4 Summary of Jurisdictional Waters

Defined regulatory limits of the jurisdictional waters and potentially jurisdictional waters within the BSA are summarized in Table 7. All jurisdictional waters are mapped on Figure 7a to Figure 7j in Appendix A. Representative photographs of jurisdictional waters and wetlands are provided in Appendix C.

Table 7 Jurisdictional Summary by Feature

Feature ID	USACE Jurisdiction		RWQCB Jurisdiction		CDFW Jurisdiction		Not Accessible/ Possibly Jurisdictional (acres)	Figure Reference (Appendix A)
	Non-Wetland Waters of the U.S./Culverted Non-Wetland Waters of the U.S. (acres/lin. ft)	Wetland Waters of the U.S. (acres)	Non-Wetland Waters of the State/Culverted Non-Wetland Waters of the State (acres/lin. ft)	Wetland Waters of the State (acres)	Streambed (acres/ lin. ft)	Lake (acres/ lin. ft)		
Palmdale Ditch	5.61/38,387	–	5.61/38,387	–	10.95/38,490	–/–	–	7a-j
Lake Palmdale	0.69/381	0.15	0.69/381	0.15	–/–	1.01/381	–	7b
Little Rock Wash	–/–	–	1.17/1,435	–	4.21/2,359	–/–	–	7j
California Aqueduct	1.81/1,704	–	1.81/1,704	–	3.32/2,812	–/–	–	7d-e
Unnamed Pond 1	–/–	–	–/–	0.08	–/–	0.10/215	–	7f
Unnamed Drainage 1	–/–	–	–/–	–	0.58/466	–/–	–	7i
Unnamed Drainage 2	–/–	–	0.10/447	–	0.14/449	–/–	–	7h
Unnamed Drainage 3	–/–	–	0.11/966	–	0.33/966	–/–	–	7g
Unnamed Drainage 4	–/–	–	<0.01/79	–	0.01/80	–/–	–	7g
Unnamed Drainage 5	–/–	–	<0.01/96	–	<0.01/97	–/–	–	7e
Unnamed Drainage 6	–/–	–	0.04/860	–	0.14/864	–/–	–	7e
Unnamed Drainage 7	–/–	–	0.02/390	–	0.04/390	–/–	–	7e
Unnamed Drainage 8	–/–	–	0.12/898	–	0.24/669	–/–	–	7d-e
Unnamed Drainage 9	–/–	–	0.04/591	–	0.15/591	–/–	–	7c
Unnamed Drainage 10	–/–	–	0.10/441	–	0.20/448	–/–	–	7b
Unnamed Drainage 11	–/–	–	0.02/340	–	0.04/342	–/–	–	7c
Unnamed Drainage 12	–/–	–	0.02/385	–	0.05/385	–/–	–	7c
Unnamed Drainage 13	–/–	–	0.01/210	–	0.02/203	–/–	–	7d
Unnamed Drainage 14	–/–	–	<0.01/213	–	0.01/212	–/–	–	7d
Unnamed Drainage 15	–/–	–	0.02/222	–	0.03/222	–/–	–	7d
Unnamed Drainage 16	–/–	–	0.05/685	–	0.11/629	–/–	–	7d
Unnamed Drainage 17	–/–	–	0.04/687	–	0.09/687	–/–	–	7d
Unnamed Drainage 18	–/–	–	–/–	–	0.85/427	–/–	–	7i
Unnamed Drainage 19	–/–	–	0.03/225	–	0.05/226	–/–	–	7f
Unnamed Drainage 20	–/–	–	0.02/258	–	0.08/258	–/–	–	7d

Feature ID	USACE Jurisdiction		RWQCB Jurisdiction		CDFW Jurisdiction		Not Accessible/ Possibly Jurisdictional (acres)	Figure Reference (Appendix A)
	Non-Wetland Waters of the U.S./Culverted Non-Wetland Waters of the U.S. (acres/lin. ft)	Wetland Waters of the U.S. (acres)	Non-Wetland Waters of the State/Culverted Non-Wetland Waters of the State (acres/lin. ft)	Wetland Waters of the State (acres)	Streambed (acres/ lin. ft)	Lake (acres/ lin. ft)		
Wetland 1	–/–	–	–/–	0.10	–/–	–/–	–	7h
Wetland 2	–/–	–	–/–	0.41	–/–	–/–	–	7h
Wetland 3	–/–	–	–/–	0.01	–/–	–/–	–	7g
Wetland 4	–/–	–	–/–	0.09	–/–	–/–	–	7g
Wetland 5	–/–	–	–/–	2.34	–/–	3.22/2,074	–	7f
Wetland 6	–/–	–	–/–	0.12	–/–	–/–	–	7f
Wetland 7	–/–	–	–/–	0.19	–/–	–/–	–	7f
Wetland 8	–/–	–	–/–	0.21	–/–	–/–	–	7e
Wetland 9	–/–	–	–/–	0.18	–/–	–/–	–	7c
Wetland 10	–/–	–	–/–	0.04	–/–	–/–	–	7c
Wetland 11	–/–	–	–/–	0.07	–/–	–/–	–	7c
Wetland 12	–/–	–	–/–	0.03	–/–	–/–	–	7c
Wetland 13	–/–	–	–/–	0.13	–/–	–/–	–	7c
Wetland 14	–/–	–	–/–	<0.01	–/–	–/–	–	7c
Wetland 15	–/–	–	–/–	0.02	–/–	–/–	–	7d
Wetland 16	–/–	–	–/–	0.96	–/–	–/–	–	7e
Potential Wetland 17	–/–	–	–/–	–	–/–	–/–	0.02	7e
Potential Wetland 18	–/–	–	–/–	–	–/–	–/–	0.14	7e
Total	**8.11/40,472**	**0.15**	**10.02/49,918**	**5.13**	**21.64/52,271**	**4.34/2,670**	**0.16**	–

USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife; lin. ft = linear feet

5 Conclusion and Recommendations

The delineation concluded a minimum of 41 potentially jurisdictional features occur in the BSA, including the Ditch, Lake Palmdale, Little Rock Wash, the California Aqueduct, Unnamed Pond 1, Unnamed Drainages 1 to 20, and Wetlands 1 to 16. In addition, two potentially jurisdictional resources (Potential Wetlands 17 and 18) may also occur, but due to access limitations, jurisdictional boundaries could not be confirmed. The delineated features included natural perennial, intermittent, and ephemeral streams, culverts, a pond, a lake, and isolated wetlands that may be subject to USACE, RWQCB, and/or CDFW jurisdictions. A summary of potential jurisdictional waters identified within the BSA is shown by agency in Table 8.

Table 8 Potential Jurisdictional Waters by Agency within the BSA

Jurisdictional Water Type	Amount (acres)
USACE Jurisdiction	
Non-Wetland Waters of the U.S.	7.60
Culverted Non-Wetland Waters of the U.S.	0.51
Wetland Waters of the U.S.	0.15
Total Waters of the U.S.	8.26
RWQCB Jurisdiction	
Non-Wetland Waters of the State	9.48
Culverted Non-Wetland Waters of the State	0.54
Wetland Waters of the State	5.13
Total Waters of the State	15.15
CDFW Jurisdiction	
CDFW-Jurisdictional Streambed	21.64
CDFW-Jurisdictional Lake	4.34
Total CDFW Jurisdiction	25.98
Potentially Jurisdictional	
Not Accessible	0.16

5.1 USACE Jurisdiction

The Ditch is an intermittent RPW with direct surface connectivity to Lake Palmdale, a TNW in-fact. Therefore, the Ditch and Lake Palmdale are likely non-wetland waters of the U.S. under jurisdiction of USACE pursuant to Section 404 of the CWA. Lake Palmdale also potentially contains wetland waters of the U.S. along the lake margins where emergent hydrophytic vegetation is present. The California Aqueduct is a perennial drainage feature with direct surface connectivity to Lake Perris, a TNW, and is also likely under jurisdiction of USACE as non-wetland waters of the U.S. The remainder of the aquatic resources in the BSA are either ephemeral non-TNWs or are isolated (i.e., do not contain direct surface connectivity) from waters of the U.S. and are therefore not likely to be regulated by USACE. A minimum of approximately 8.26 acres of non-wetland waters of the U.S. are present, including 7.60 acres of non-wetland waters of the U.S., 0.51 acre of culverted non-wetland waters of the U.S., and 0.15 acre of wetland waters of the U.S., and are likely to be regulated by

USACE (Table 8). Detailed acreages of jurisdiction by feature are displayed in Table 7 in Section 4.4, *Summary of Jurisdictional Waters*.

5.2 RWQCB Jurisdiction

Several ephemeral and intermittent drainages (including culverted waters), ditches/canals (including the Ditch, the California Aqueduct, and Unnamed Drainages 9 and 10), ponds/lakes (including Lake Palmdale and Unnamed Pond 1), and 16 isolated wetlands (Wetlands 1 to 16) are likely waters of the State under jurisdiction of the Lahontan RWQCB pursuant to Section 401 of the CWA and Porter-Cologne Water Quality Control Act. A minimum of approximately 15.15 acres of potential waters of the State, including 9.48 acres of non-wetland waters of the State, 0.54 acre of culverted non-wetland waters of the State, and 5.13 acres of wetland waters of the State are present and are likely to be regulated by the Lahontan RWQCB (Table 8). Detailed acreages of jurisdiction by feature are displayed in Table 7 in Section 4.4, *Summary of Jurisdictional Waters*.

Potential Wetlands 17 and 18 have the potential to be waters of the State as determined by field observations via binoculars from the limits of the right-of-way or via the literature review (i.e., aerial imagery, NHD map, or NWI map). However, these features could not be definitively defined as waters of the State due to limited access for evaluation.

5.3 CDFW Jurisdiction

Several ephemeral and intermittent drainages, ditches/canals (including the Ditch, the California Aqueduct, and Unnamed Drainages 9 and 10) are likely CDFW-jurisdictional streambeds pursuant to Section 1600 et. seq. of the CFGC. In addition, multiple ponds/lakes (including Lake Palmdale and Unnamed Pond 1) and one isolated wetland that contained a defined bed and bank (i.e., Wetland 5) are likely CDFW-jurisdictional lakes pursuant to Section 1600 et. seq. of the CFGC. A minimum of approximately 25.98 acres of potential CDFW-jurisdictional areas are present, including 21.64 acres of CDFW-jurisdictional streambed and 4.34 acres of CDFW-jurisdictional lake (Table 8). Detailed acreages of jurisdiction by feature are displayed in Table 7 in Section 4.4, *Summary of Jurisdictional Waters*.

5.4 Recommendations

Where feasible, jurisdictional waters should be considered and avoided during Project design. Based on Rincon's understanding of the Project, the discharge of dredge and fill into waters of the U.S., waters of the State, and CDFW-jurisdictional streambeds is likely to occur, at the very least, from the conversion of the above-ground portions of the Ditch to a buried 48-inch diameter pipeline. Therefore, authorizations from USACE, RWQCB, and CDFW are anticipated. Several jurisdictional waters are located in close proximity to the Ditch where Project activities are anticipated to occur. If ground disturbance is proposed at those locations, it may result in temporary impacts (i.e., temporary excavation or soil disturbance) or permanent impacts (i.e., permanent fill) to waters of the U.S., waters of the State, and/or CDFW-jurisdictional streambeds/lakes.

Should the Project design require impacts to jurisdictional waters, the following permits may be required: USACE Section 404 permit for fill of non-wetland waters of the U.S.; CWA Section 401 Water Quality Certification from the Lahontan RWQCB for impacts to waters of the U.S. and State; and a CDFW Notification of Lake or Streambed Alteration.

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Appendix A

Figures

Figure 1 Regional Location

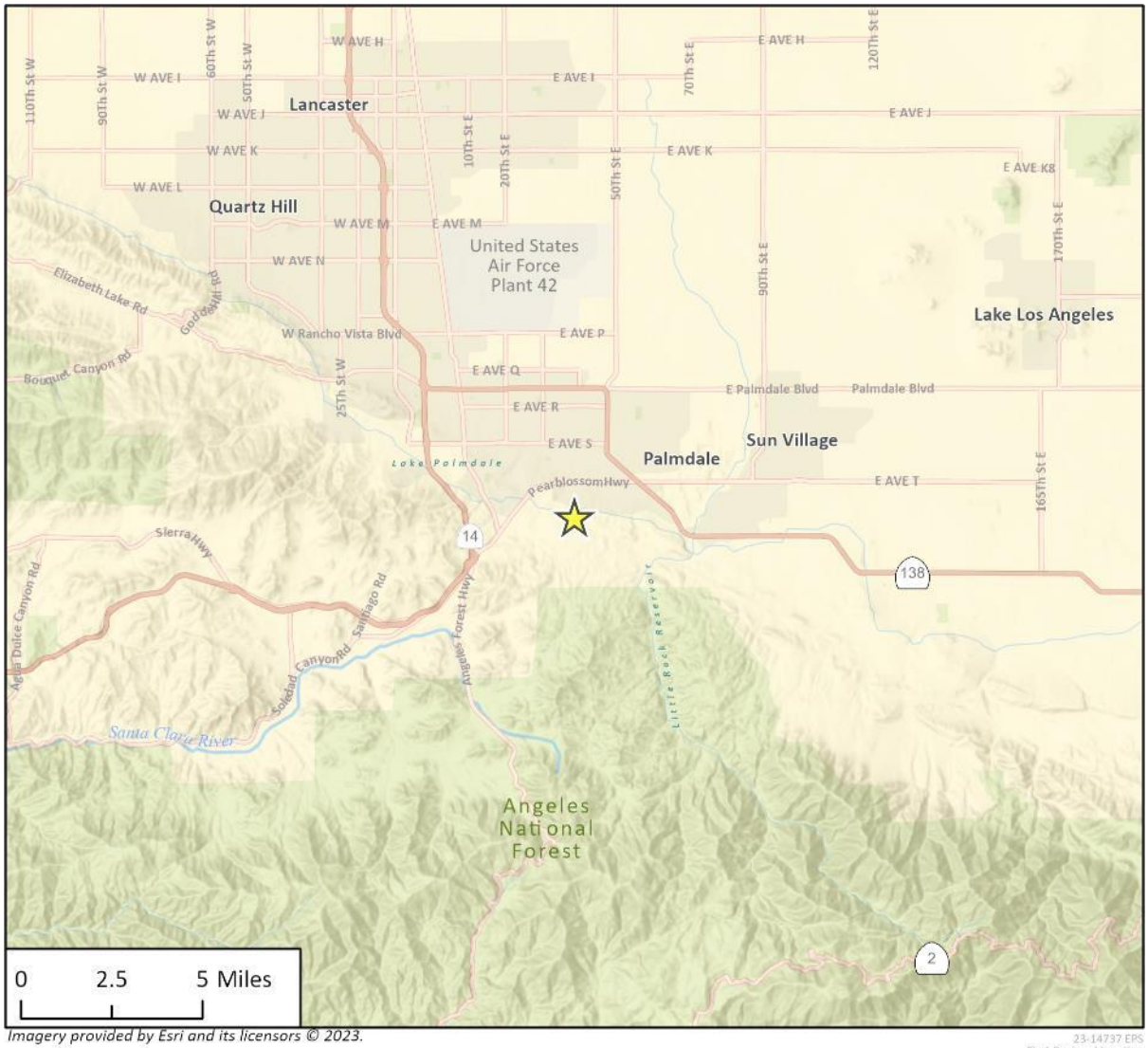

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Fig 1 Regional Location

Project Location

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Figure 2a Project Site Location – Full Extent

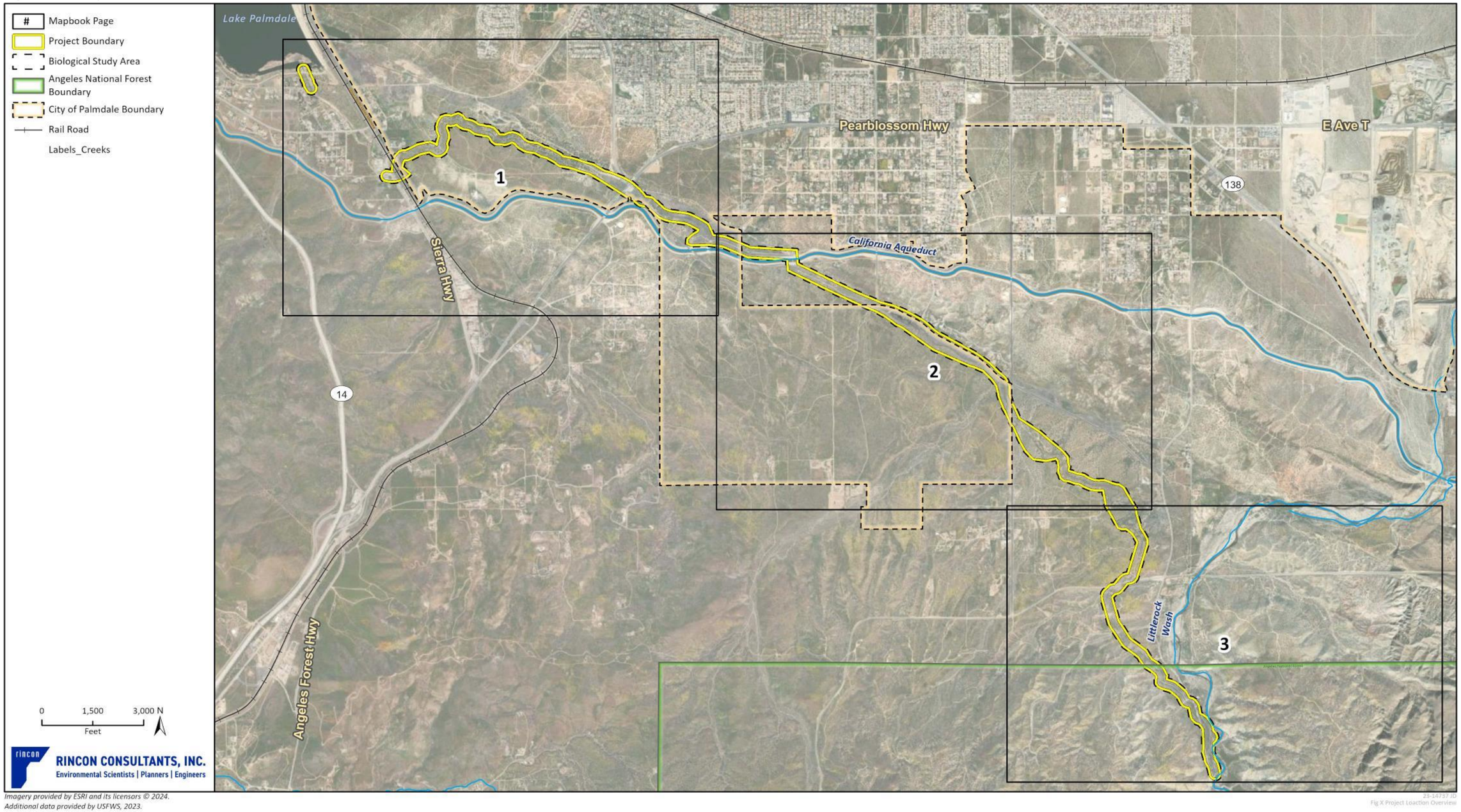
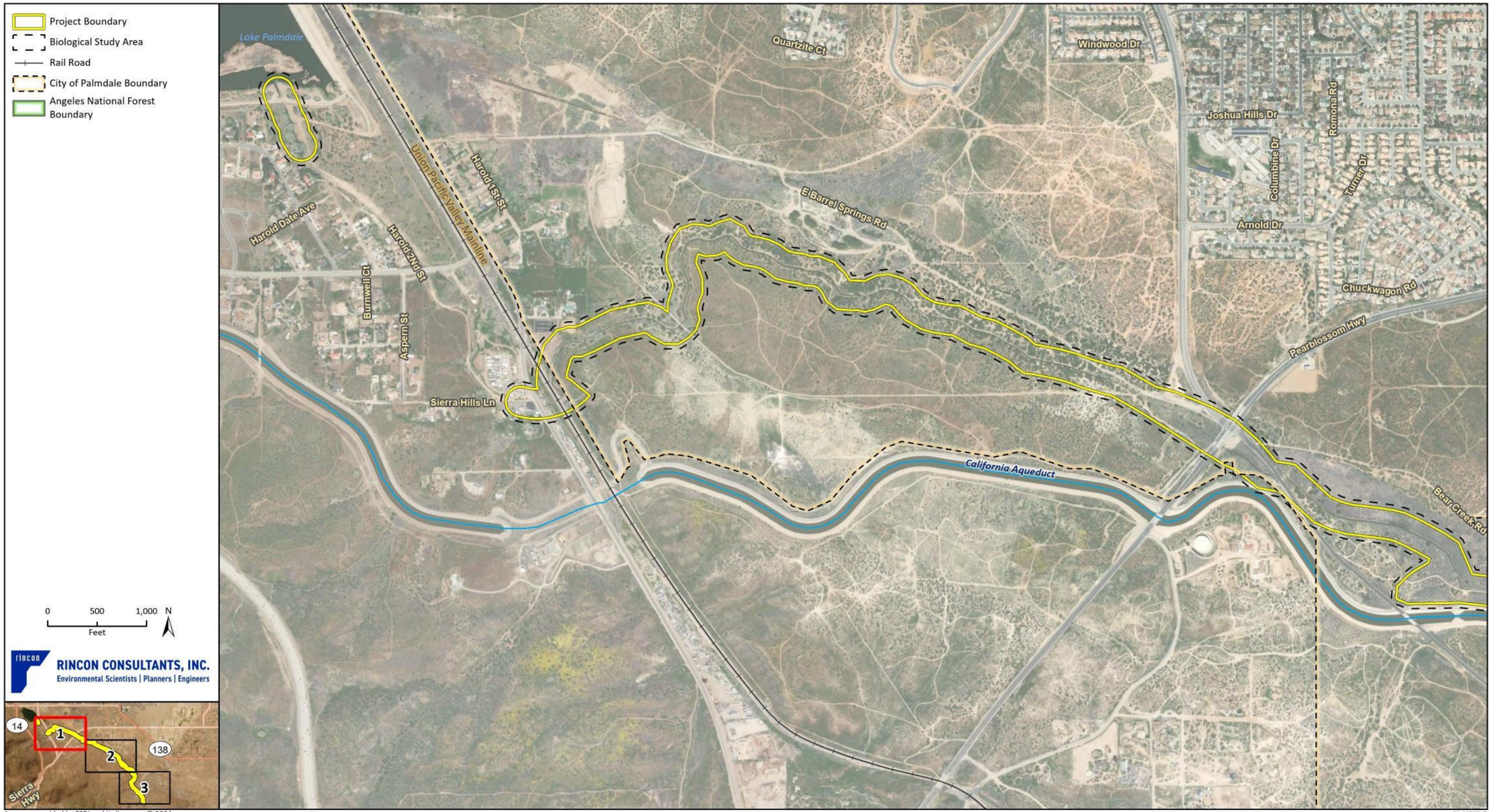


Figure 2b Project Site Location – Northern Extent



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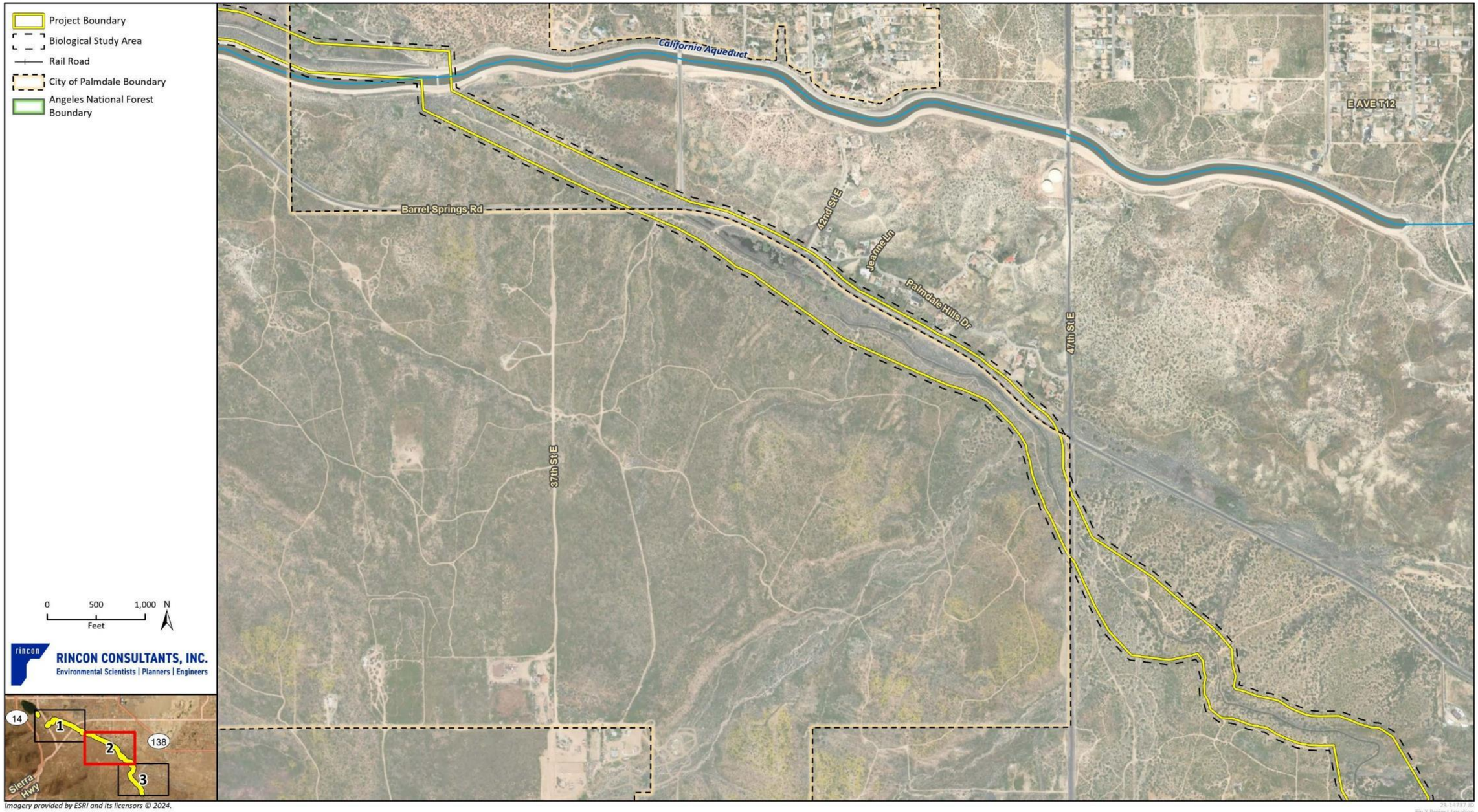

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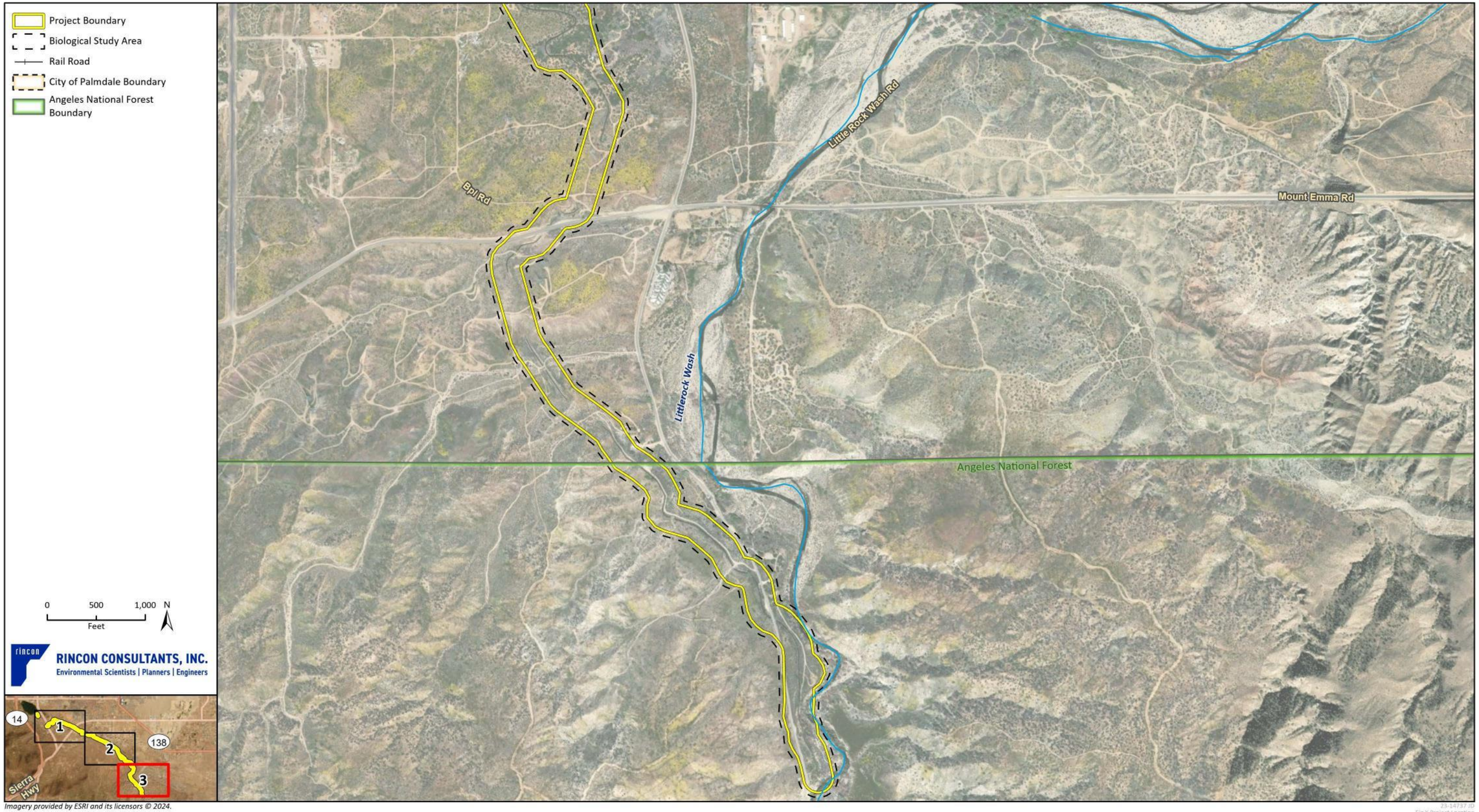
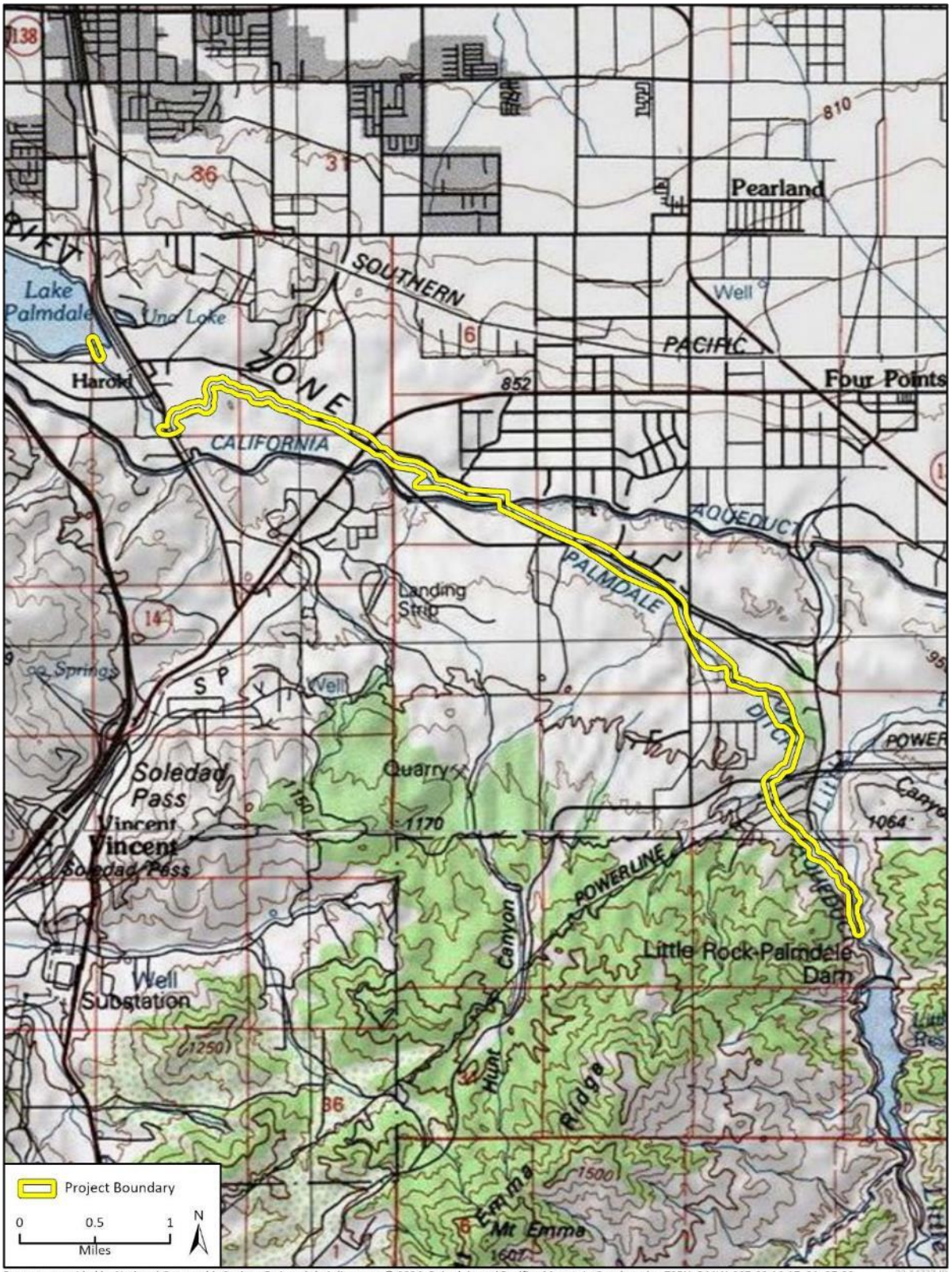


Figure 3 Project Boundary and Topographical Map



Basemap provided by National Geographic Society, Esri, and their licensors © 2024. Palmdale and Pacifico Mountain Quadrangle . T05N, R11W, S07-08,16-17, 21, 27-28 & T05N R12W S01-03, 11-12. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

Figure 4a Watershed and Hydrology of the BSA and Surrounding Area – Overview

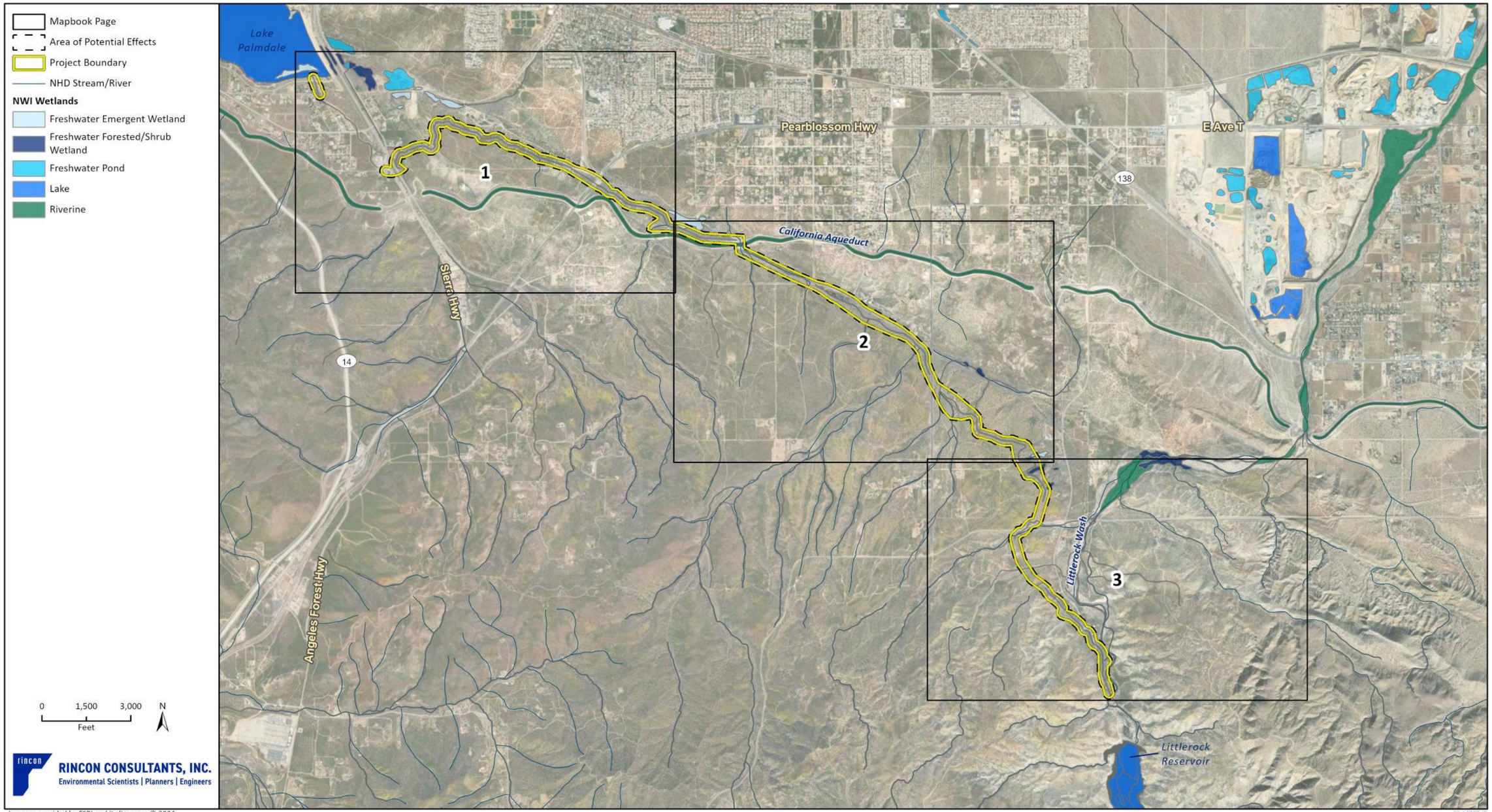


Figure 4b Watershed and Hydrology of the BSA and Surrounding Area – Northern Extent

Figure 4c Watershed and Hydrology of the BSA and Surrounding Area – Central Extent

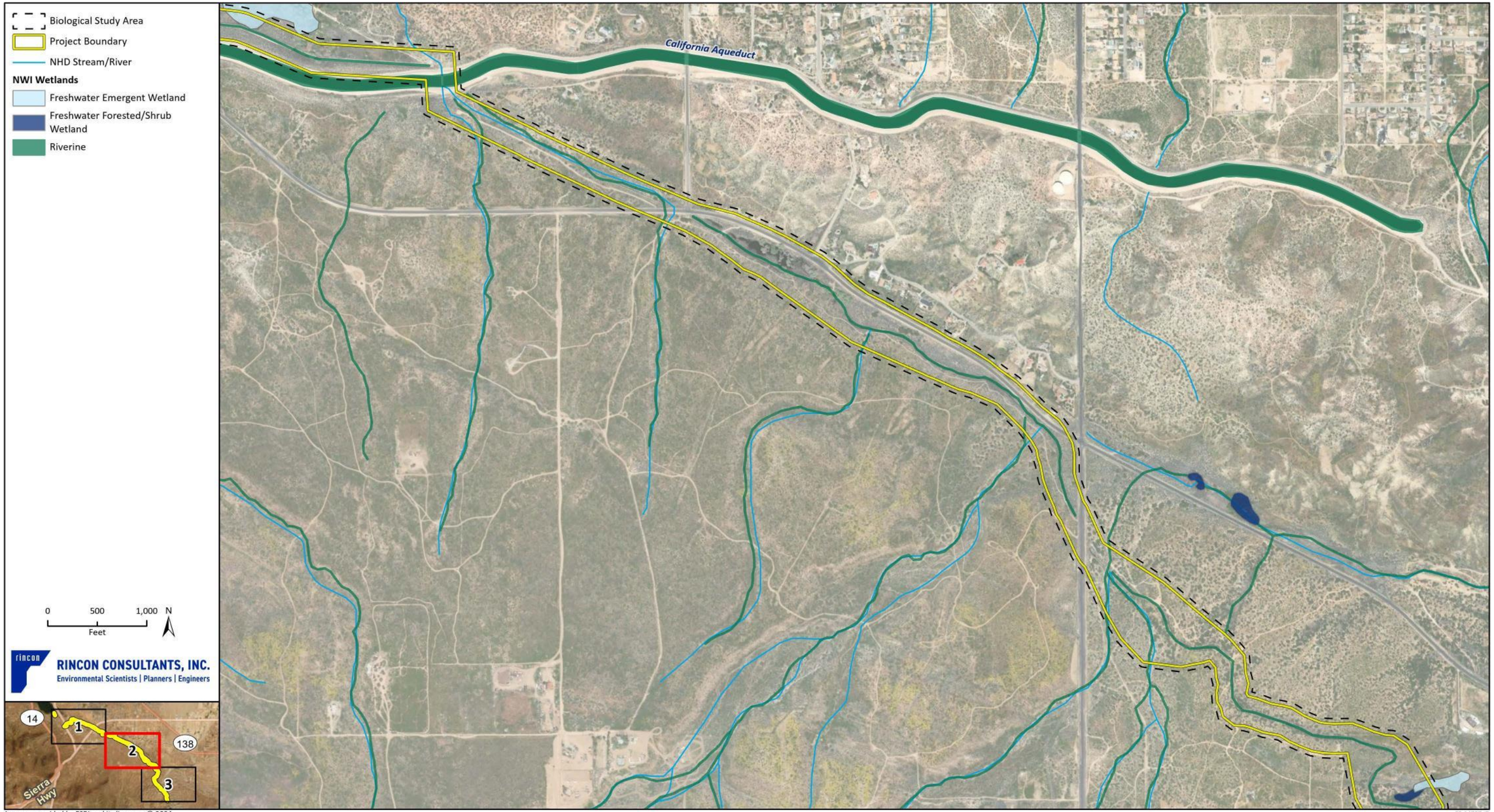


Figure 4d Watershed and Hydrology of the BSA and Surrounding Area – Southern Extent

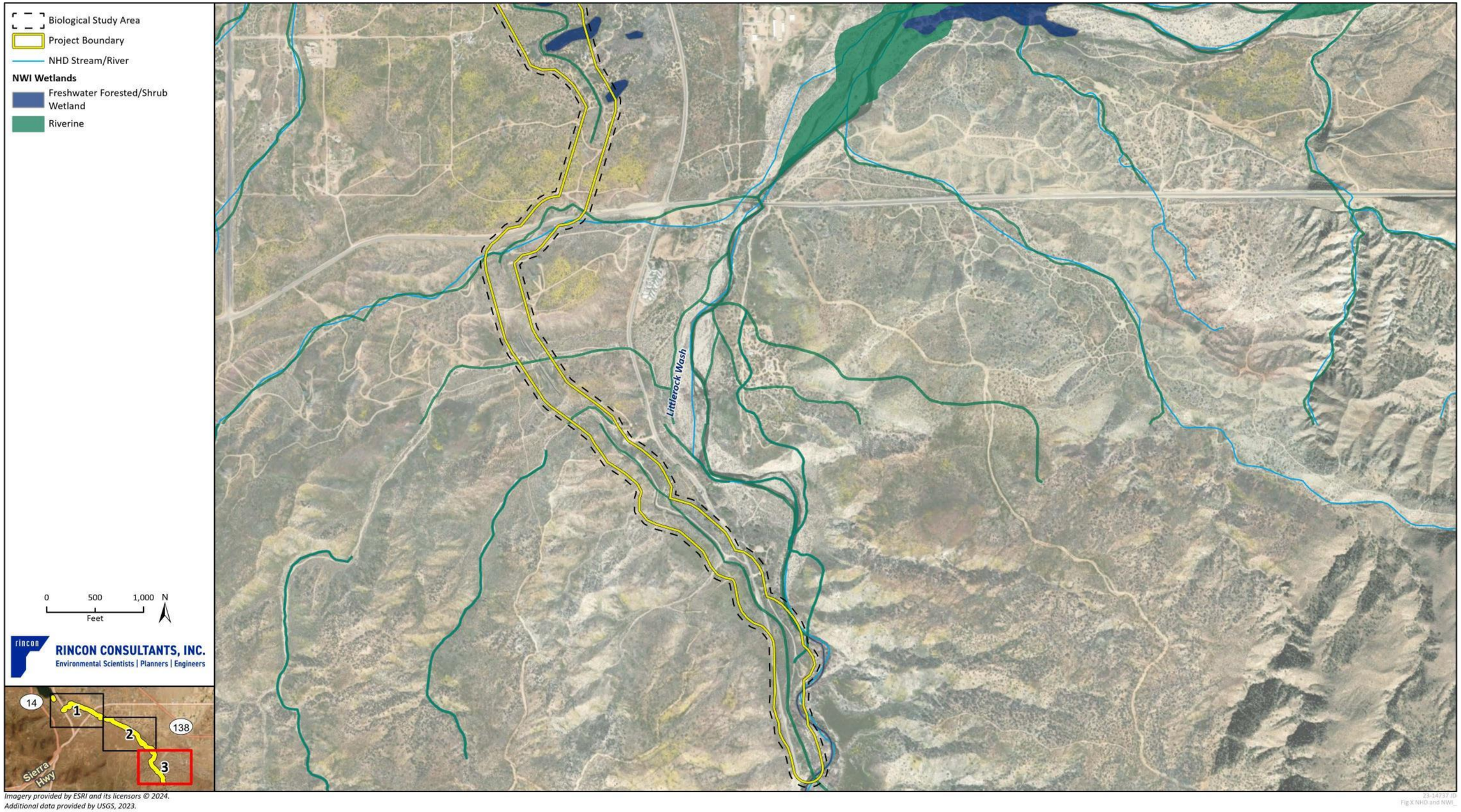


Figure 5a Vegetation Communities and Land Cover – Overview

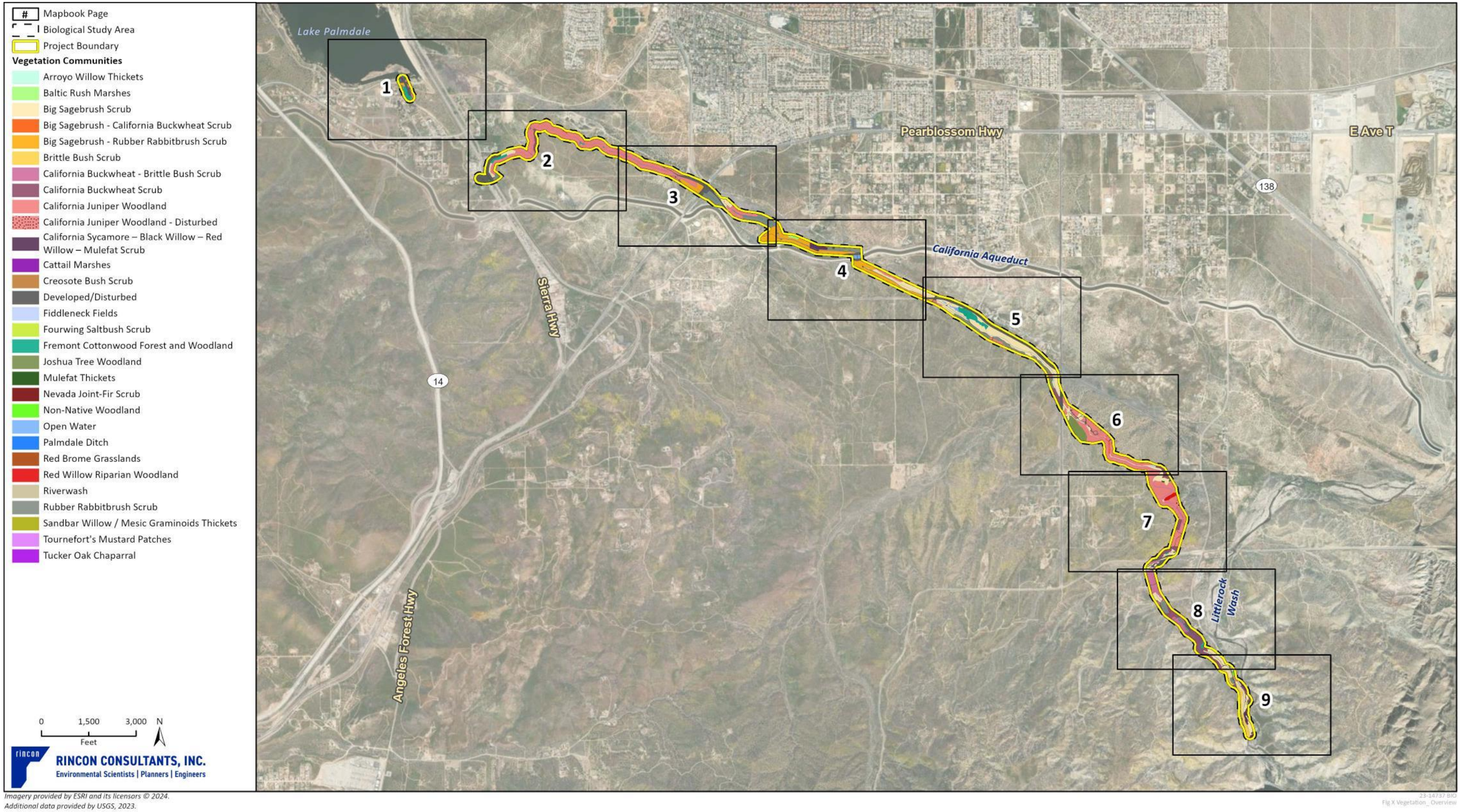


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Fig X Vegetation _ Overview

Figure 5b Vegetation Communities and Land Cover (Map 1 of 11)

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Fig X Vegetation

Figure 5c Vegetation Communities and Land Cover (Map 2 of 11)

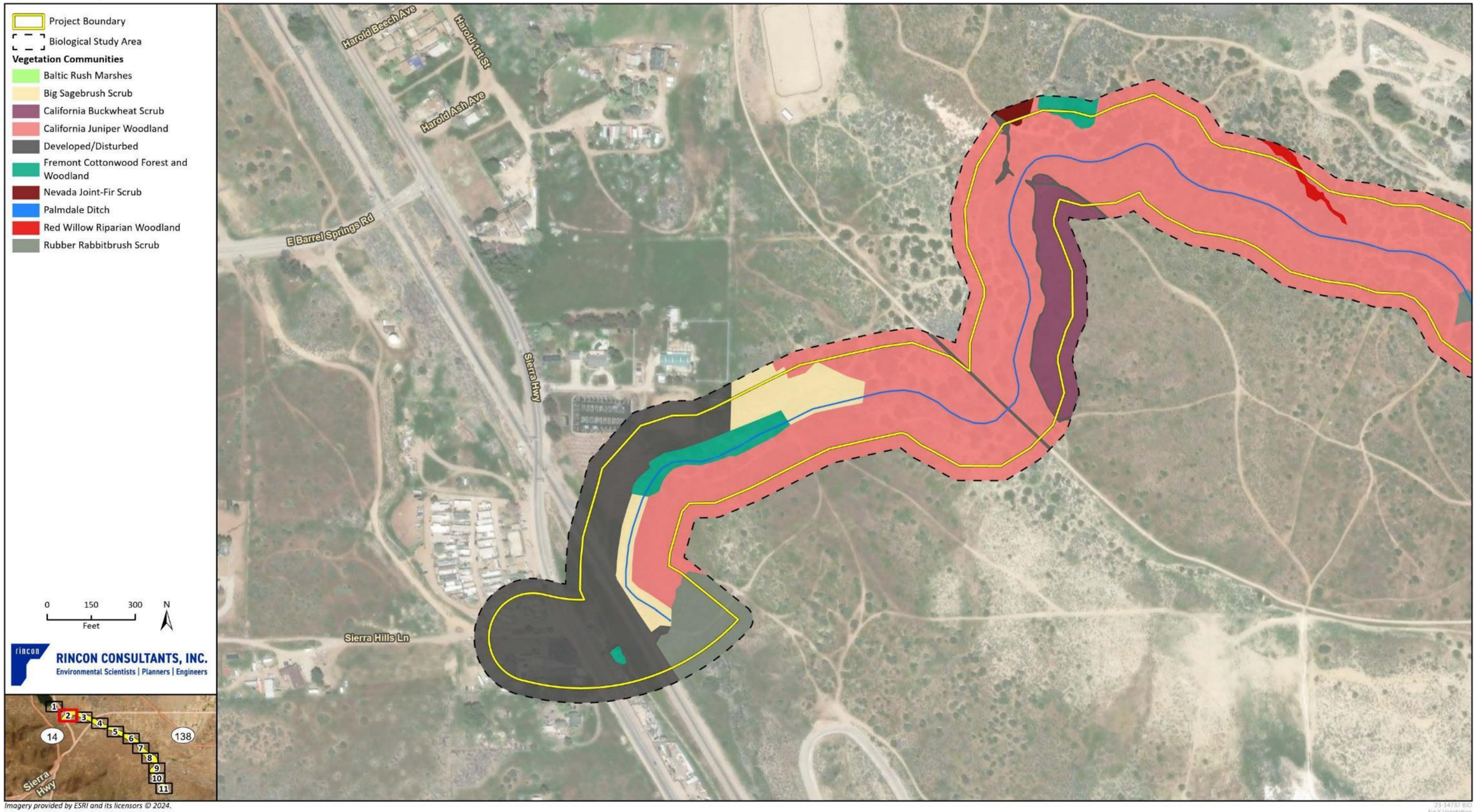

Figure 5d Vegetation Communities and Land Cover (Map 3 of 11)

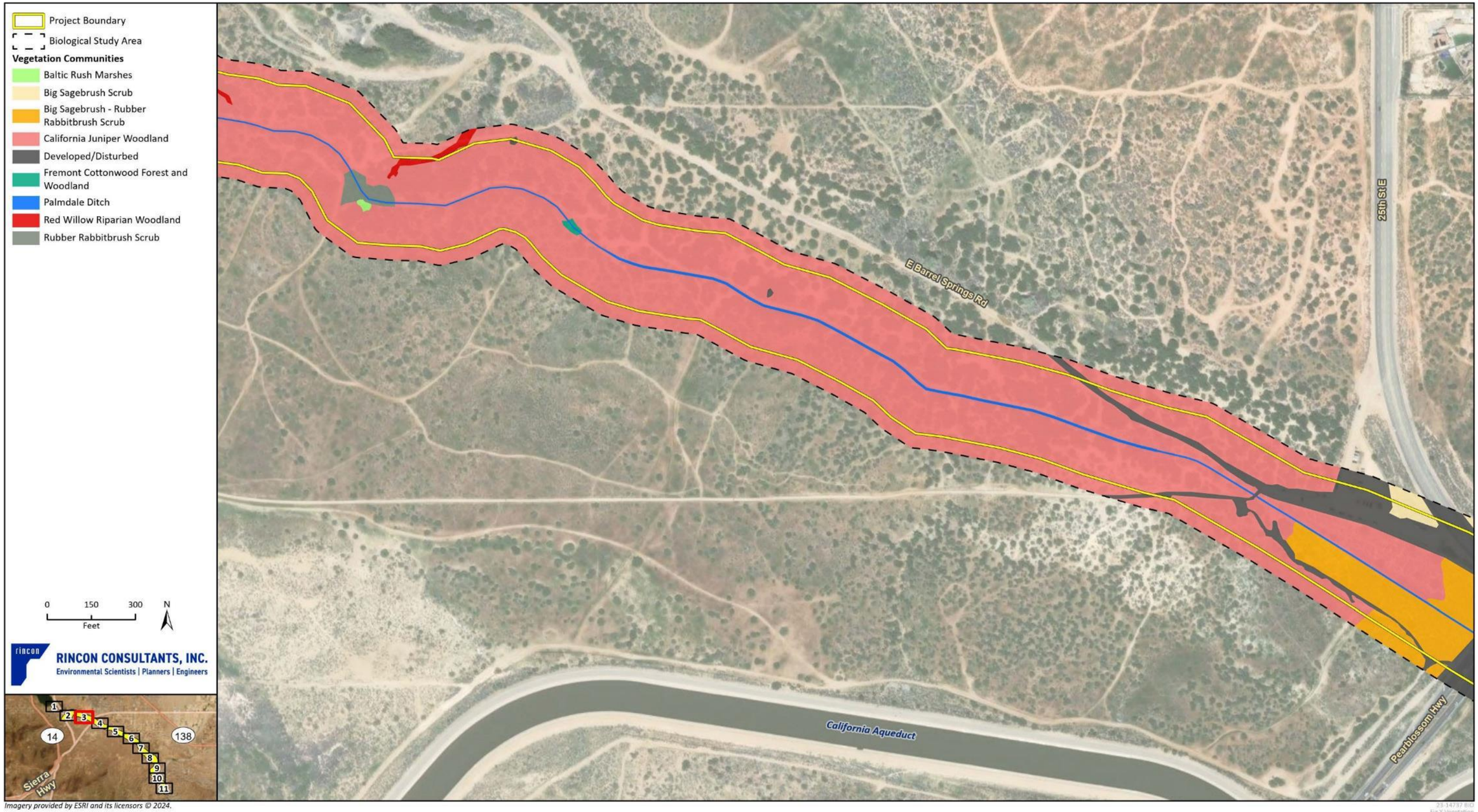

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Figure 5e Vegetation Communities and Land Cover (Map 4 of 11)

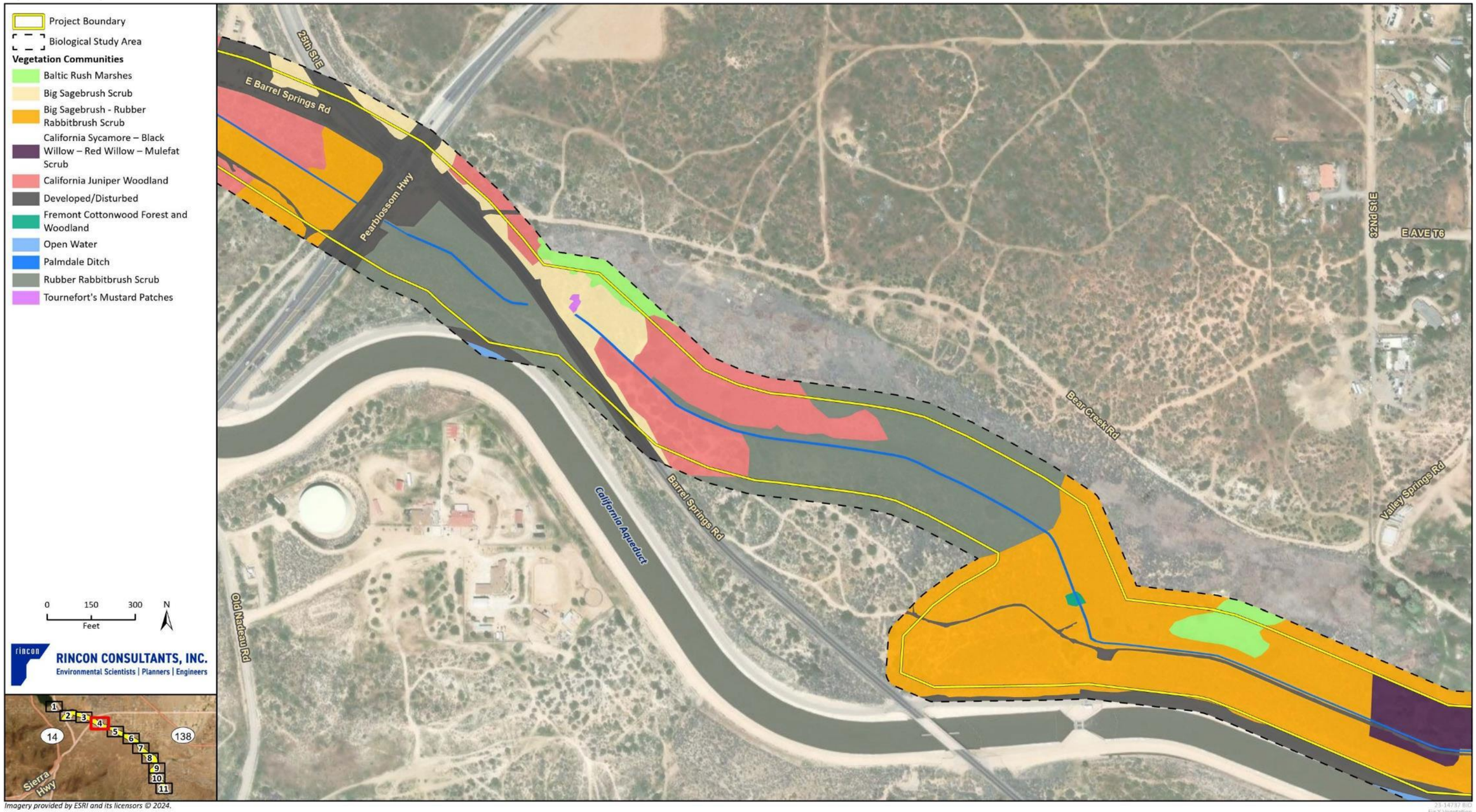

Figure 5f Vegetation Communities and Land Cover (Map 5 of 11)

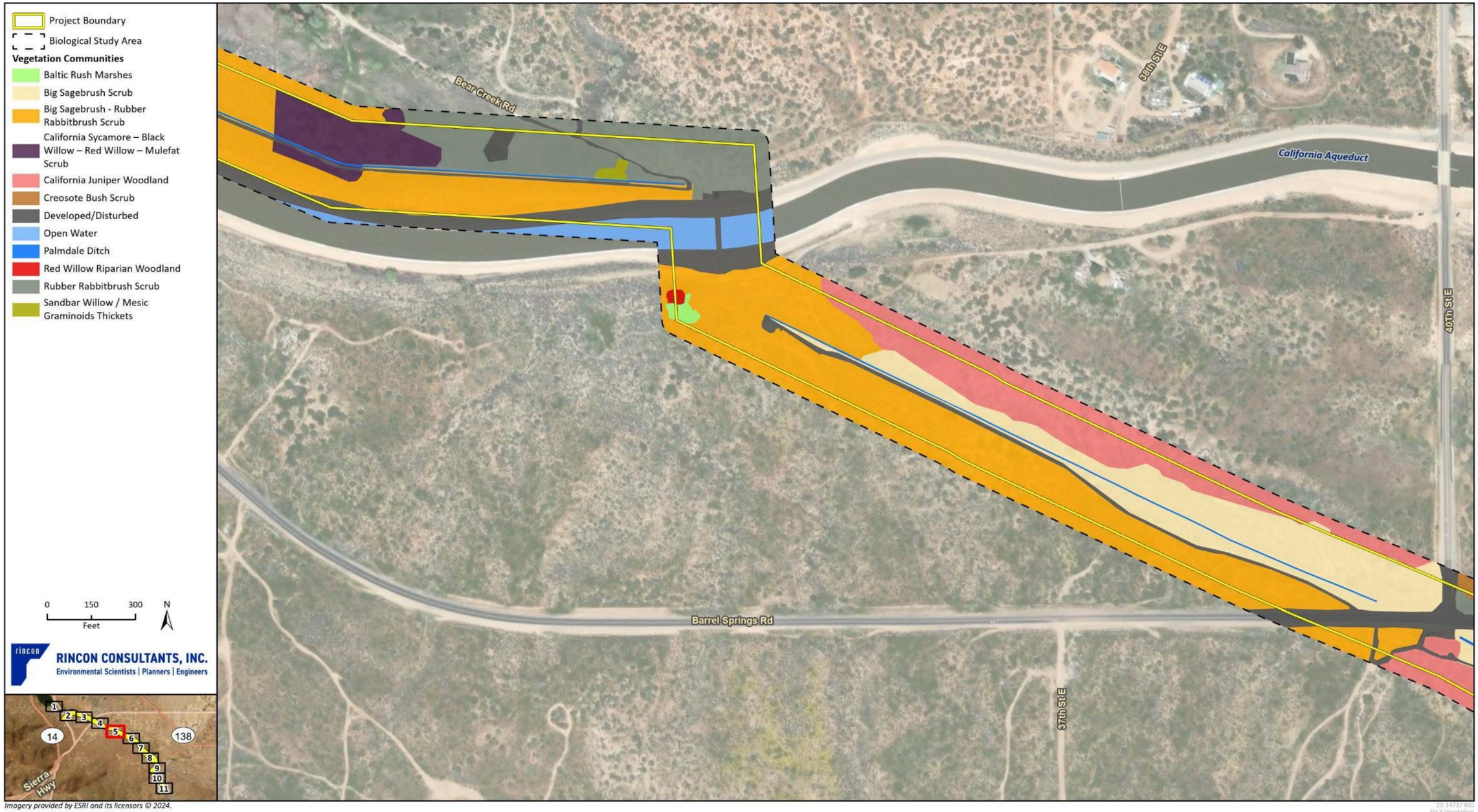

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Figure 5g Vegetation Communities and Land Cover (Map 6 of 11)

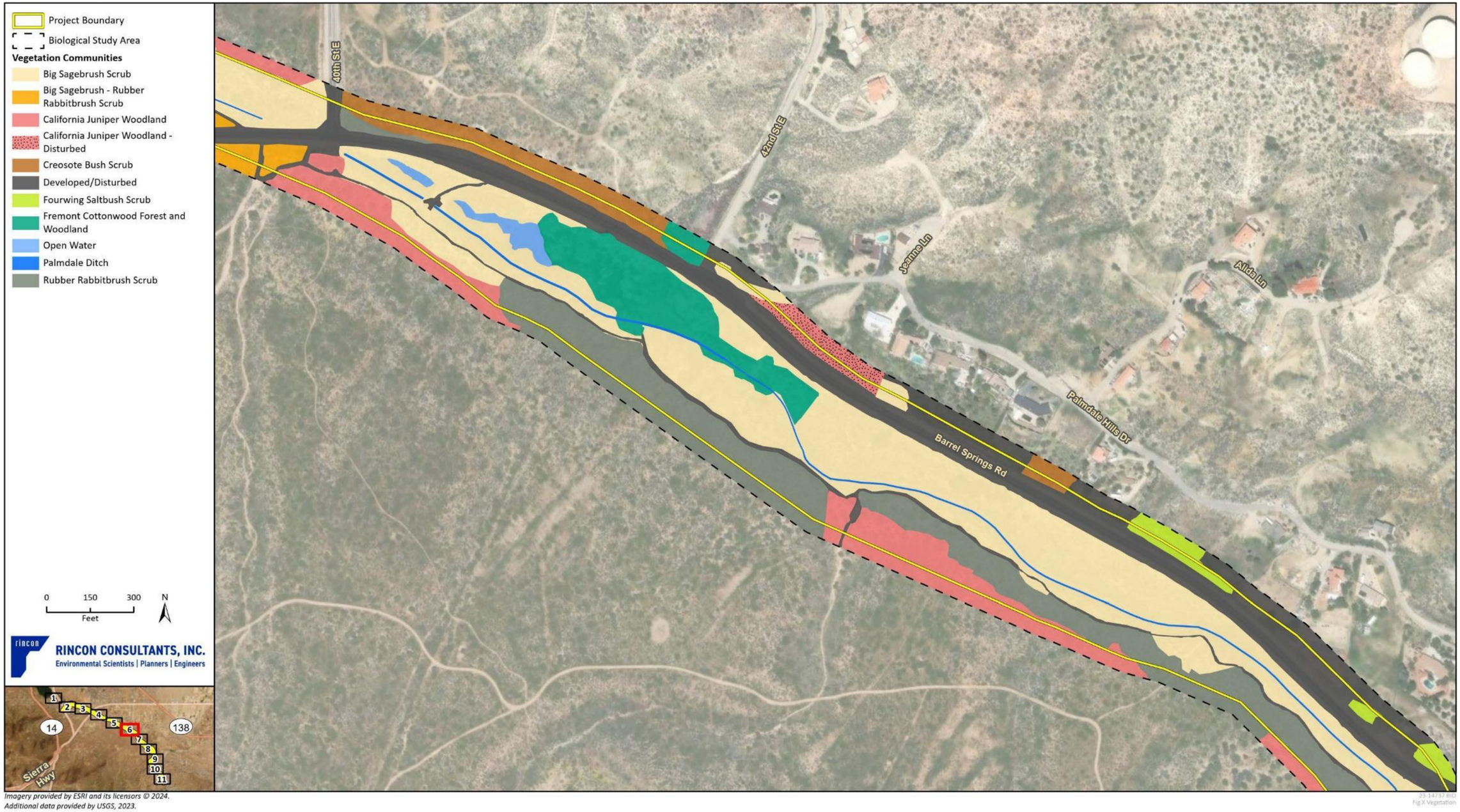


Figure 5h Vegetation Communities and Land Cover (Map 7 of 11)

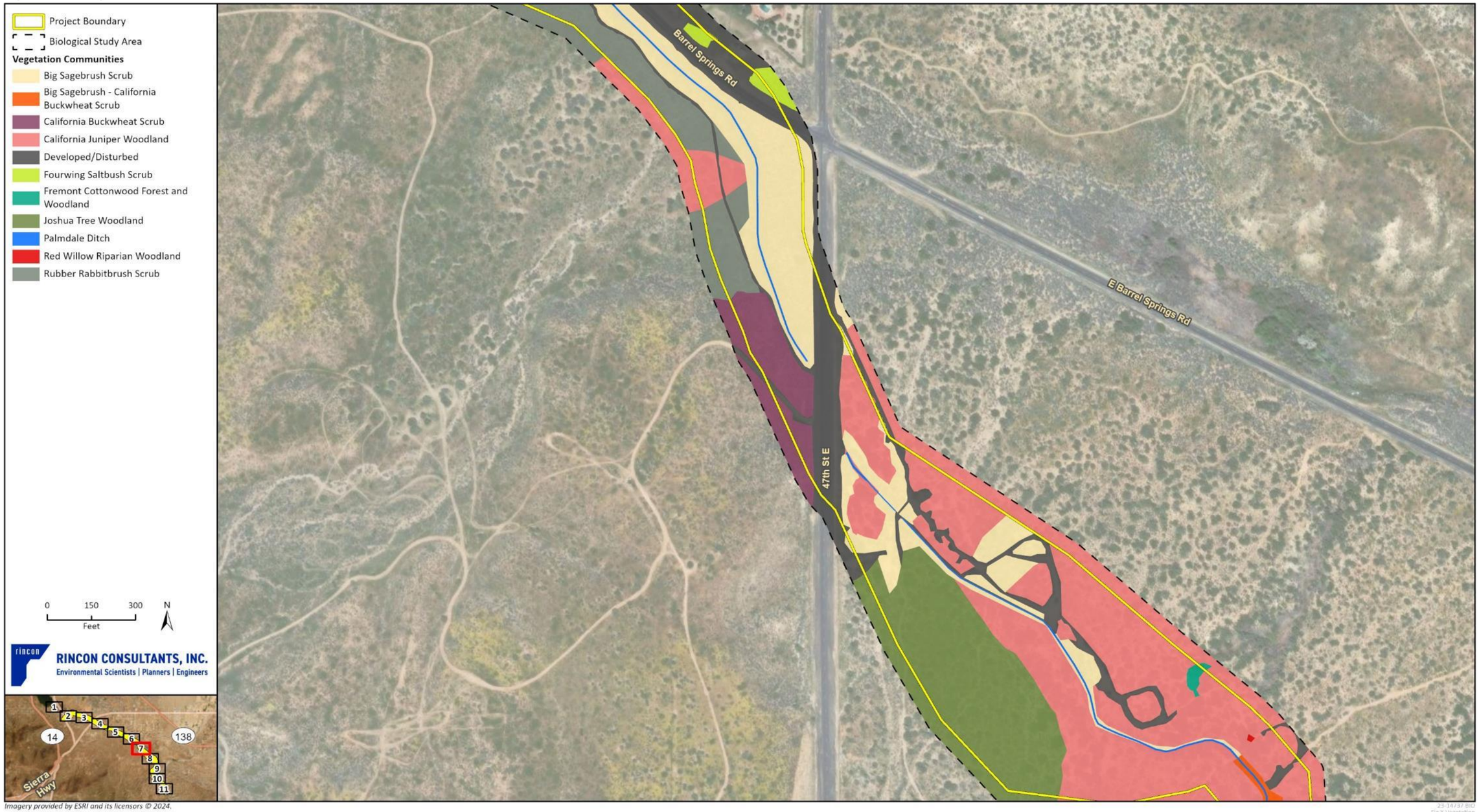
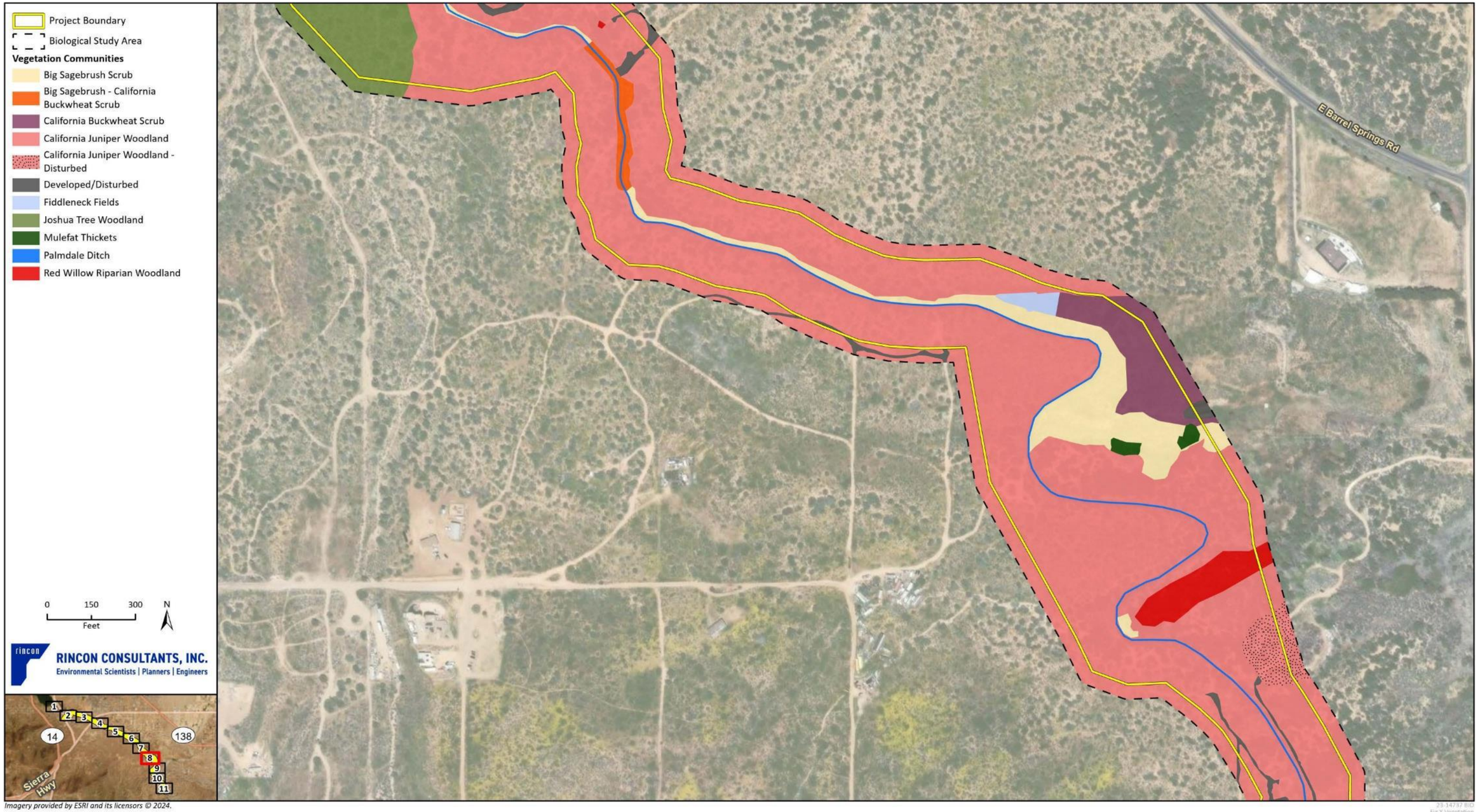


Figure 5i Vegetation Communities and Land Cover (Map 8 of 11)



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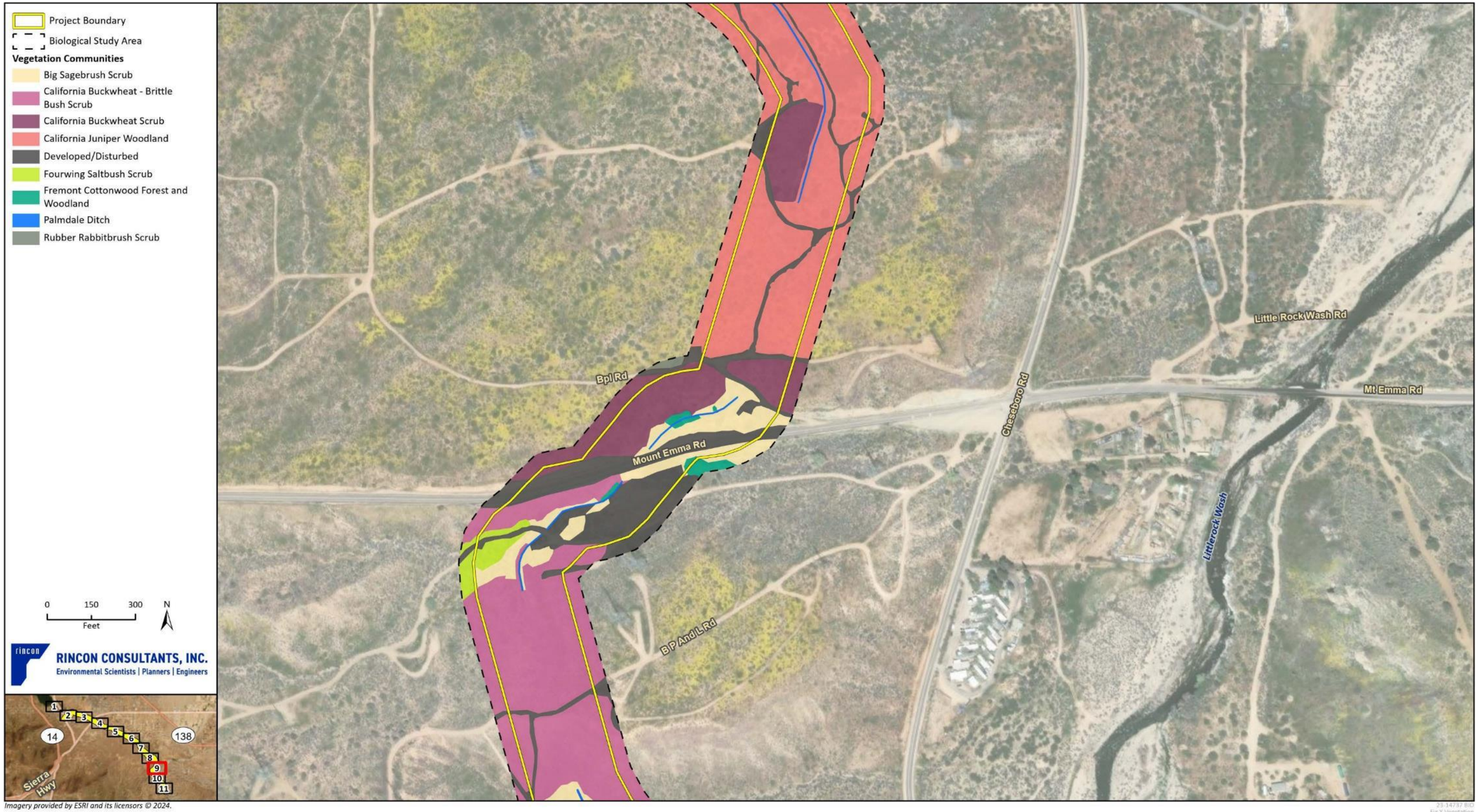

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Figure 5k Vegetation Communities and Land Cover (Map 10 of 11)

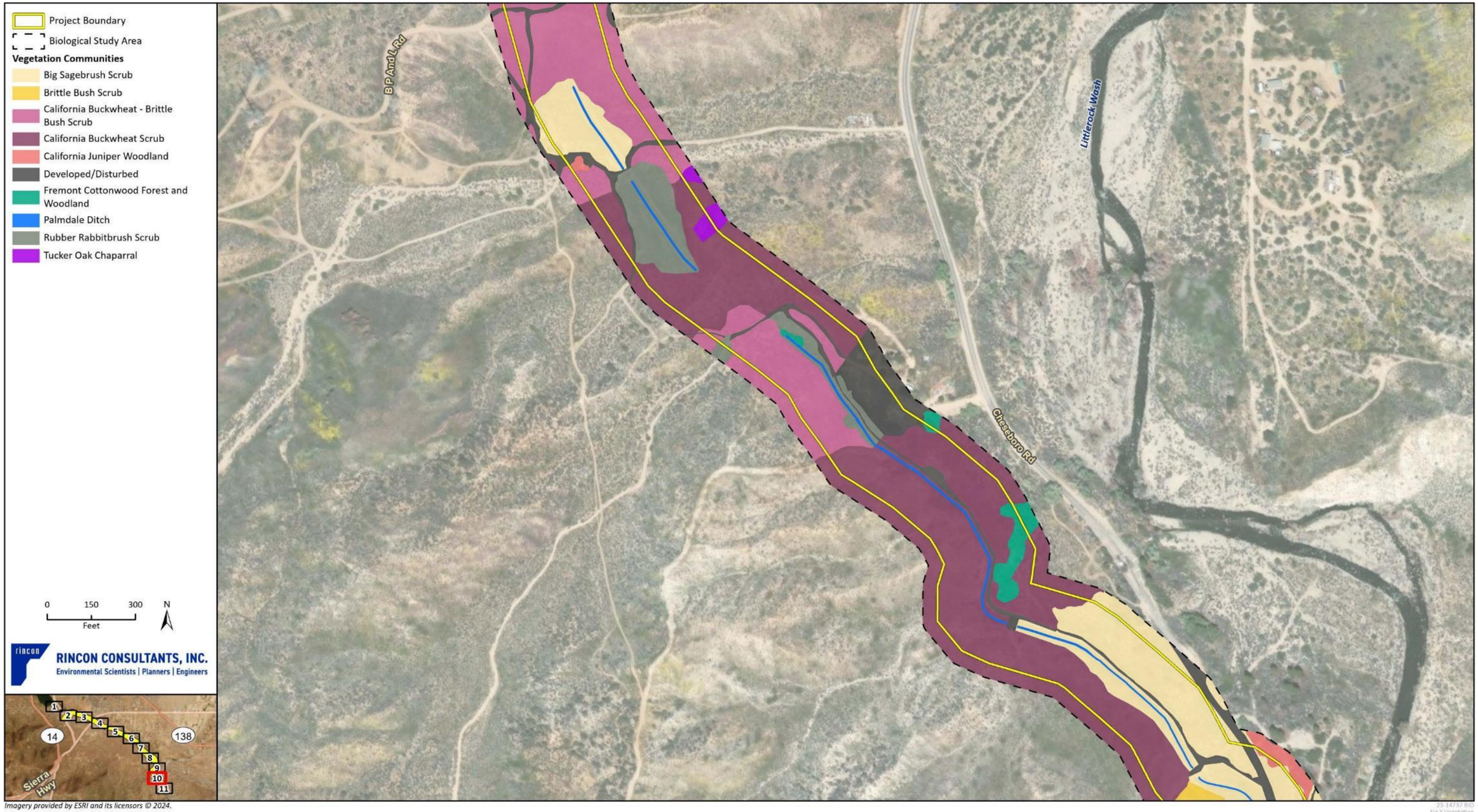

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Figure 5I Vegetation Communities and Land Cover (Map 11 of 11)

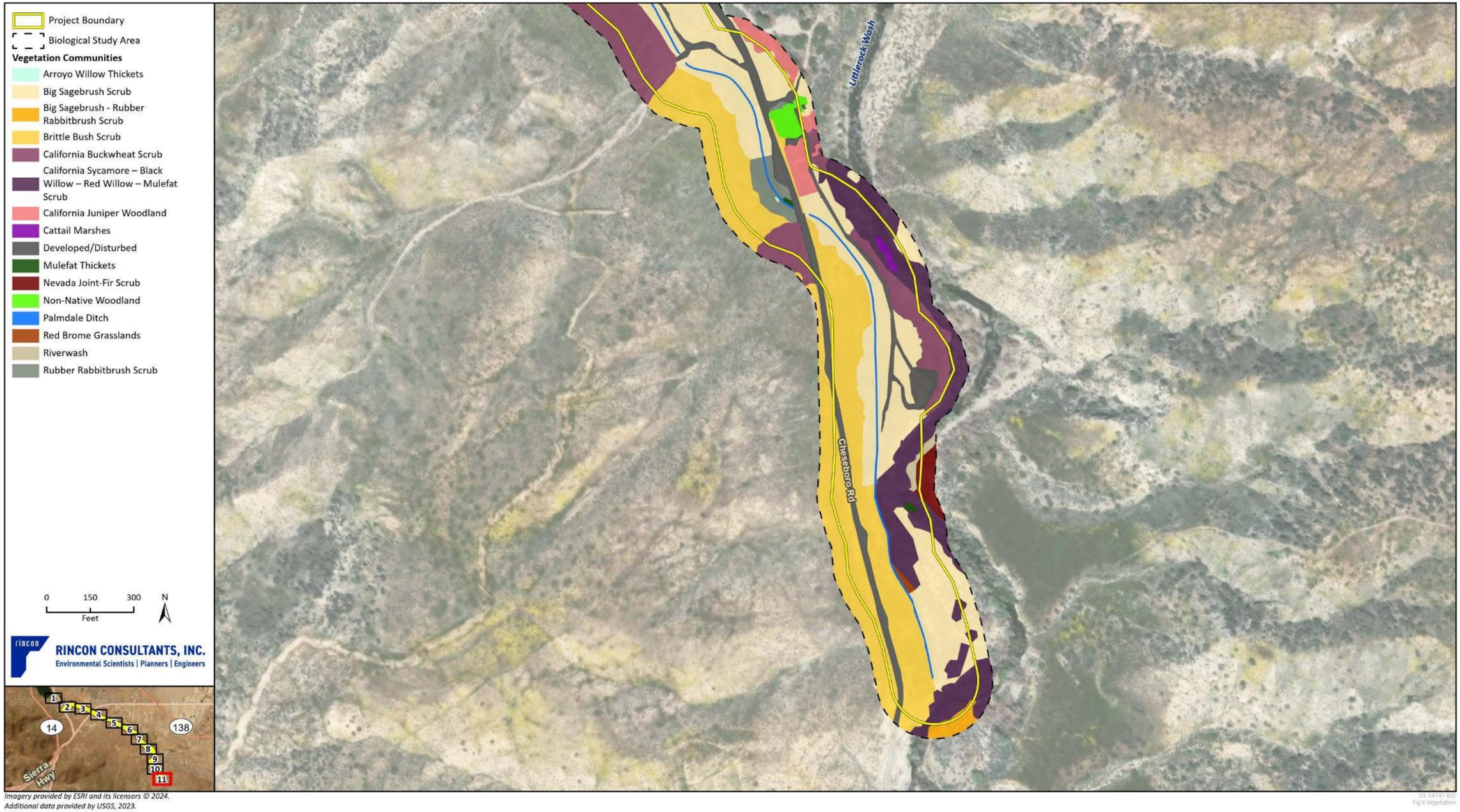

Figure 6a Soils in the BSA – (Map 1 of 9)

Figure 6b Soils in the BSA (Map 2 of 9)

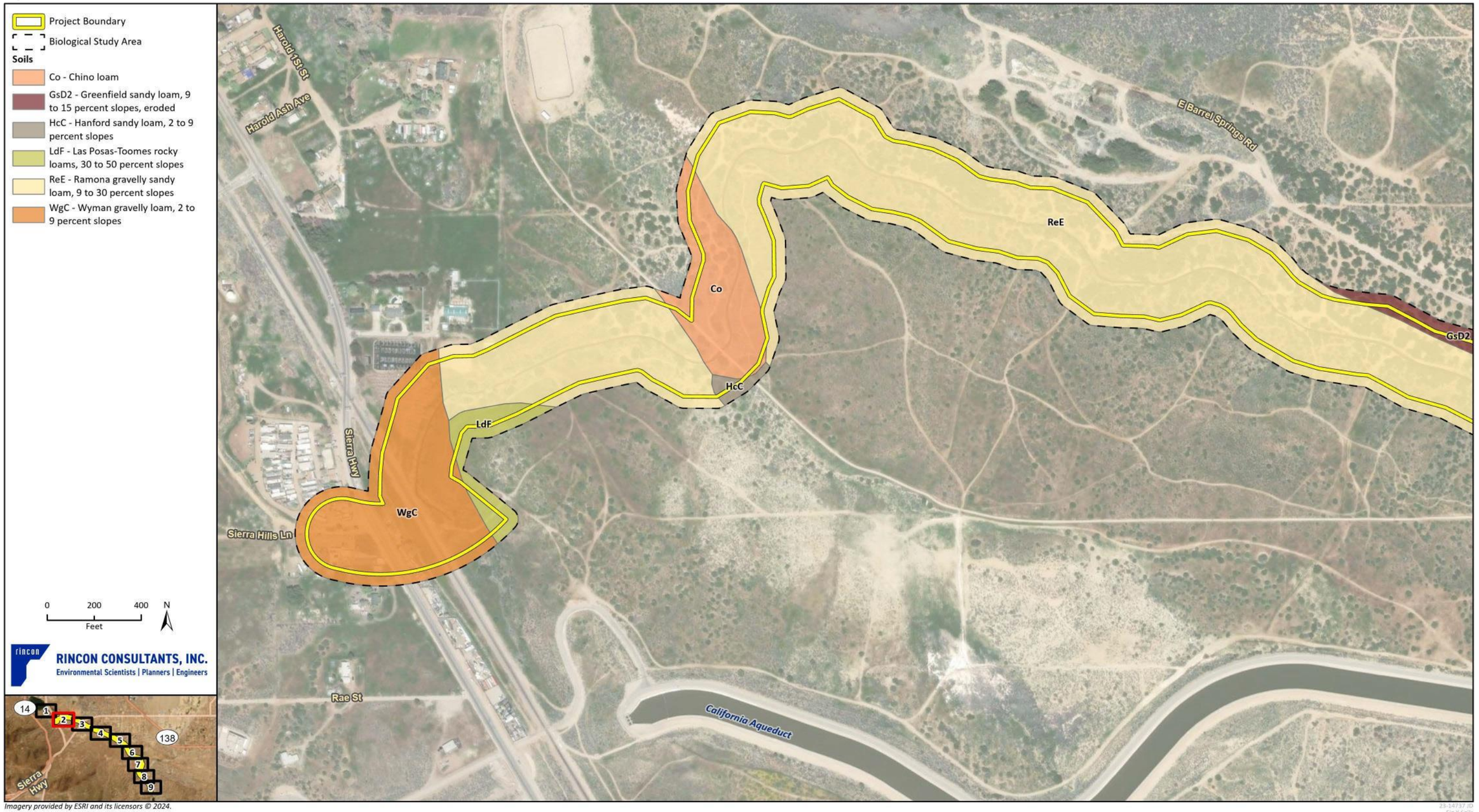

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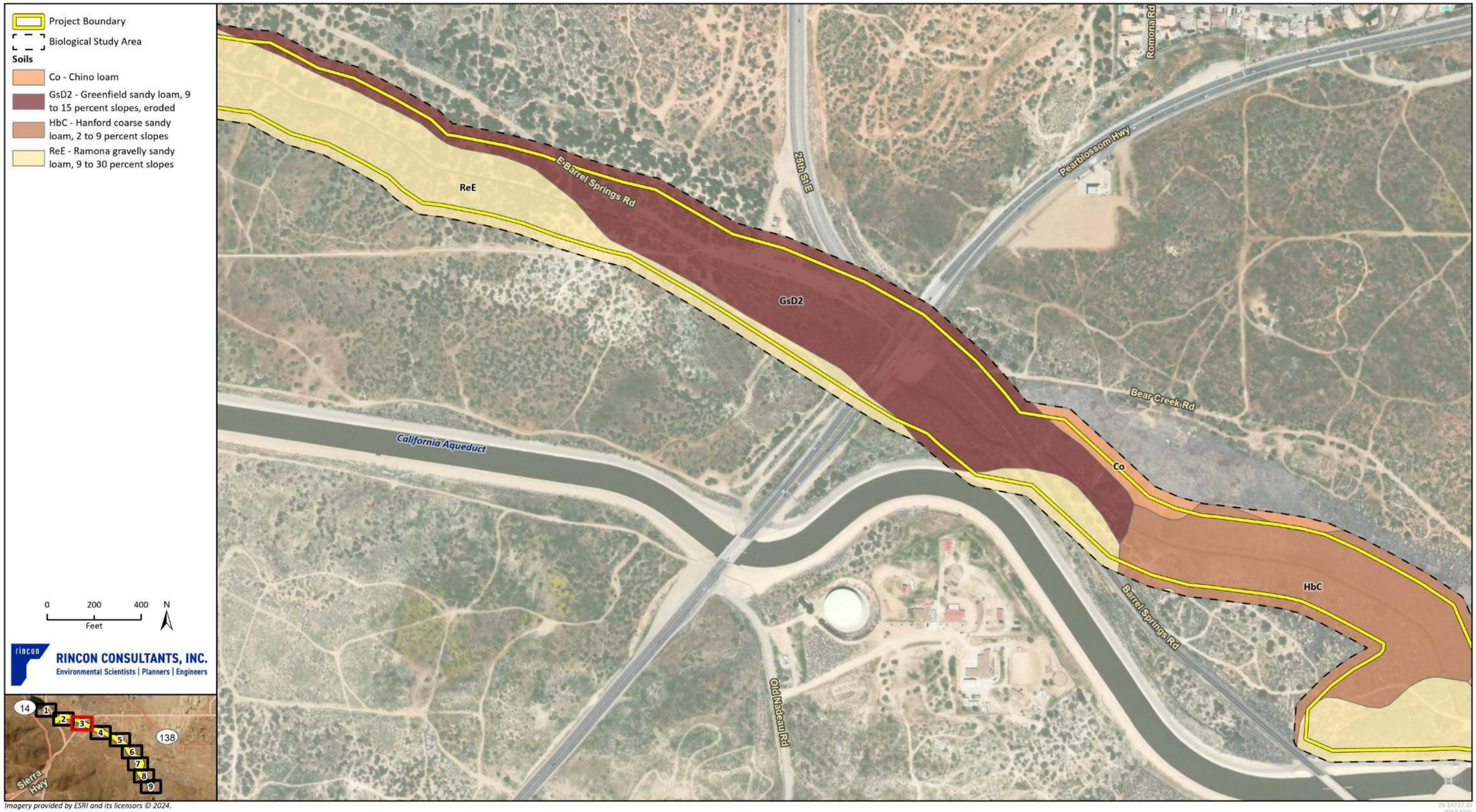
Figure 6c Soils in the BSA (Map 3 of 9)



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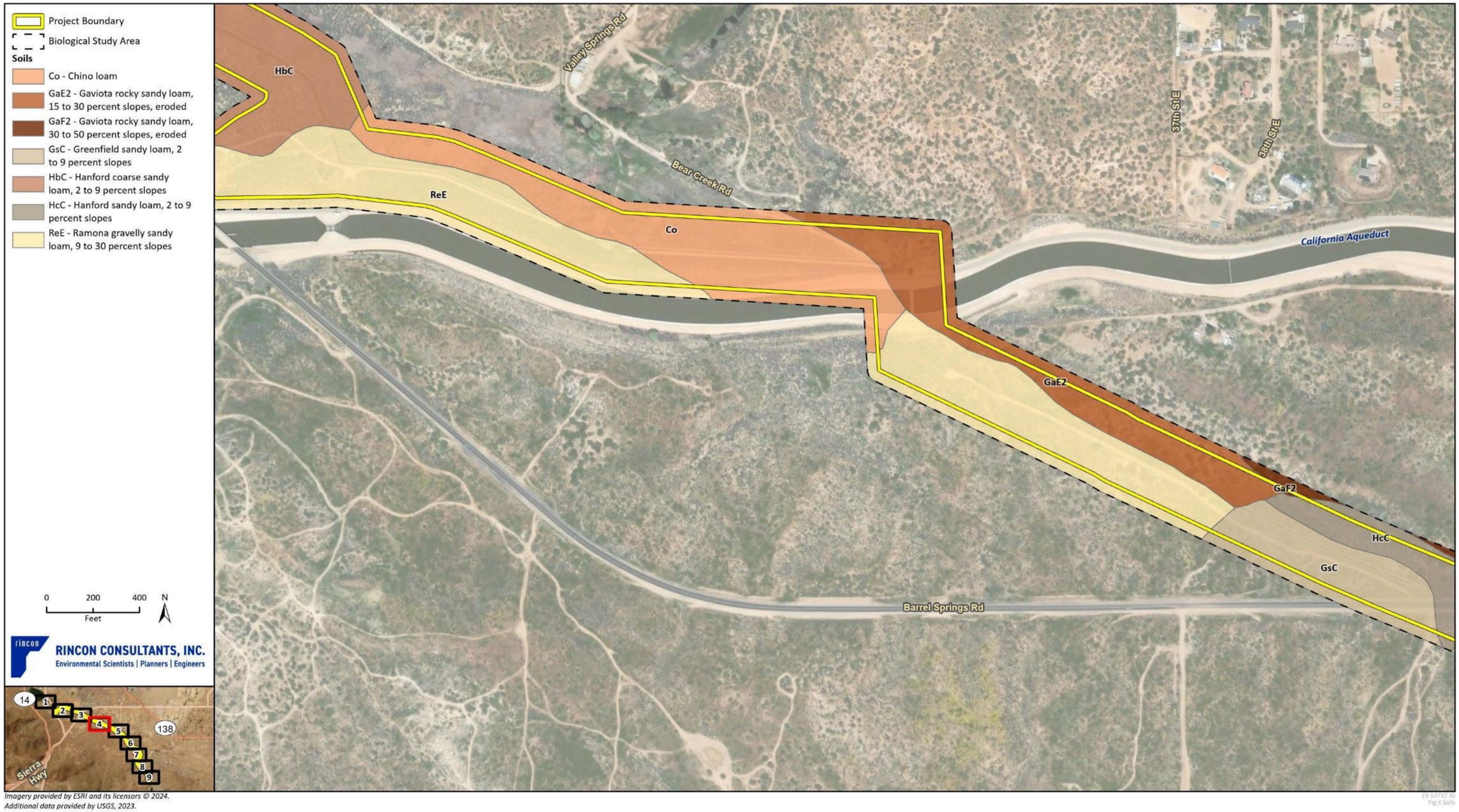

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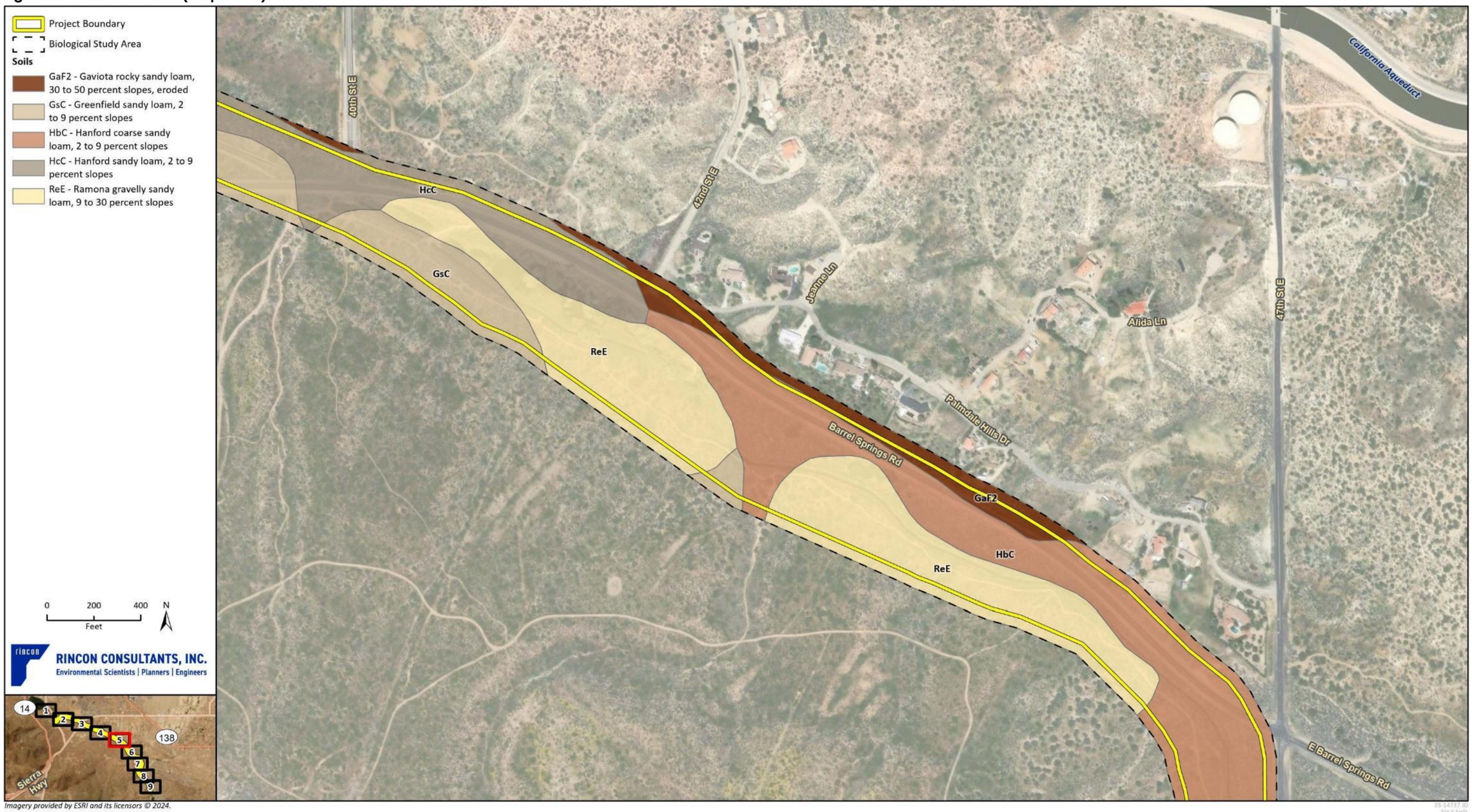

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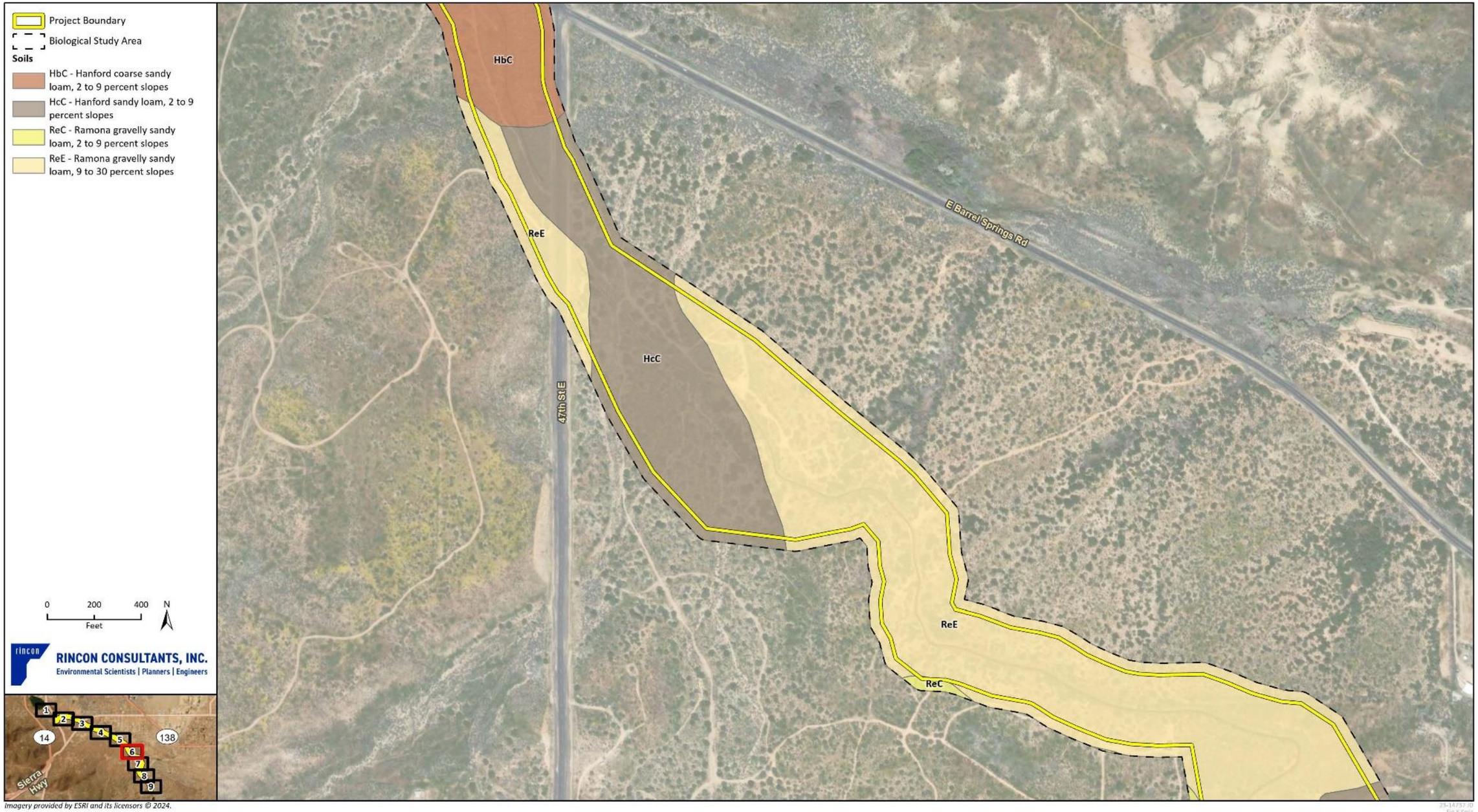
Fig X Soils

Figure 6f Soils in the BSA (Map 6 of 9)



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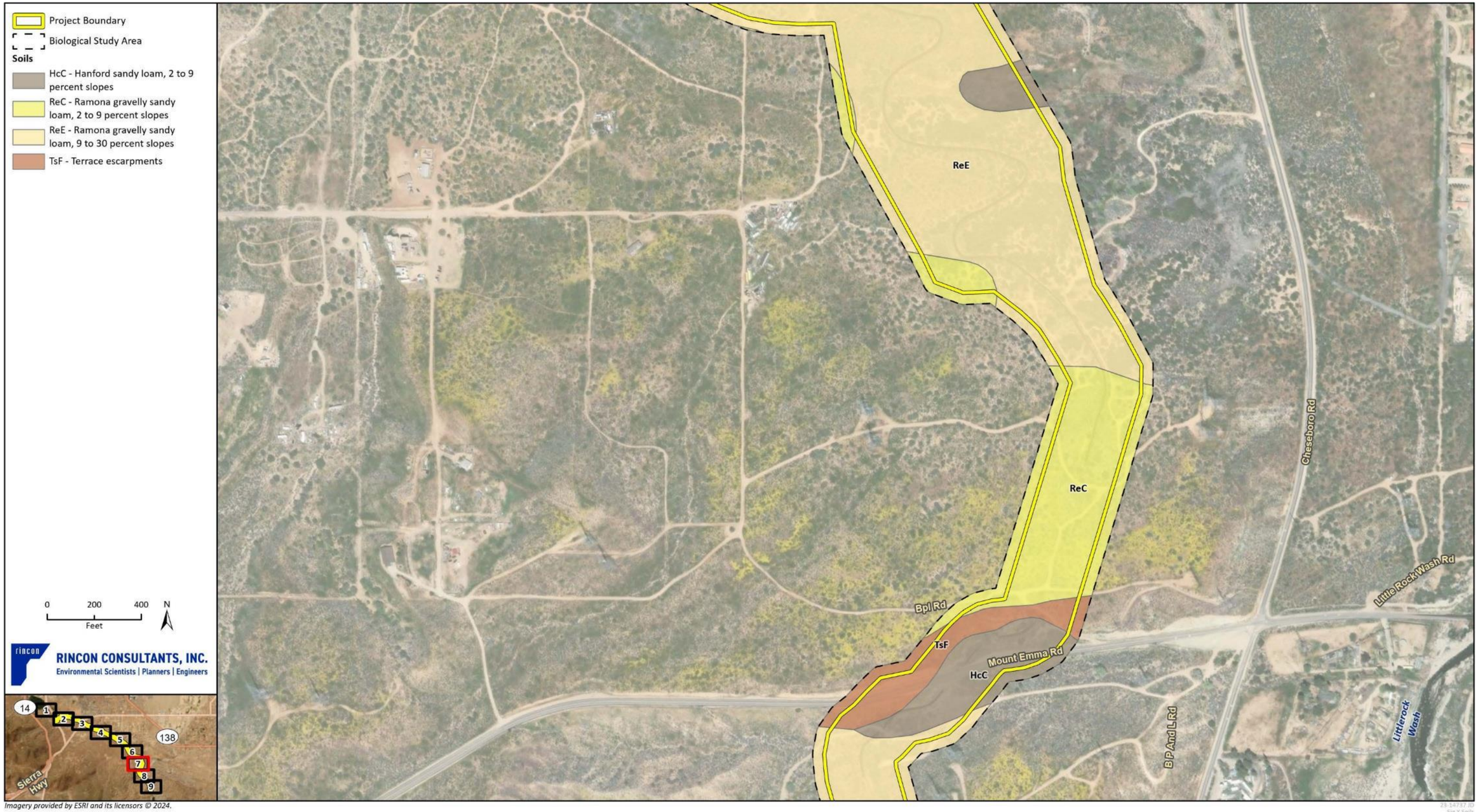

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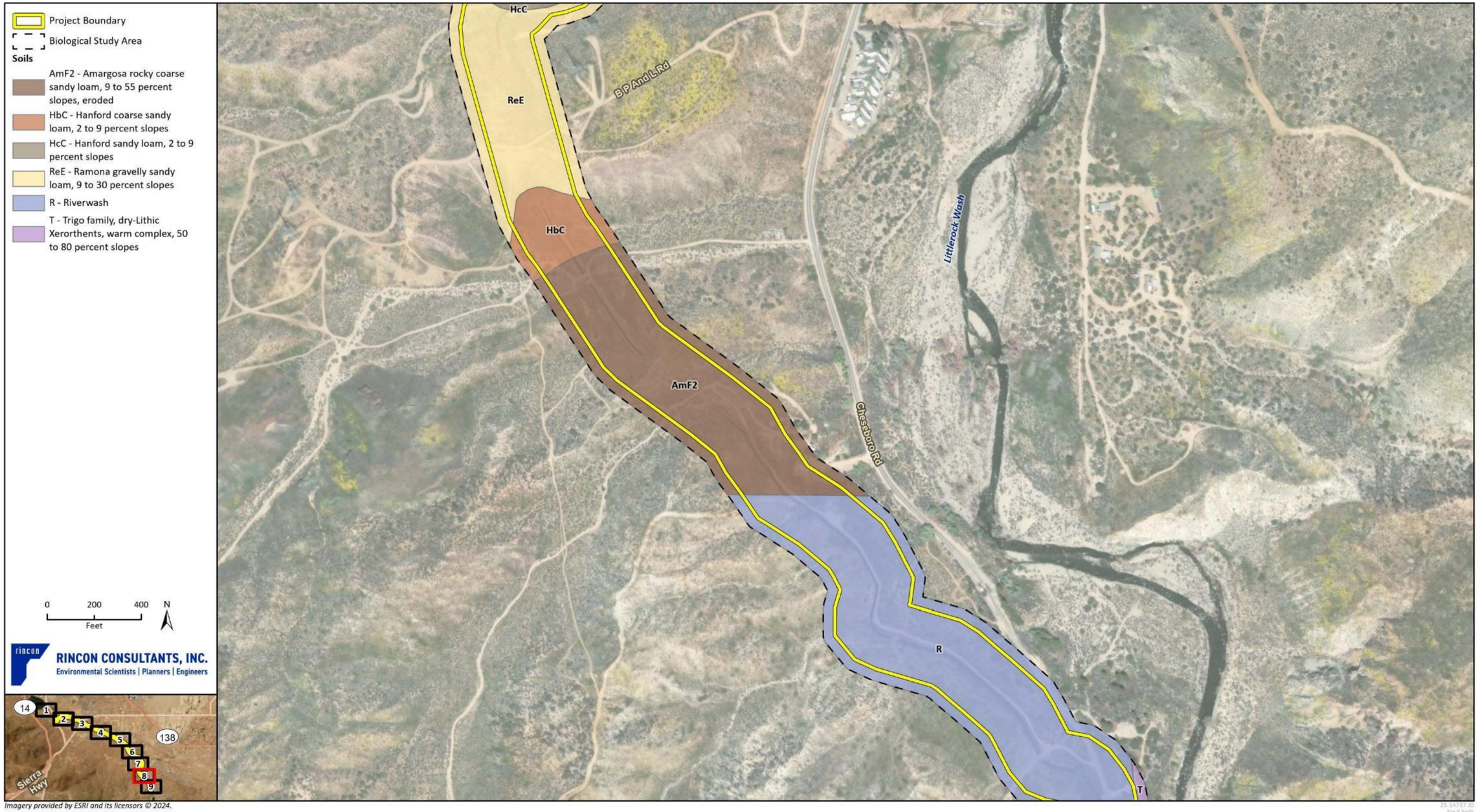
Figure 6h Soils in the BSA (Map 8 of 9)



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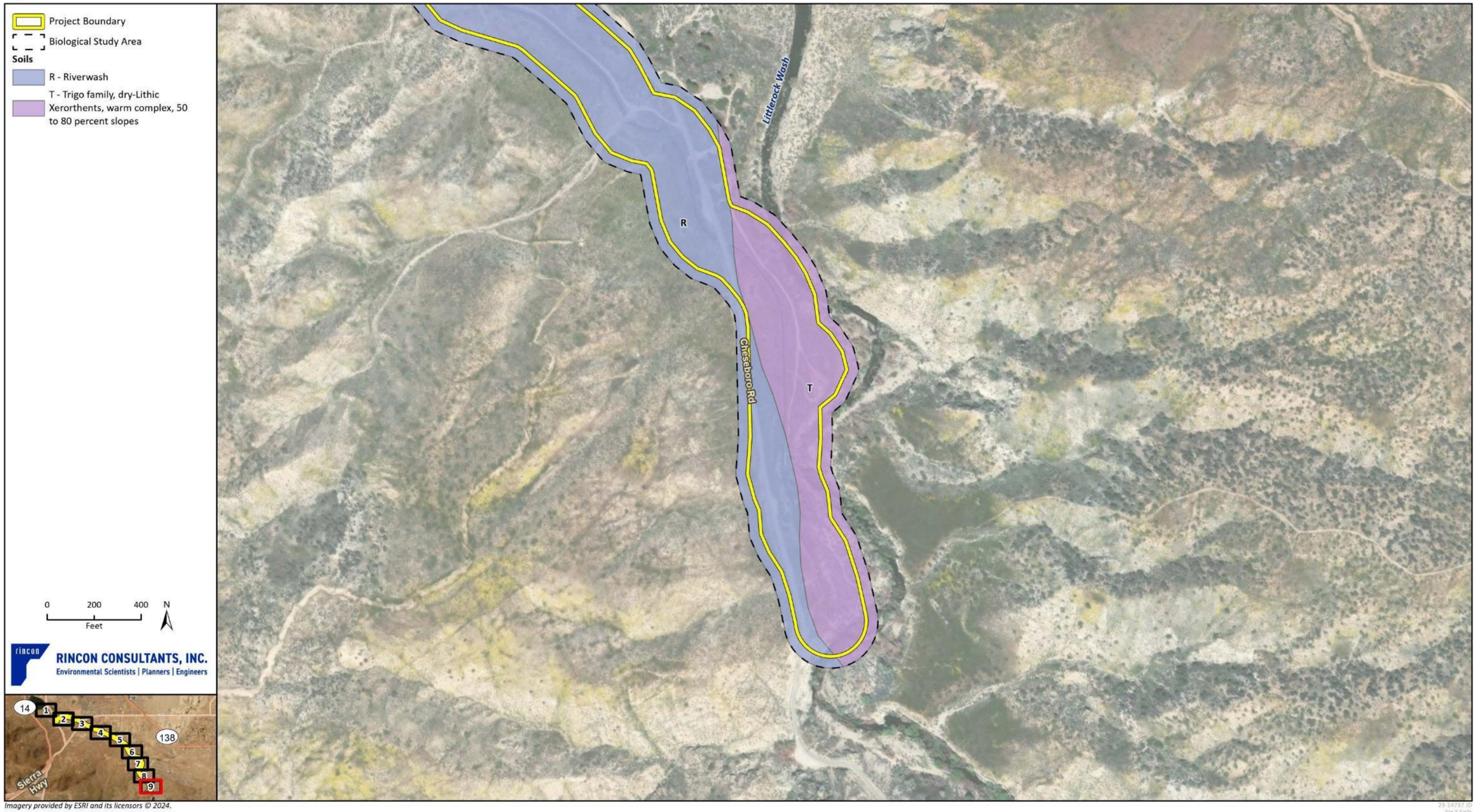

Figure 7a Jurisdictional Delineation of the BSA – Overview

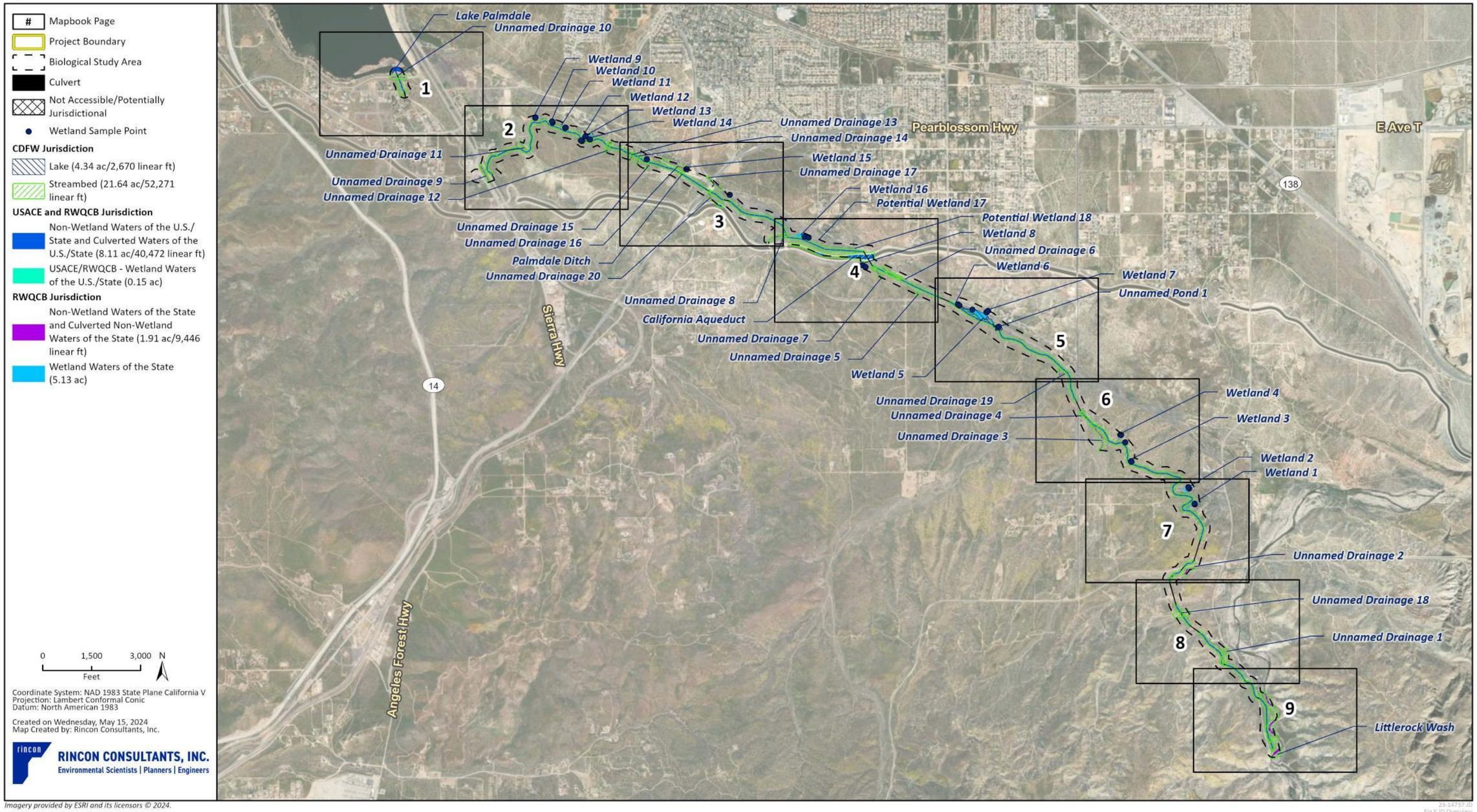

Figure 7b Jurisdictional Delineation of the BSA (Map 1 of 9)

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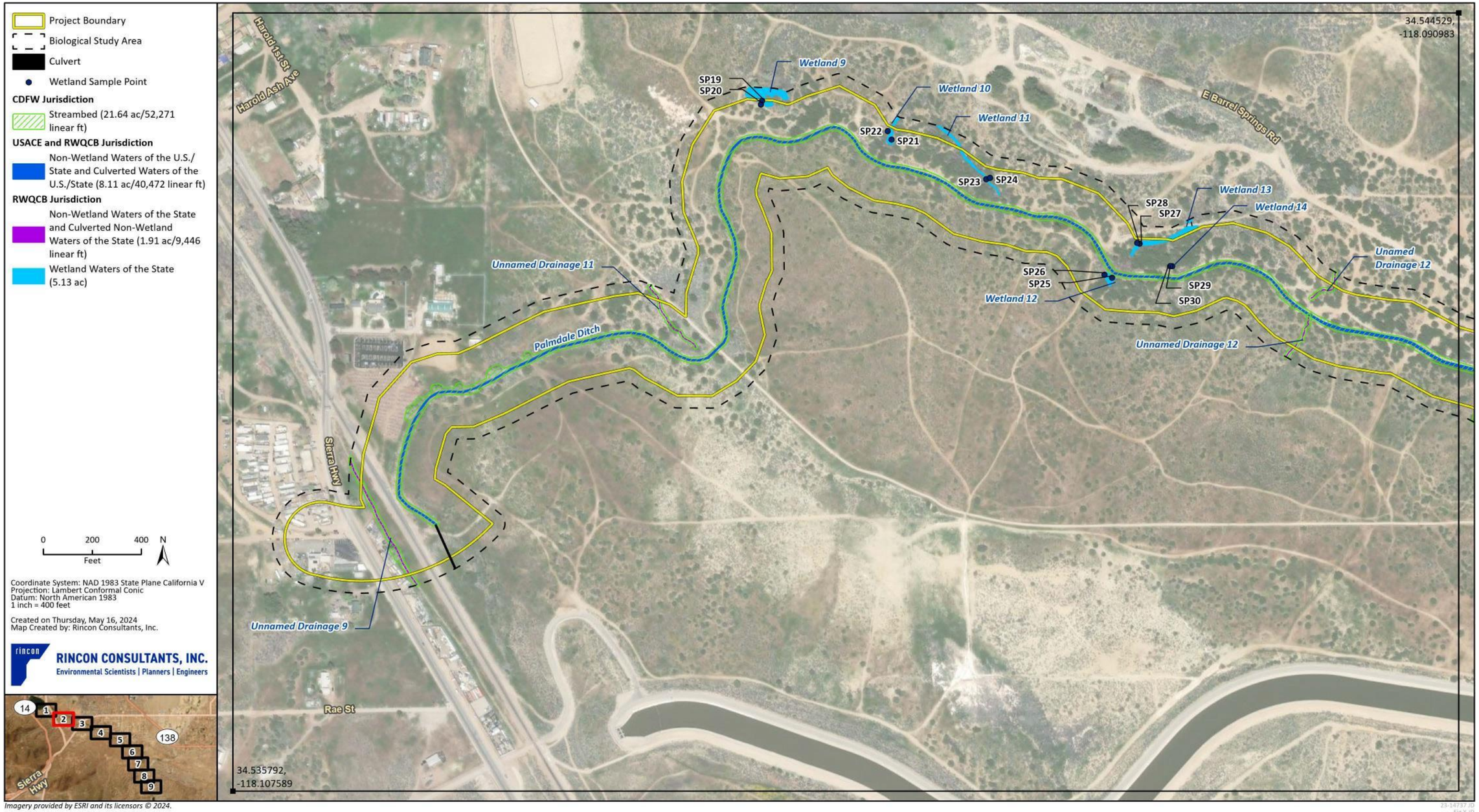
Figure 7c Jurisdictional Delineation of the BSA (Map 2 of 9)



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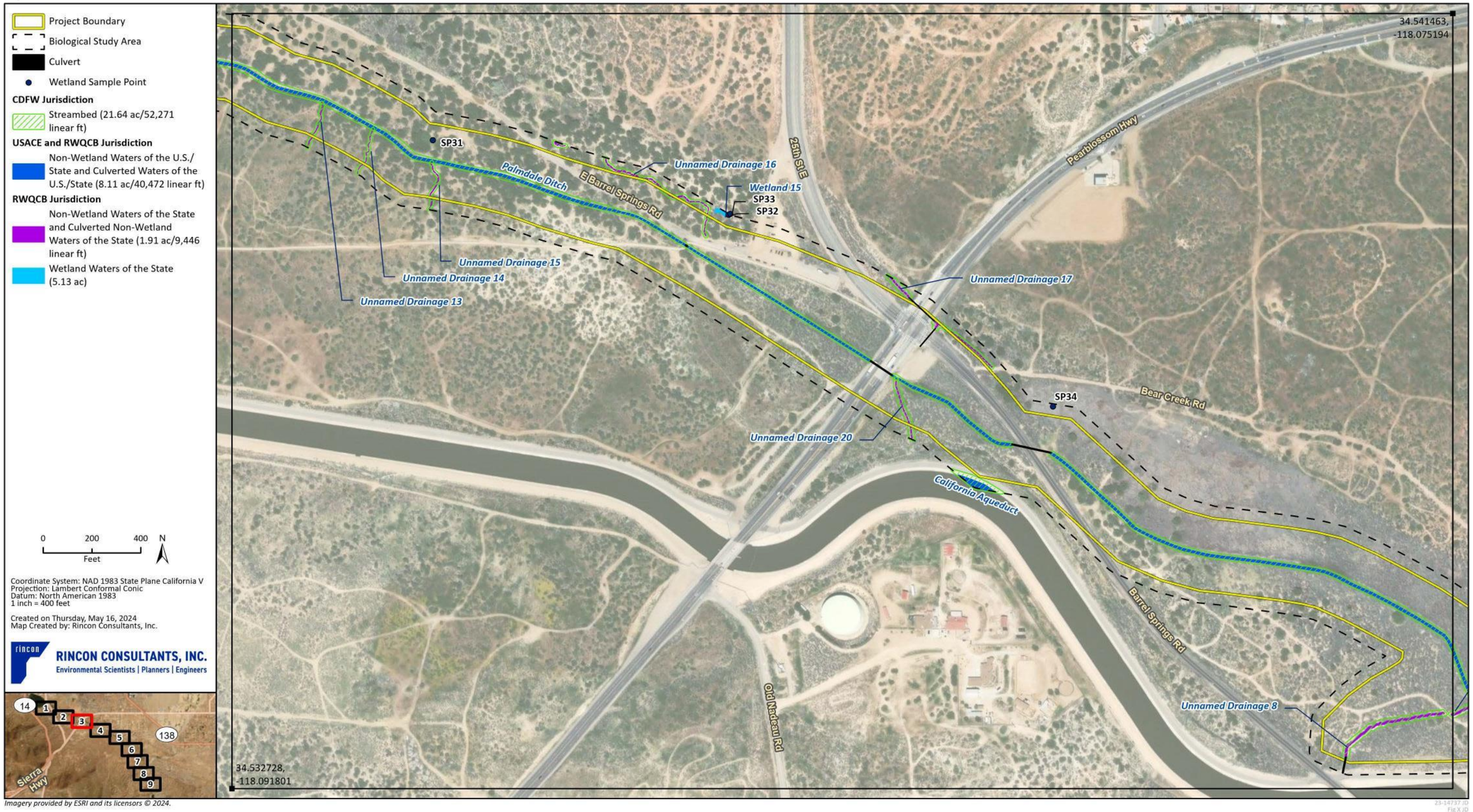

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Figure 7e Jurisdictional Delineation of the BSA (Map 4 of 9)

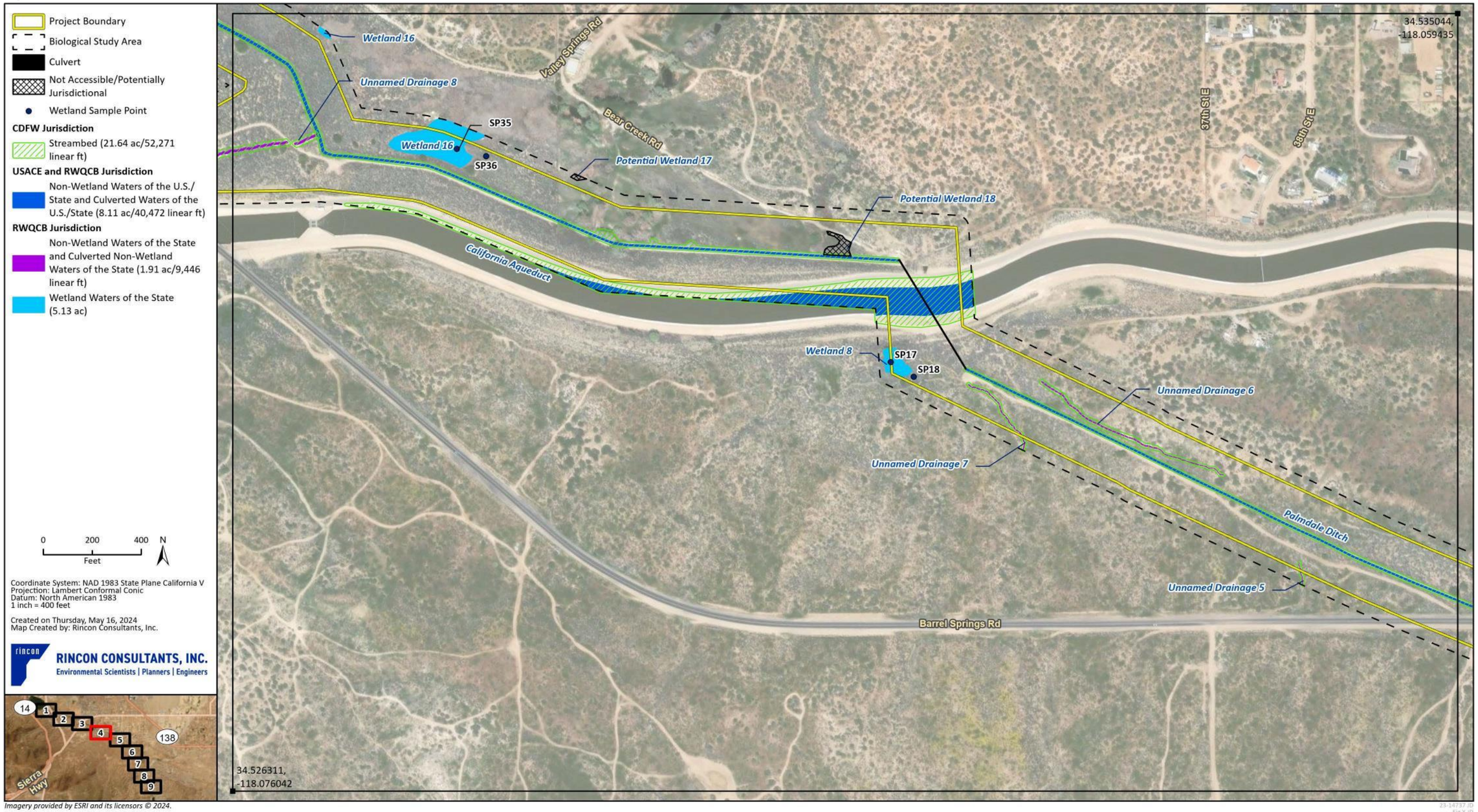

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Figure 7f Jurisdictional Delineation of the BSA (Map 5 of 9)

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Figure 7g Jurisdictional Delineation of the BSA (Map 6 of 9)

Figure 7h Jurisdictional Delineation of the BSA (Map 7 of 9)

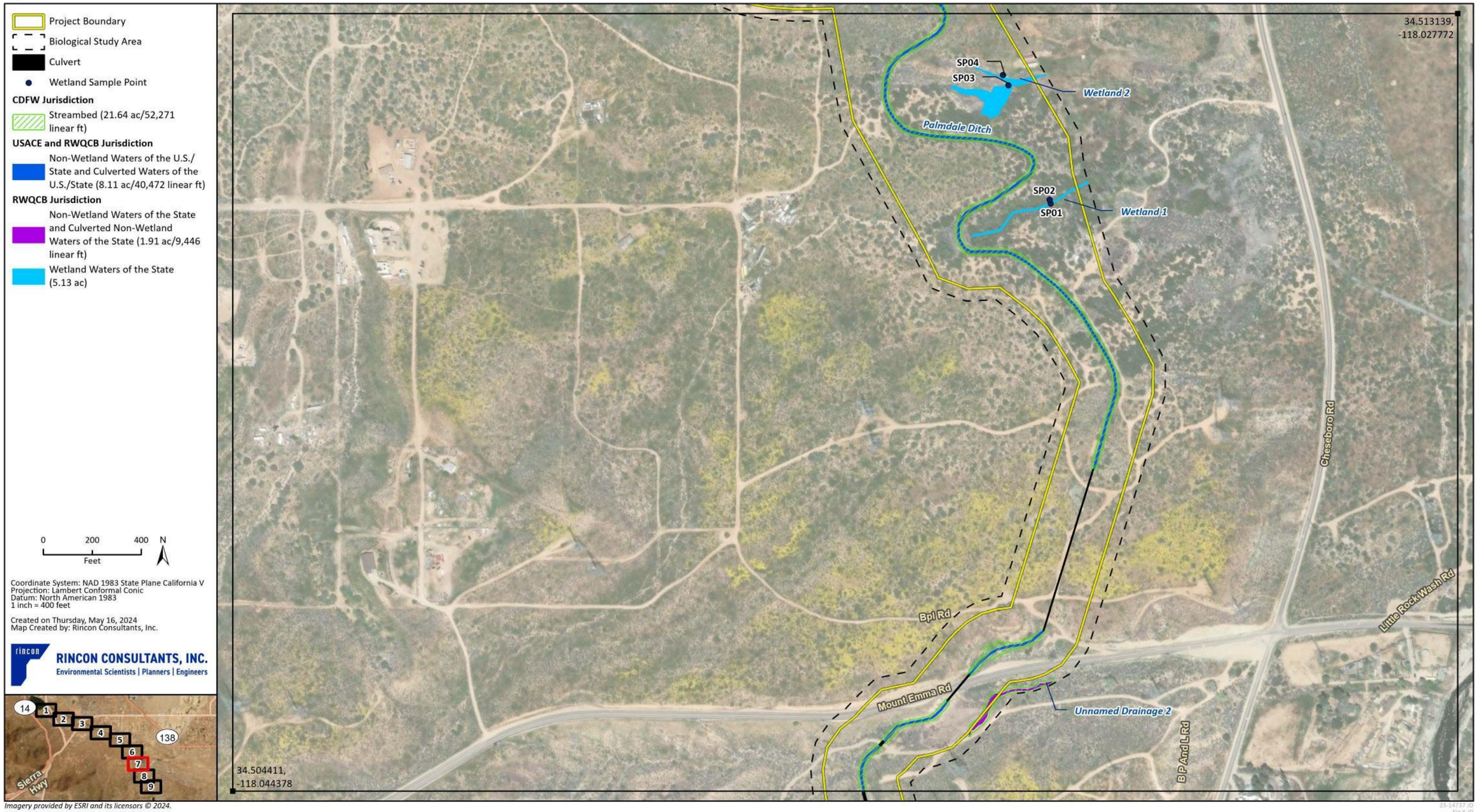

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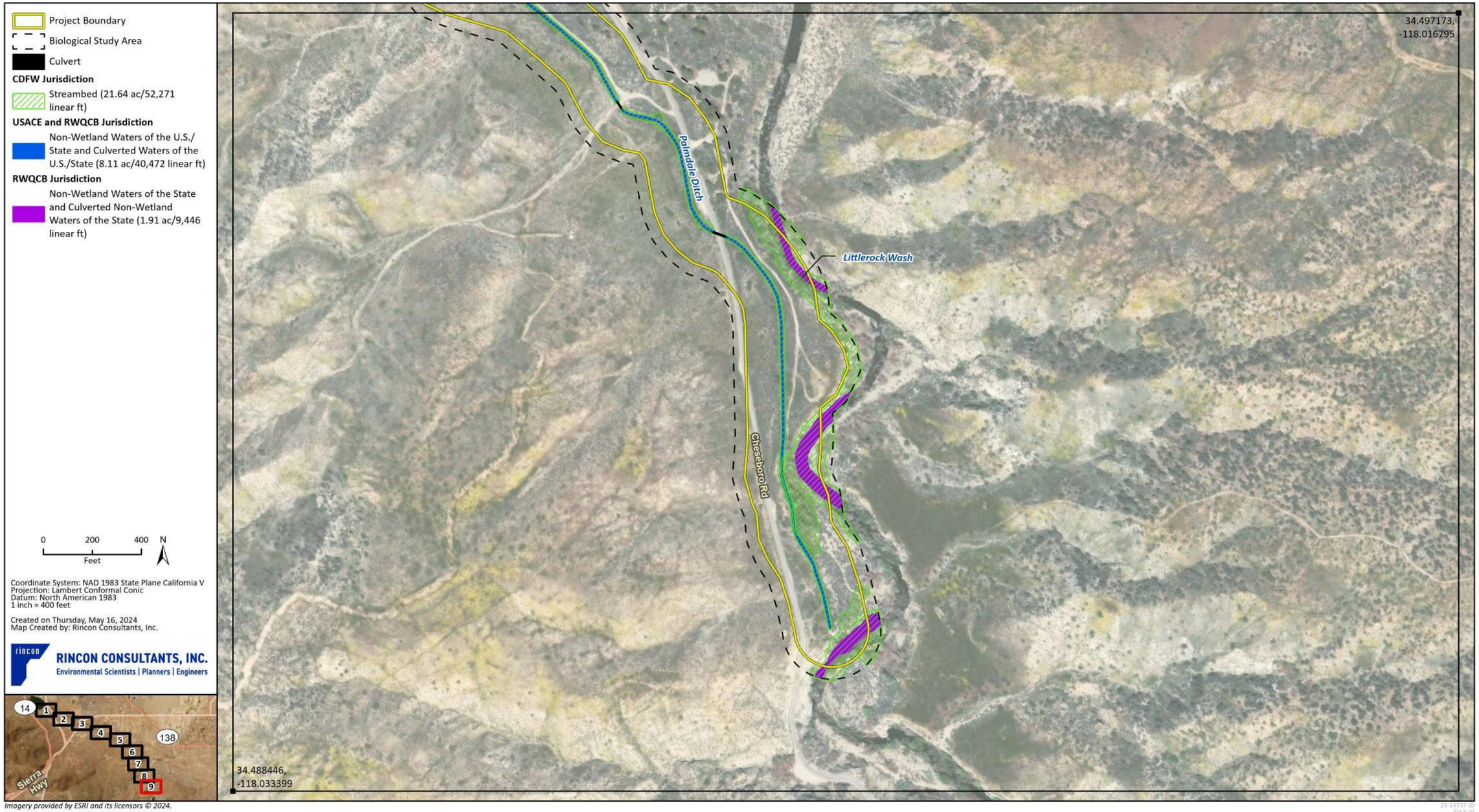
Figure 7i Jurisdictional Delineation of the BSA (Map 8 of 9)

Figure 7j Jurisdictional Delineation of the BSA (Map 9 of 9)



Appendix B

Regulatory Framework

Regulatory Framework

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, State, and local levels. A number of federal and state statutes provide a regulatory structure which guide the protection of jurisdictional features. Agencies with the responsibility for protection of jurisdictional features within the Project site include:

- United States Army Corps of Engineers (USACE; non-wetland waters and wetlands of the United States)
- Regional Water Quality Control Board (RWQCB; waters of the State)
- California Department Fish and Wildlife (CDFW; riparian areas, streambeds, and lakes)

United States Army Corps of Engineers Jurisdiction

USACE is responsible for administering several federal programs related to ensuring the quality and navigability of the nation's waters.

Clean Water Act Section 404

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the CWA authorizes the Secretary of the Army, acting through USACE, to issue permits regulating the discharge of dredged or fill materials into the "navigable waters at specified disposal sites."

Section 502 of the CWA further defines "navigable waters" as "waters of the United States, including the territorial seas." "Waters of the United States" are broadly defined at 33 Code of Federal Regulations (CFR) Part 328.3 to include navigable, tidal, and interstate waters and certain impoundments, tributaries, and wetlands. The most recent regulatory definition of the term was promulgated by USACE and United States Environmental Protection Agency (USEPA) in January 2023, following failed attempts in prior years that had been frustrated by legal challenges. However, in May 2023, the U.S. Supreme Court issued its ruling in *Sackett v. Environmental Protection Agency*, which invalidated portions of the updated regulations. To address this ruling, the agencies issued a "conforming rule" in September 2023 (88 Federal Register 61964-61969), modifying their definition of "waters of the United States" to comport with the Court's ruling. This definition is described in detail below.

Waters of the U.S.

Current USACE and USEPA regulations, reflecting of the January 2023 definition as modified by the September 2023 Conforming Rule, define "waters of the United States" as follows (33 CFR 328.3; see also 88 Federal Register 61964-61969):

1. Waters which are:
   (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
   (ii) The territorial seas; or
   (iii) Interstate waters;

2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under provision (5) of this section;
3. Tributaries of waters identified in provisions (1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
   (i) Waters identified in provision (1) of this section; or
   (ii) Relatively permanent, standing or continuously flowing bodies of water identified in provisions (2) or (3) of this section and with a continuous surface connection to those waters;
5. Intrastate lakes and ponds, not identified in provisions (1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in provisions (1) or (3) of this section.

The definition specifies the following features are not “waters of the United States” even where they otherwise meet the terms of provisions (2) through (5) above:

1. Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the CWA;
2. Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with USEPA;
3. Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water (i.e., flowing for more than three months out of the year);
4. Artificially irrigated areas that would revert to dry land if the irrigation ceased;
5. Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
6. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;
7. Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and
8. Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

The lateral limits of USACE jurisdiction in non-tidal waters is defined by the "ordinary high-water mark" (OHWM) unless adjacent wetlands are present. The OHWM is a line on the shore or edge of a channel established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed upon the bank, shelving, changes in the character of soil, destruction of vegetation, or the presence of debris (33 CFR 328.3(c)(1)). As such, waters are recognized in the field by the presence of a defined watercourse with appropriate physical and topographic features. If wetlands occur within, or adjacent to, waters of the United States, the lateral limits of USACE

jurisdiction extend beyond the OHWM to the outer edge of the wetlands (33 CFR 328.4[c]). The upstream limit of jurisdiction in the absence of adjacent wetlands is the point beyond which the OHWM is no longer perceptible (33 CFR 328.4; see also 51 Federal Register 41217).

Wetlands

USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[c][1]). USACE's delineation procedures identify wetlands in the field based on indicators of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. The following is a discussion of each of these parameters.

Hydrophytic Vegetation

Hydrophytic vegetation dominates areas where frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of their occurring in wetlands. More than fifty percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. USACE published the National Wetland Plant List (USACE 2020b), which separates vascular plants into the following four basic categories based on plant species frequency of occurrence in wetlands:

- **Obligate Wetland (OBL).** Almost always occur in wetlands
- **Facultative Wetland (FACW).** Usually occur in wetlands, but occasionally found in non-wetlands
- **Facultative (FAC).** Occur in wetlands or non-wetlands
- **Facultative Upland (FACU).** Usually occur in non-wetlands, but may occur in wetlands
- **Obligate Upland (UPL).** Almost never occur in wetlands

USACE considers OBL, FACW and FAC species to be indicators of wetlands. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not appearing on the USACE's list is assumed to be an upland species, almost never occurring in wetlands. In addition, an area needs to contain at least 5 percent vegetative cover to be considered as a vegetated wetland.

Hydric Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of wetland soils include observations of ponding, inundation, saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), gleying (indicates reducing conditions by a blue-grey color), or accumulation of organic material. Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soils survey, both of which must be verified in the field.

Wetland Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation.

If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by field indicators, such as water marks, drift lines, sediment deposits, or drainage patterns in wetlands.

Limitations on Jurisdiction based on *Sackett v. USEPA* Supreme Court Decision

On May 25, 2023, the Supreme Court issued its decision on the petition from the Sacketts, a family in Idaho that was subject to a compliance order from the USEPA for backfilling their lot near Priest Lake, which the USEPA claimed contained federally-regulated wetlands. The wetlands in question were adjacent to a ditch that fed a creek that ultimately drained into Priest Lake, a navigable water body. The USEPA asserted the Sacketts had violated the law by filling the wetlands on their property without a permit. The Court's decision addressed controversy over whether, and under what conditions, the CWA reaches navigable waters' tributaries or adjacent wetlands. The Supreme Court's decision in *Sackett* provides definitive guidance to the agencies in determining the limits of their CWA authority. Major tenets of the decision have been incorporated into the agencies' current regulations through the September 2023 Conforming Rule.

The Court decided:

- "Adjacent wetlands" are waters of the United States only if there is a continuous surface connection between the wetland and a navigable or relatively permanent water body, such that it is difficult to determine the boundary between the wetland and the water body. The opinion notes "temporary interruptions to surface connection may sometimes occur because of phenomena like low tides or dry spells." The agencies addressed this element by defining the term "adjacent" to mean "having a continuous surface connection" in the Conforming Rule.
- The Significant Nexus Standard, introduced by the Court in prior decisions, is not mentioned in the CWA and should not be used. The Court determined the standard applies ecological factors whose use in determining jurisdiction is not supported by the statute. The Conforming Rule removed significant nexus considerations from the definition.

Although jurisdiction over tributaries was not addressed by the Court, the decision stated "…the [Clean Water Act's] use of "waters" encompasses only those relatively permanent, standing or continuously flowing bodies of water forming geographical features that are described in ordinary parlance as streams, oceans, rivers, and lakes." The Conforming Rule makes clear that only relatively permanent tributaries qualify as "waters of the United States."

Rivers and Harbors Act Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from USACE for the construction of any structure in or over any navigable water of the United States. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, re-channelization, or any other modification of a navigable water of the United States and applies to all structures and work. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent

obstacle or obstruction. It is important to note Section 10 applies only to navigable waters and thus does not apply to work in non-navigable wetlands or tributaries. In some cases, Section 10 authorization is issued by USACE concurrently with CWA Section 404 authorization, such as when certain Nationwide Permits are used.

Regional Water Quality Control Board Jurisdiction

The State Water Resources Control Board (SWRCB) and nine RWQCBs have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code sec. 13050(e)). These agencies also have responsibilities for administering portions of the CWA.

Clean Water Act Section 401

Section 401 of the CWA requires an applicant requesting a federal license or permit for an activity that may result in any discharge into navigable waters (such as a CWA Section 404 Permit) to provide state certification that the proposed activity will not violate state and federal water quality standards. In California, CWA Section 401 Water Quality Certification (Section 401 Certification) is issued by the RWQCBs and by the SWRCB for multi-region projects. The process begins when an applicant requests a pre-application meeting with the RWQCB, waits no less than 30 days, and then submits an application to the RWQCB and informs USACE (or the applicable agency from which a license or permit was requested) that an application has been submitted. USACE will then determine a "reasonable period of time" for the RWQCB to act on the application; this is typically 60 days for routine projects and longer for complex projects but may not exceed one year. Under current regulations, once initiated, the reasonable period of time cannot be stopped or paused. When the period has elapsed, if the RWQCB has not either issued a Section 401 Certification or denied the application, USACE may determine that Certification has been waived and issue the requested permit. If a Section 401 Certification is issued, it may include binding conditions, imposed either through the Certification itself or through the requested federal license or permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code section 13000 et seq.), the policy of the State is as follows:

- The quality of all the waters of the State shall be protected
- All activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason
- The State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation

The Porter-Cologne Act established nine RWQCBs (based on watershed boundaries) and the SWRCB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. In addition, the SWRCB allocates rights to the use of

surface water. The RWQCBs have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The SWRCB and RWQCBs have numerous nonpoint-source-related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

Section 13260 of the Porter-Cologne Act requires any person discharging or proposing to discharge waste that could affect the quality of waters of the State to file a Report of Waste Discharge with the appropriate RWQCB. The RWQCB may then authorize the discharge, subject to conditions, by issuing Waste Discharge Requirements (WDRs). While this requirement was historically applied primarily to outfalls and similar point source discharges, the SWRCB's (2019) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, effective May 2020, make it clear the agency will apply the Porter-Cologne Act's requirements to discharges of dredge and fill material as well. The *Procedures* state they are to be used in issuing CWA Section 401 Certifications and WDRs and largely mirror the existing review requirements for CWA Section 404 Permits and Section 401 Certifications, incorporating most elements of the USEPA's *Section 404(b)(1) Guidelines*. Following issuance of the *Procedures*, SWRCB produced a consolidated application form for dredge/fill discharges that can be used to obtain a CWA Section 401 Water Quality Certification, WDRs, or both.

Non-Wetland Waters of the State

The SWRCB and RWQCBs have not currently established regulations for field determinations of waters of the State except for wetlands. In many cases, the RWQCBs interpret the limits of waters of the State to be bounded by the OHWM unless isolated conditions or ephemeral waters are present. However, in the absence of statewide guidance, each RWQCB may interpret jurisdictional boundaries within their region, and the SWRCB has encouraged applicants to confirm jurisdictional limits with their RWQCB before submitting applications. As determined by the RWQCB, waters of the State may include riparian areas or other locations outside the OHWM, leading to a larger jurisdictional area over a given water body compared to USACE.

Wetland Waters of the State

Procedures for defining wetland waters of the State pursuant to the SWRCB's (2019) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* went into effect May 28, 2020. The SWRCB defines an area as a wetland if, under normal circumstances:

(i) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;

(ii) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and

(iii) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The SWRCB's Implementation Guidance for the Wetland Definition and Procedures for Discharges of Dredge and Fill Material to Waters of the State (2019, states waters of the United States and waters of the State should be delineated using the standard USACE delineation procedures, taking into consideration that the methods shall be modified only to allow for the fact that a lack of vegetation does not preclude an area from meeting the definition of a wetland.

California Department of Fish and Wildlife Jurisdiction

California Fish and Game Code Section 1602 states it is unlawful for any person to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying CDFW of that activity. Thereafter, if CDFW determines and informs the entity the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFW determines the activity may substantially adversely affect an existing fish or wildlife resource, the entity may be required to obtain a Streambed Alteration Agreement (SAA) from CDFW, which will include reasonable measures necessary to protect the affected resource(s), before the entity may conduct the activity described in the notification. Upon receiving a complete Notification of Lake/Streambed Alteration, CDFW has 60 days to present the entity with a Draft SAA. Upon review of the Draft SAA by the applicant, any problematic terms are negotiated with CDFW, and a final SAA is executed.

CDFW has not defined the term “stream” for the purposes of implementing its regulatory program under Section 1602, and the agency has not promulgated regulations directing how jurisdictional streambeds may be identified, or how their limits should be delineated. However, four relevant sources of information offer insight as to the appropriate limits of CDFW jurisdiction as discussed below.

- **The plain language of Section 1602 of CFGC** establishes the following general concepts:
  - References “river,” “stream,” and “lake”
  - References “natural flow”
  - References “bed,” “bank,” and “channel”
- **Applicable court decisions**, in particular *Rutherford v. State of California* (188 Cal App. 3d 1276 [1987]), which interpreted Section 1602’s use of “stream” to be as defined in common law. The Court indicated that a “stream” is commonly understood to:
  - Have a source and a terminus
  - Have banks and a channel
  - Convey flow at least periodically, but need not flow continuously and may at times appear outwardly dry
  - Represent the depression between the banks worn by the regular and usual flow of the water
  - Include the area between the opposing banks measured from the foot of the banks from the top of the water at its ordinary stage, including intervening sand bars
  - Include the land that is covered by the water in its ordinary low stage
  - Include lands below the OHWM
- **CDFW regulations** defining “stream” for other purposes, including sport fishing (14 California Code of Regulations 1.72) and streambed alterations associated with cannabis production (14 California Code of Regulations 722[c][21]), which indicate that a stream:
  - Flows at least periodically or intermittently
  - Flows through a bed or channel having banks
  - Supports fish or aquatic life

  - Can be dry for a period of time
  - Includes watercourses where surface or subsurface flow supports or has supported riparian vegetation

- **Guidance documents**, *including A Field Guide to Lake and Streambed Alteration Agreements* (CDFW 1994) and *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which suggest the following:
  - A stream may flow perennially or episodically
  - A stream is defined by the course in which water currently flows, or has flowed during the historic hydrologic course regime (approximately the last 200 years)
  - Width of a stream course can reasonably be identified by physical or biological indicators
  - A stream may have one or more channels (single thread vs. compound form)
  - Features such as braided channels, low-flow channels, active channels, banks associated with secondary channels, floodplains, islands, and stream-associated vegetation, are interconnected parts of the watercourse
  - Canals, aqueducts, irrigation ditches, and other means of water conveyance can be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife
  - Biologic components of a stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, invertebrates, and terrestrial species which derive benefits from the stream system
  - The lateral extent of a stream can be measured in different ways depending on the particular situation and the type of fish or wildlife resource at risk

The tenets listed above, among others, are applied to establish the boundaries of streambeds in various environments. The importance of each factor may be weighted based on site-specific considerations and the applicability of the indicators to the streambed at hand.

Appendix C

Representative Site Photographs

Photograph 1. Palmdale Ditch, view looking at concrete-lined portion of the Ditch with vertical banks in the southern portion of the BSA. Photo taken 12/18/23, facing south.

Photograph 2. Palmdale Ditch, view looking at concrete-lined portion of the Ditch with sloped banks in the southern portion of the BSA. Photo taken 12/18/23, facing northwest.

Photograph 3. Palmdale Ditch, view looking at earthen portion of the Ditch in the northern portion of the BSA. Note Fremont cottonwood tree along the left bank. Photo taken 12/21/23, facing northeast.

Photograph 4. Lake Palmdale, view of the lake in the northern portion of the BSA. Photo taken 12/21/23, facing west.

Photograph 5. Palmdale Ditch, view of Ditch where it connects to Lake Palmdale in the northern portion of the BSA. Photo taken 12/21/23, facing north.

Photograph 6. Little Rock Wash, overview of the wash in the southern portion of the BSA. Photo taken 12/18/23, facing south.

Photograph 7. Little Rock Wash, view of the OHWM of the wash in the southern portion of the BSA. Photo taken 12/18/23, facing north.

Photograph 8. California Aqueduct, view of the aqueduct in the northern portion of the BSA. Photo taken 1/2/24, facing southwest.

Photograph 9. Unnamed Pond 1, view of the pond immediately south of the Ditch. Note the concrete-lined Ditch on the right-hand side of the photograph. Photo taken 12/20/23, facing northwest.

Photograph 10. Unnamed Drainage 1, view of the southern, upstream portion of the drainage. Note presence of Fremont cottonwoods in the drainage. Photo taken 12/18/23, facing north.

Photograph 11. Unnamed Drainage 2, view of the southern, upstream portion of the drainage. Photo taken 12/18/23, facing northeast.

Photograph 12. Unnamed Drainage 3, view of the southern, upstream portion of the drainage. Photo taken 12/19/23, facing southwest.

Photograph 13. Unnamed Drainage 3, view of the northern, downstream portion of the drainage near connection point to the Ditch. Photo taken 12/19/23, facing southeast.

Photograph 12. Unnamed Drainage 4, view of the drainage where it originates from a culvert outlet along 47th Street East. Photo taken 12/19/23, facing southwest.

Photograph 15. Unnamed Drainage 5, view of the downstream portion of this feature. Photo taken 12/20/23, facing south.

Photograph 16. Unnamed Drainage 6, view of the central portion of this feature. Photo taken 12/20/23, facing west.

Photograph 17. Unnamed Drainage 7, view of the southern portion of this feature before it terminates along a disturbed access road. Photo taken 12/20/23, facing northwest.

Photograph 18. Unnamed Drainage 8, view of this drainage on the west side of an access road that bisects the drainage. Photo taken 12/20/23, facing west (upstream).

Photograph 19. Unnamed Drainage 9, view of the artificial drainage feature in the northern portion of the BSA. Note presence of Fremont cottonwood tree along right bank. Photo taken 12/21/23, facing southeast.

Photograph 20. Unnamed Drainage 10, view of the artificial drainage feature in the northern portion of the BSA. Photo taken 12/21/23, facing west.

Photograph 21. Unnamed Drainage 11, view of the southern, upstream portion of the drainage. Drainage surrounded by rubber rabbitbrush scrub. Photo taken 12/21/23, facing southwest.

Photograph 22. Unnamed Drainage 12, view of the drainage before it passes underneath the Ditch. Photo taken 12/21/23, facing southwest.

Photograph 23. Unnamed Drainage 12, view of the drainage where it becomes discontinuous along disturbed dirt road underneath the Ditch. Note Ditch span. Photo taken 12/21/23, facing southwest.

Photograph 24. Unnamed Drainage 13, view of the connection point between the drainage and the Ditch. Photo taken 12/21/23, facing south.

Photograph 25. Unnamed Drainage 14, view of upstream portion of drainage before it flows into the Ditch. Photo taken 12/21/23, facing south.

Photograph 26. Unnamed Drainage 15, view of upstream portion of drainage before it flows into the Ditch. Photo taken 12/13/23, facing south.

Photograph 27. Unnamed Drainage 16, view of central portion of drainage in the northern portion of the BSA. Note presence of some slowly-moving water. Photo taken 1/2/24, facing southeast.

Photograph 28. Unnamed Drainage 17, view of origin of drainage from steel pipe culvert outlet on south side of Pearblossom Highway. Photo taken 1/2/24, facing west.

Photograph 29. Unnamed Drainage 18, view of the wide, alluvial drainage feature in the southern portion of the BSA, facing upstream. Photo taken 12/18/23, facing west.

Photograph 30. Unnamed Drainage 19, view of the southern branch of the drainage to the north of the Ditch. Photo taken 12/19/23, facing southwest.

Photograph 31. Wetland 1, view of the isolated wetland in the southern portion of the BSA. Note overstory of Goodding's black willow and understory of Baltic rush. Photo taken 12/19/23, facing north.

Photograph 32. Wetland 2, view of the isolated wetland in the southern portion of the BSA. Note the presence of Goodding's black willow and Baltic rush. Photo taken 12/19/23, facing west.

Photograph 33. Wetland 3, view of the isolated wetland in the southern portion of the BSA. Note the presence of Baltic rush and rabbitsfoot grass along the narrow wetland. Photo taken 12/19/23, facing west.

Photograph 34. Wetland 4, view of the isolated wetland in the southern portion of the BSA. Note the presence of Baltic rush, narrowleaf milkweed, and Goodding's black willow. Photo taken 12/19/23, facing east.

Photograph 35. Wetland 5, view of the large, isolated wetland in the central portion of the BSA. Note water marks on Fremont cottonwood trees and presence of ponded water. Photo taken 12/20/23, facing west.

Photograph 36. Wetland 5, view of the large, isolated wetland in the central portion of the BSA. Note the presence of open water. Photo taken 12/20/23, facing south.

Photograph 37. Wetland 6, view of the isolated wetland in the central portion of the BSA. Note the presence of cattails. Photo taken 12/20/23, facing northwest.

Photograph 38. Wetland 7, view of the isolated wetland in the northern portion of the BSA to the north of Barrel Springs Road. Note the presence of cattails and Fremont cottonwood. Photo taken 12/20/23, facing north.

Photograph 39. Wetland 8, view of the isolated wetland immediately south of the California Aqueduct. Note the dominance of Baltic rush and red willow. Photo taken 12/20/23, facing east.

Photograph 40. Wetland 9, view of the isolated wetland immediately north of the Ditch. Note the presence of Fremont cottonwood and Baltic rush. Photo taken 12/21/23, facing northwest.

Photograph 41. Wetland 10, view of the isolated wetland in the northern portion BSA. Note the dominance of Baltic rush. Photo taken 12/21/23, facing northeast.

Photograph 42. Wetland 11, view of the isolated wetland in the northern portion of the BSA. Note the dominance of Baltic rush and surrounding California juniper (*Juniperus californica*). Photo taken 12/21/23, facing northwest.

Photograph 43. Wetland 12, view of the isolated wetland in the northern portion of the BSA to the south of the Ditch. Photo taken 12/21/23, facing southwest.

Photograph 44. Wetland 13, view of the isolated wetland in the northern portion of the BSA. Note the dominance of Baltic rush. Photo taken 12/21/23, facing east.

Photograph 45. Wetland 14, view of the isolated wetland in the northern portion of the BSA. Photo taken 12/21/23, facing east.

Photograph 46. Wetland 15, view of the isolated wetland in the northern portion of the BSA. Note the presence of cattails. Photo taken 1/2/24, facing northwest.

Photograph 47. Wetland 16, view of the isolated wetland in the northern portion of the BSA. Note the dominance of Baltic rush. Photo taken 1/2/24, facing north.

Photograph 48. Potential Wetland 17, view of possible wetland feature immediately north of the California Aqueduct. Photograph taken with binoculars. Photo taken 1/2/24, facing north.

Photograph 49. Potential Wetland 18, view of possible wetland feature immediately north of the California Aqueduct. Photo taken 1/2/24, facing northeast.

Photograph 50. Unnamed Drainage 20, view of drainage feature immediately south of the intersection between Pearblossom Highway and Barrel Springs Road. Photo taken 5/2/24, facing southwest.

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Appendix D

Completed Arid West Ordinary High Water Mark Datasheets and United States Army Corps of Engineers Wetland Determination Data Forms

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Project Number: 23-107737
Stream: Little Rock Wash
Investigator(s): Kyle Geon, Casey Clark

Date: 12/18/23 **Time:** 10am
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: In wash to east of PWD entry road

Projection: USGS **Datum:** NAD83
Coordinates:

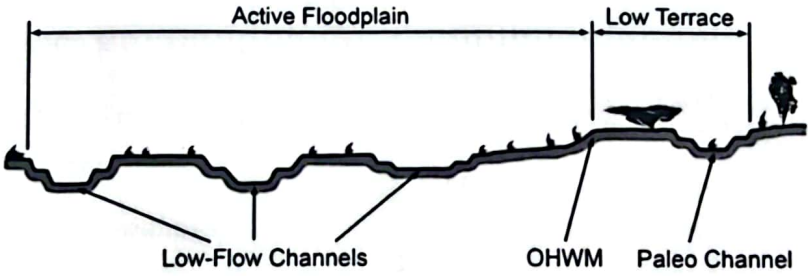
Potential anthropogenic influences on the channel system:
dam upstream of feature → feature dammed.

Brief site description:
Perennial wash flowing in North direction through eastern portion of study area. Dominated by riparian vegetation, including willows and cottonwoods.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



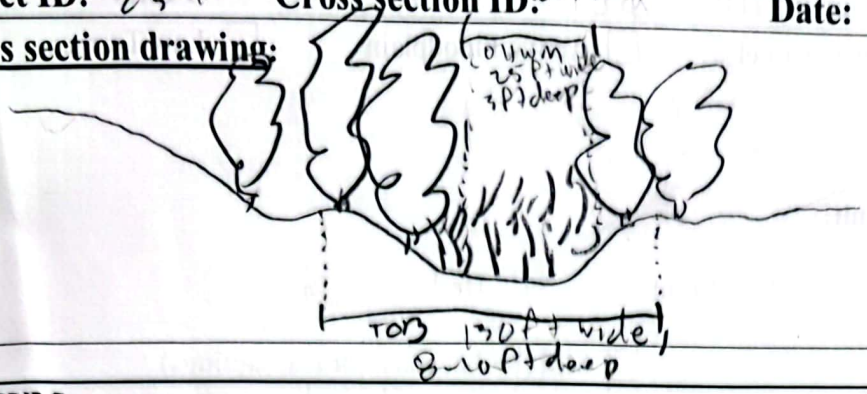
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-101737 **Cross section ID:** Little Rock Wash **Date:** 12/18/23 **Time:** 10am

Cross section drawing:



OHWM

GPS point: 34.990343, -118.024683

Indicators:

- [1] Change in average sediment texture
- [2] Change in vegetation species
- [3] Change in vegetation cover
- [4] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - More fine sediment (silt) in OHWM than outside
2 - Cattails in OHWM, none outside
3 - Higher vegetation cover inside than outside OHWM
4 - Observable break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Silt and boulder

Total veg cover: 90 % Tree: 60 % Shrub: 10 % Herb: 20 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [x] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Low flow channel includes some areas of standing/slow-moving water with establishment of riparian vegetation (ie., cattails). However, these areas occur in the OHWM.

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Project Number: 23-11737
Stream: Palmdale Ditch (PD-A)
Investigator(s): Kyle Gorn, Casey Clark

Date: 12/18/23 **Time:**
Town: palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details: Palmdale ditch in southern part of site.

Projection: USGS **Datum:** NAD83

Coordinates: 34.490712, -118.025434

Potential anthropogenic influences on the channel system:

Man-made ditch

Brief site description:

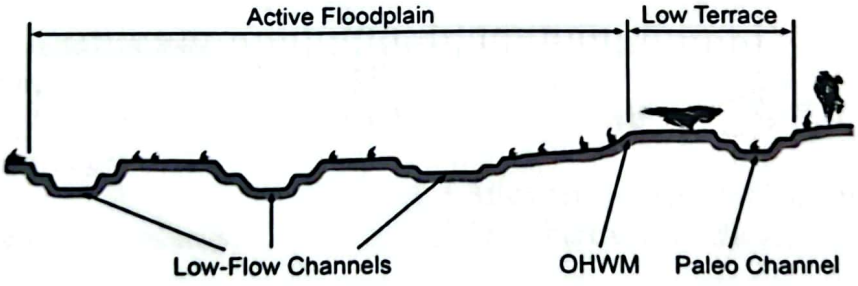
concrete lined portion of ditch where OHWM and top of bank are terminous

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



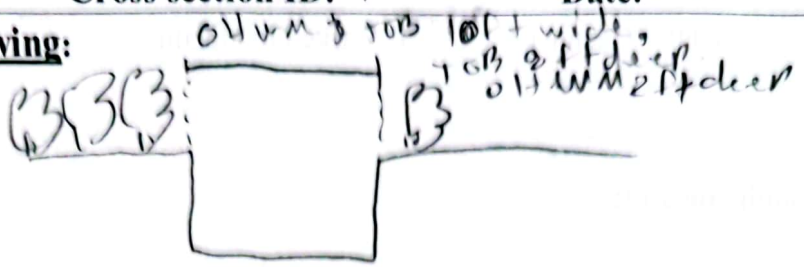
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

roject ID: 23-14737 **Cross section ID:** P12-A **Date:** 12/18/23 **Time:**

Cross section drawing:



OHWM

GPS point: 34.490712, -118.025434

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover (1)
- ☒ Break in bank slope (2)
- ☐ Other: _____
- ☐ Other: _____

Comments:

1 - veg cover higher outside OHWM
2 - break in slope observable

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: concrete-lined

Total veg cover: 0 % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

concrete-lined.

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Project Number: 23-147337
Stream: Palmdale Ditch (PD-B)
Investigator(s): Kyle Geon, Cosey Clark

Date: 12/19/23 **Time:**
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Ditch to west of bank

Projection: WGS **Datum:** WGS

Coordinates:

Potential anthropogenic influences on the channel system:
channelized, mow-mode ditch

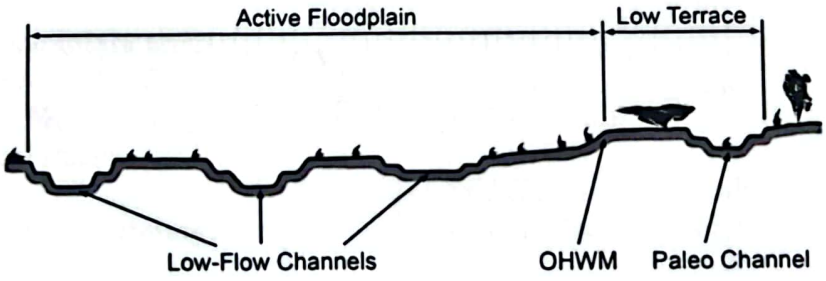
Brief site description:
channelized ditch. grouted cobble w/ some sediment accumulation

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



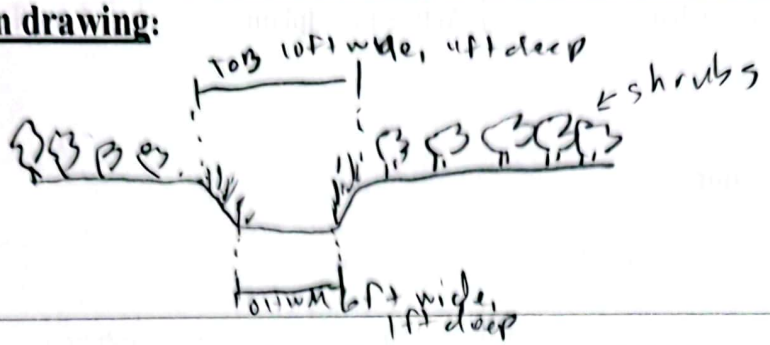
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

CamScanner

Project ID: 23-14737 **Cross section ID:** 1D - B **Date:** 12/18/23 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:
1 - change in sediment texture from silt/bobbles inside to cobbles/sand outside
2 - unvegetated in OHWM, vegetated with shrub outside OHWM
3 - observable break in bank slope

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: pebbles/silt

Total veg cover: 20 % Tree: 0 % Shrub: 10 % Herb: 10 %

Community successional stage:

- [ ] NA
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Early (herbaceous & seedlings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Margins of low-flow channel have some establishment of willows/rulefat

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Project Number: 23.145737
Stream: Palmdale Ditch (PD-C)
Investigator(s): K Carn, E. Clark

Date: 12/19/23 **Time:**
Town: **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details: Ditch

Projection: WGS **Datum:** NAD83
Coordinates:

Potential anthropogenic influences on the channel system:

Ditch

Brief site description:

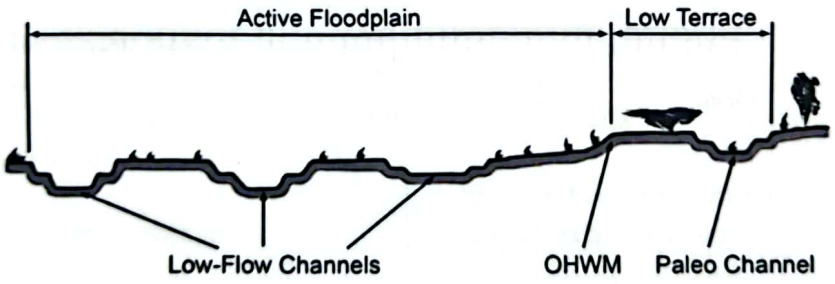
Ditch, concrete lined, but TOB is slightly wider than OHWM due to sloped banks

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



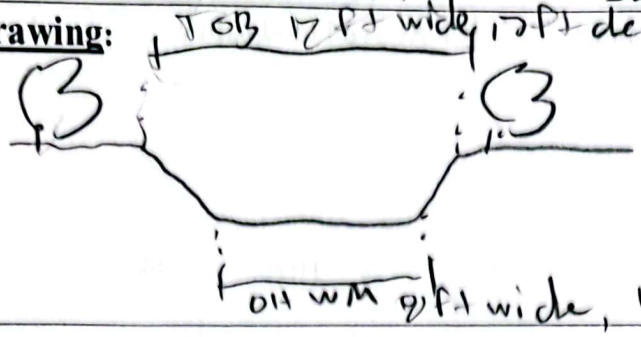
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: **Cross section ID:** PD-C **Date:** 12/18/23 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- 1 ☒ Change in vegetation cover
- 2 ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

1 - trees in OHWM, veg. outside
2 - observed break

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Concrete-lined

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch Conversion **Date:** 12/18/23 **Time:** 13:00
Project Number: 23-14737 **Town:** Palmdale **State:** CA
Stream: Unnamed Drainage 1 **Photo begin file#:** **Photo end file#:**
Investigator(s):

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Immediately north of Little Rock Reservoir

Projection: USGS **Datum:** NAD83
Coordinates:

Potential anthropogenic influences on the channel system:
Road development / OHV use

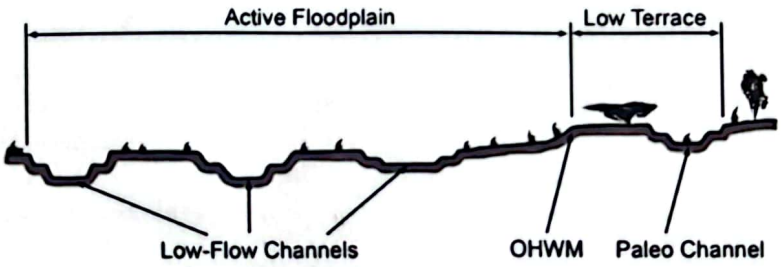
Brief site description:
Small ephemeral drainage flowing in northeastern direction between dirt road to the south and Cheseboro Road to the north.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



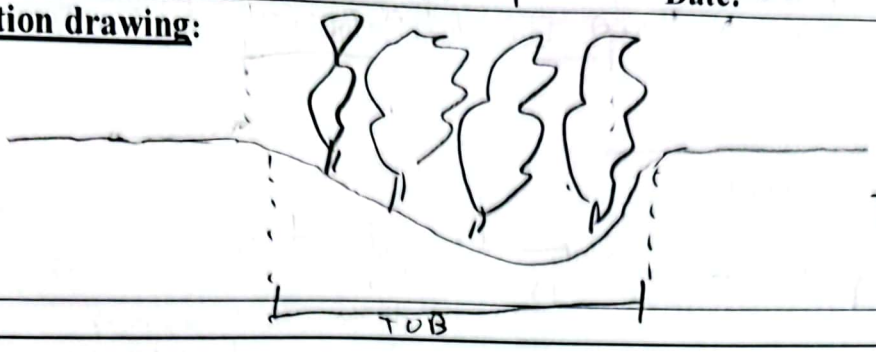
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

CamScanner

Project ID: 23-14737 **Cross section ID:** Unnamed Drainage 1 **Date:** 12/18/23 **Time:** 13:00

Cross section drawing:



OHWM

GPS point: No OHWM present

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments: No OHWM present

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 30 % Tree: 0 % Shrub: 0 % Herb: 30 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Project Number: 23-141735
Stream: Unnamed Drainage 2
Investigator(s): Kyle Gein, Casey Clark

Date: 12/18/23
Town: Palmdale
Photo begin file#:

Time: 2 pm
State: CA
Photo end file#:

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Ephemeral drainage south of road and north of dirt road

Projection: WGS 84 **Datum:** NAD83

Coordinates: 34.505128, -118.034242

Potential anthropogenic influences on the channel system:

pollution, road development

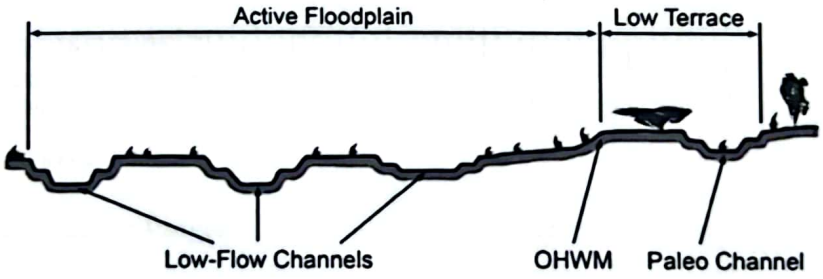
Brief site description:

Small ephemeral drainage flowing in northeast direction. Inception point is adjacent to dirt road where sheet flow is channelized into drainage.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

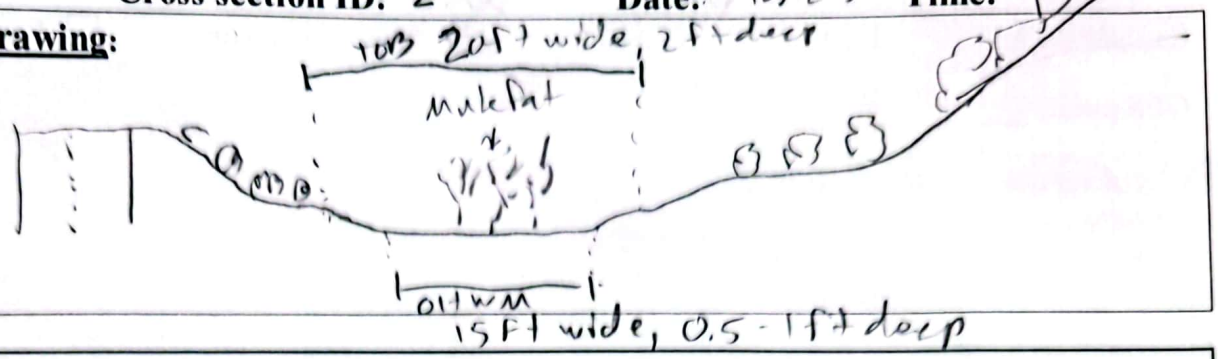
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

CamScanner

Unnamed Drainage

Project ID: 23-141777 **Cross section ID:** 2 **Date:** 12/18/23 **Time:**

Cross section drawing:



OHWM

GPS point: 34.505189, -118.034242

Indicators:

- [1] Change in average sediment texture
- [2] Change in vegetation species
- [ ] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - Sand in OHWM to silty and pebbles outside OHWM

2 - Mulefat + POPFRE in OHWM, upland species outside OHWM

3 - observed break in slope

Floodplain unit:

- [X] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 35 % Tree: 0 % Shrub: 30 % Herb: 5 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [X] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [X] Drift and/or debris
- [X] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale ditch conversion
Project Number:
Stream: Unnamed drainage 3
Investigator(s): Casey Clark, Kyle Gern

Date: 12/19/23 **Time:** —
Town: Palmdale **State:** CA
Photo begin file#: — **Photo end file#:** —

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: outside of Palmdale, near the ditch

Projection: USGS **Datum:** NAD83
Coordinates: 34.516761, -118.042864

Potential anthropogenic influences on the channel system: OHV use, Ditch transverses through area.

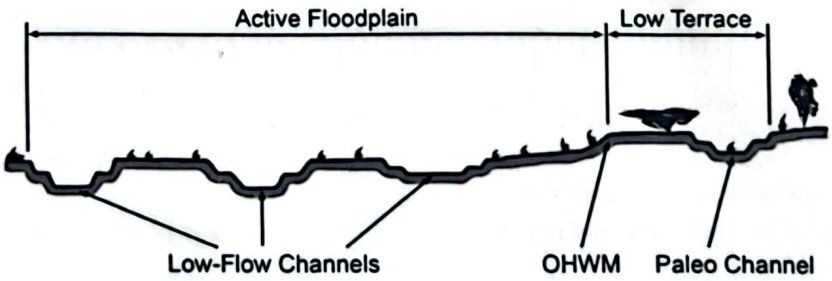
Brief site description: California Juniper / with Joshua tree Woodland, sandy loam soil, ephemeral Drainage, very channelized / defined. WASH fans out in certain portions, then re-channelized. No Riparian vegetation present.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 2023
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



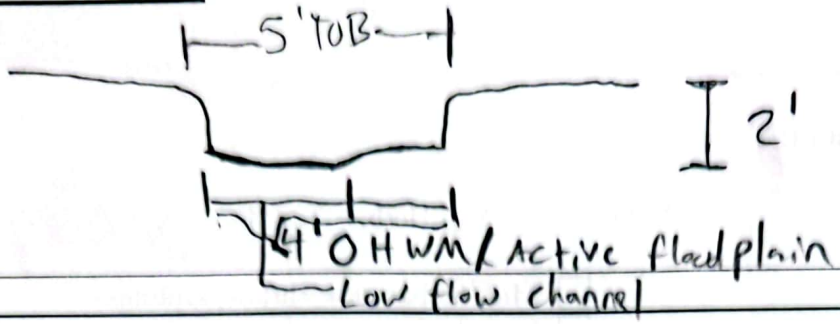
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☑ GPS
   - ☐ Other:

CamScanner

Project ID: **Cross section ID:** Drainage 3 **Date:** 12/19 **Time:**

Cross section drawing:



OHWM

GPS point: 34.516761, -118.042869

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 0 % Tree: — % Shrub: — % Herb: — %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

Project ID: PDC **Cross section ID:** 3 **Date:** 12/19 **Time:**

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: 3

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 0 % Tree: — % Shrub: — % Herb: — %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch
Date: 12/14/23
Time:
Project Number: 23-14737
Town: Palmdale
State: CA
Stream: Unnamed Drainage 4
Photo begin file#:
Photo end file#:
Investigator(s): ~~[illegible]~~ Kyle Gerin, Cosey Cook

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Immediately east of 47th Street E near Palmdale Ditch

Projection: N.A.D.S **Datum:** NAD83

Coordinates: 34.518652, -118.044858

Potential anthropogenic influences on the channel system:
Road maintenance development.

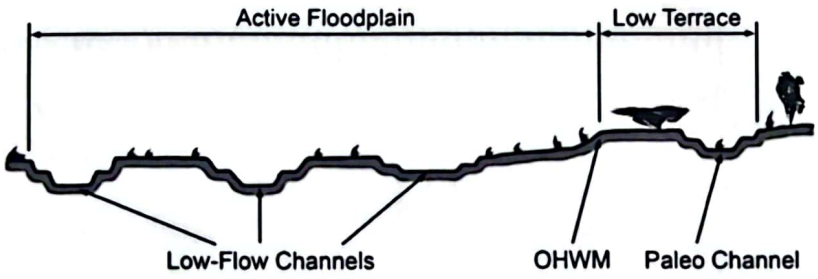
Brief site description: small ephemeral drainage that starts ~~[illegible]~~ from outlet of ~~[illegible]~~ 2-ft wide corrugated steel pipe culvert coming from 47th Street E. Culvert itself is non-jurisdictional.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



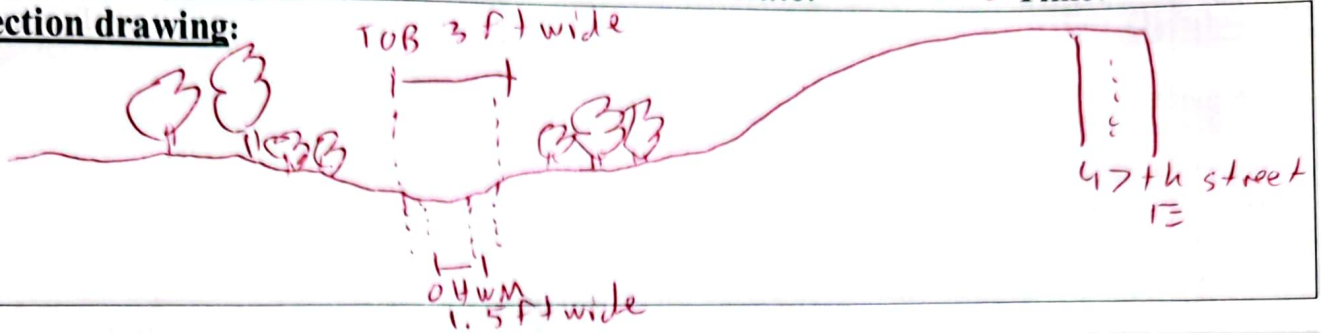
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

CamScanner

Project ID: **Cross section ID:** 4 **Date:** 12/14/23 **Time:**

Cross section drawing:



OHWM

GPS point: 34.518614, -118.044845

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 – More pebbles in OHWM, less pebbles outside OHWM

2 – ~~unexpected~~ in channel, scour outside channel

3 – observed break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand, pebbles

Total veg cover: 5 % Tree: 0 % Shrub: 0 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch Conversion
Project Number:
Stream: Unnamed Drainage 5
Investigator(s): CC/KG

Date: 12/20/23
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Near Palmdale Ditch

Projection: USGS **Datum:** NAD83
Coordinates: 34.528833, -118.061584

Potential anthropogenic influences on the channel system: Channel is fed by a culvert which recieves highway run off.

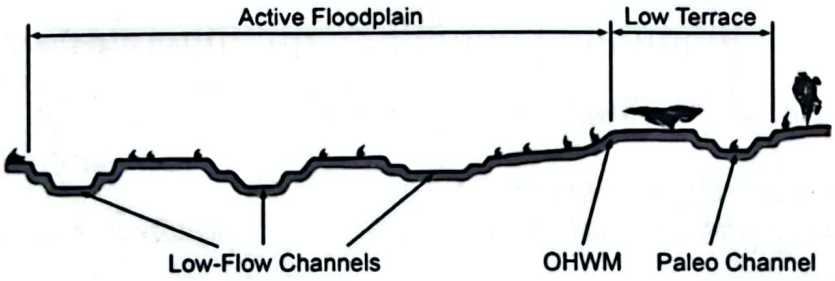
Brief site description: California Juniper woodland. High non-native grass cover. Sandy Soil. Stream is an ephemeral channel resulting from highway runoff. It is discontinuous and does not support hydrophytic vegetation.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 11/23
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



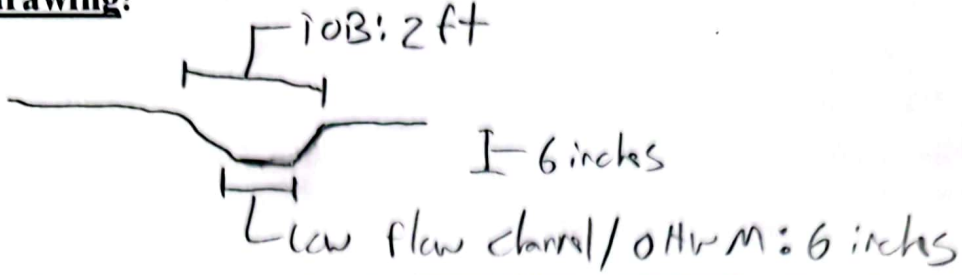
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☑ GPS
   - ☐ Other:

CamScanner

Project ID: 23-141737 **Cross section ID:** Drainage 5 **Date:** 12/20 **Time:**

Cross section drawing:



OHWM

GPS point: 34.528833, -118.061584

Indicators:

- [ ] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments: Homogenous channel.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand/Gravel

Total veg cover: 0 % Tree: — % Shrub: — % Herb: — %

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch. CA = California

Palmdale Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: D.I.C.H conversion
Project Number: 23-141737
Stream: ~~(E)~~ Unnamed Drainage 6
Investigator(s): K. Green, C. Clark

Date: 11/20/23 **Time:**
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Ephemeral

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: ~~E~~ drainage to North of P.D. & East of CAAqueduct

Projection: WGS **Datum:** NAD83

Coordinates: 34.530018, -118.063166

Potential anthropogenic influences on the channel system:

Pollution

Brief site description:

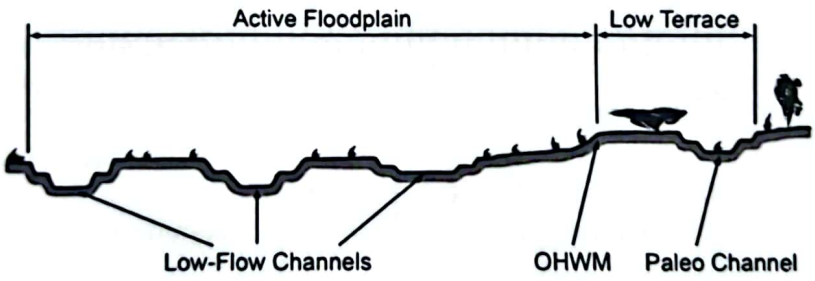
small Ephemeral drainage flowing in ~~South~~ Northwest direction to North of P.D. vegetated with scrub.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



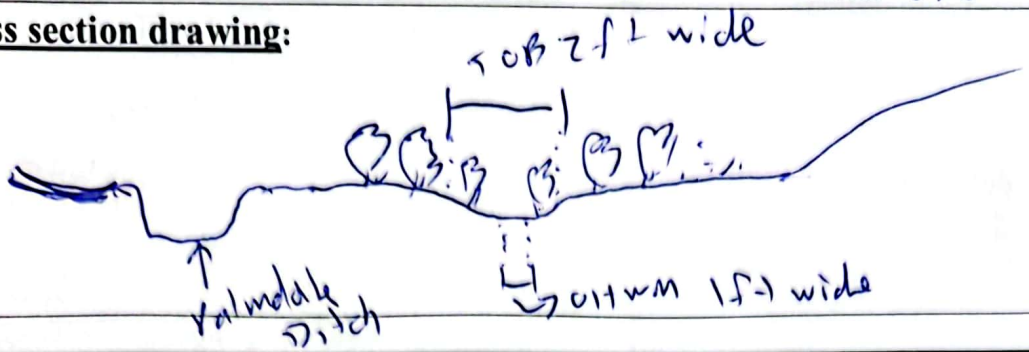
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

CamScanner

Project ID: 23-1017 Cross section ID: Unnamed Drainage 6a Date: 12/20/23 Time:

Cross section drawing:



OHWM

GPS point: 34.5 30018, -118.063106

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [2] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1- More pebbles in OHWM, less outside OHWM
2- observed break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand/pebbles

Total veg cover: 30 % Tree: 0 % Shrubz 0 % Herb: 10 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD conversion
Project Number: 23-14733
Stream: ~~B~~ Unnamed Drainage 6
Investigator(s): ~~Kyle~~ Kyle Gein, Casey Clark

Date: 12/20/23
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Erh drain to ~~PD~~ North of P.D. ditch

Projection: WGS **Datum:** NAD83
Coordinates: 34.530212, -118.063603

Potential anthropogenic influences on the channel system:

Pollution

Brief site description:

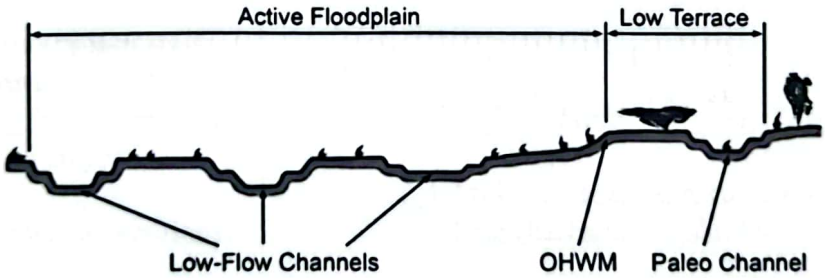
small ~~ephemeral~~ drain paralleling RD. to North. Flows in Northwest direction. Vegetated with ~~[illegible]~~ upland scrub.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



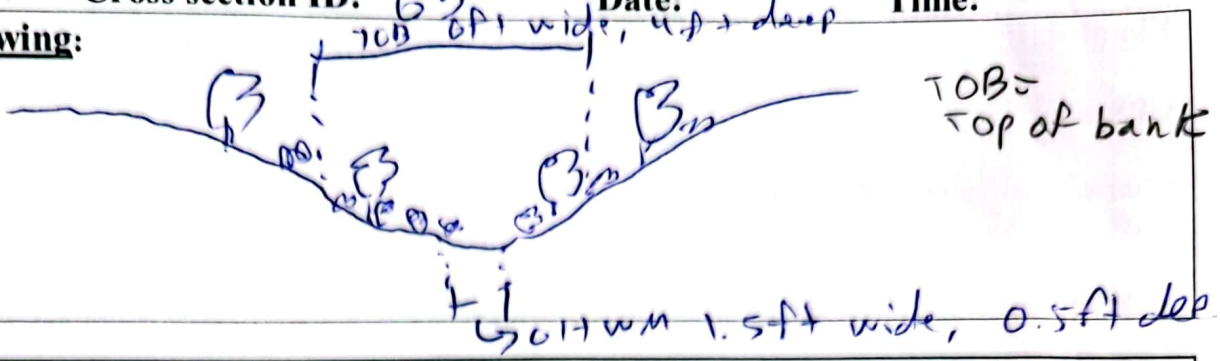
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

CamScanner

Project ID: 23-141737 Cross section ID: unnamed Drainage 65 Date: 12/20/23 Time:

Cross section drawing:



OHWM

GPS point: 34.531217, -118.063603

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [2] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - More fine-grained sand in OHWM, less outside OHWM

2 - observed break in bank slope

Floodplain unit: [X] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 40 % Tree: 10 % Shrub: 20 % Herb: 10 %

Community successional stage:

- [ ] NA
- [X] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [X] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

CA = California P.D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: 23-141737 PD conversion
Project Number: 23-141737
Stream: Unnamed Drainage 7
Investigator(s): Kyle Bern, caseyclark
Date: 12/20/23
Time:
Town: Palmdale
State: CA
Photo begin file#:
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: ~0.6 west of PD, ½ south of CA aqueduct

Projection: WGS **Datum:** NAD83

Coordinates: 34.530824, -118.065900

Potential anthropogenic influences on the channel system:

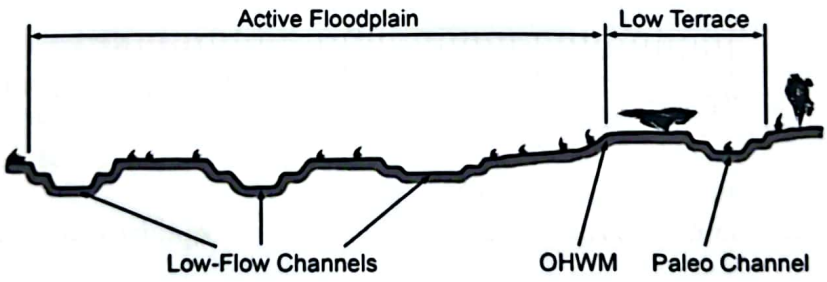
Pollution

Brief site description: small single-thread ephemeral drainage flowing SE → NW on southside of PD, flows directly onto dirt road and dissipates into sheet flow.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



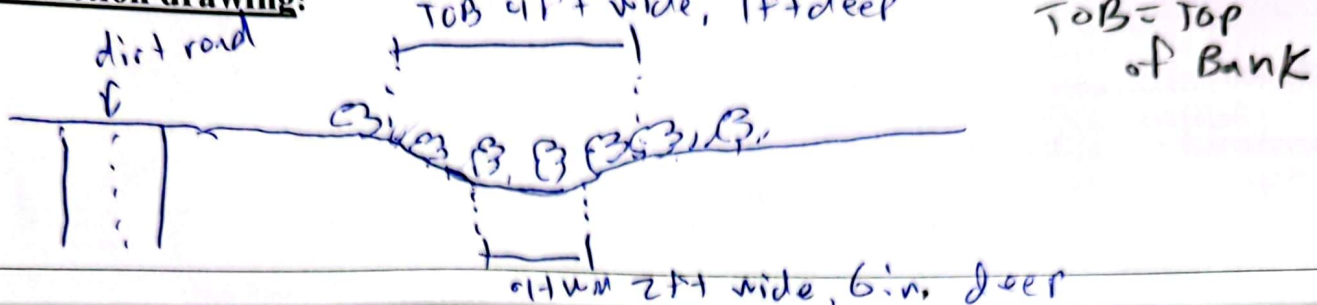
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-141733 Unnamed Drainage Cross section ID: 7 Date: 12/20/23 Time:

Cross section drawing:



OHWM

GPS point: 34.530824, -118.065900

Indicators:

- 1 ☒ Change in average sediment texture
- ☐ Change in vegetation species
- 2 ☒ Change in vegetation cover
- 3 ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

1- More coarse sand / pebbles in OHWM than outside OHWM. More fine sand & cobbles outside OHWM
2- Mostly ~~unvegetated~~ in OHWM, ~~riparian~~ herbs & scrub outside OHWM.
3- Observed break in slope

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand / pebble

Total veg cover: 20 % Tree: 0 % Shrub: 18 % Herb: 2 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch ; CA = California

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD conversion
Project Number: 23-141735
Stream: Unnamed Drainage B
Investigator(s): ~~[redacted]~~ Kyle Bean, Casey Clark
Date: 12/20/23
Town: Palmdale
Time:
State: CA
Photo begin file#:
Photo end file#:

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Ephemeral drainage flowing W->E to N of CA Aqueduct

Projection: WGS 84 **Datum:** NAD83

Coordinates: 34.533596, -118.075365

Potential anthropogenic influences on the channel system:

Pollution, road maintenance

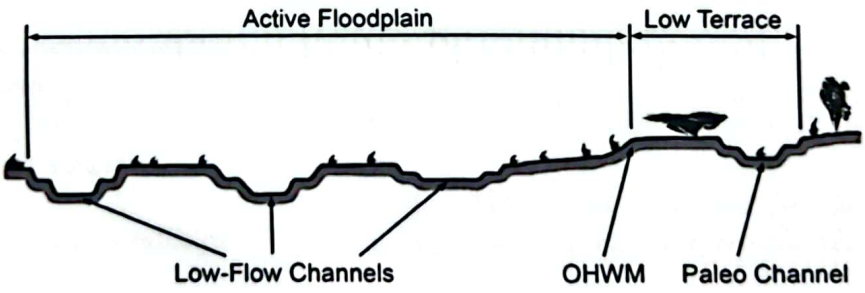
Brief site description:

Small ephemeral drainage flowing W -> E to N of CA Aqueduct. Turns into sheet flow across access road & flows directly into Palmdale ditch. North vegetated with scrub vegetation around channel.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

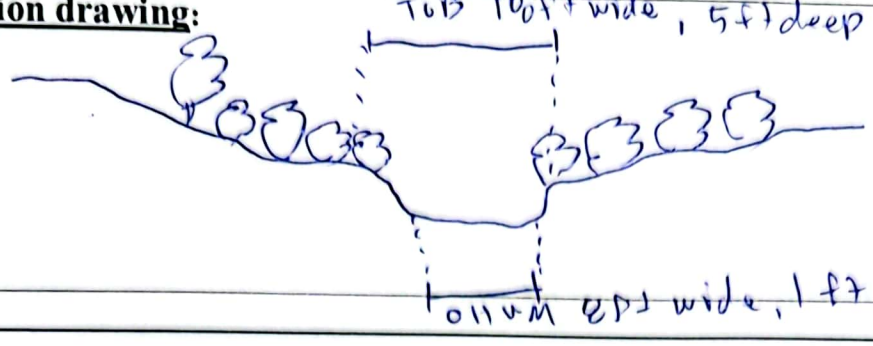
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

CamScanner

Unnamed Drainage

Project ID: 23-1-1737 **Cross section ID:** 8 **Date:** 7/10/23 **Time:**

Cross section drawing:



OHWM

GPS point: 34.533596, -118.075365

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1- coarse sand/pebbles in OHWM, fine sand above OHWM
2- uruey in channel, ~~Scrub veg~~ upland scrub above OHWM
~~Ar~~
3- observed break in bank slope.

Floodplain unit:

- [1] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: coarse sand

Total veg cover: 10 % Tree: 0 % Shrub: 10 % Herb: 0 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch JD
Project Number: 23-1173.7
Stream: Unnamed Drainage 9
Investigator(s): Kyle Bern, Casey Clark

Date: 12/21/23
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#:

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: E of Sierra Hwy, near Sierra Hills Ln intersection

Projection: WGS **Datum:** NAD83
Coordinates: 34.539881, -118.10564

Potential anthropogenic influences on the channel system:
Excavated drainage feature, trash, pollution. As feature is excavated, site is significantly disturbed

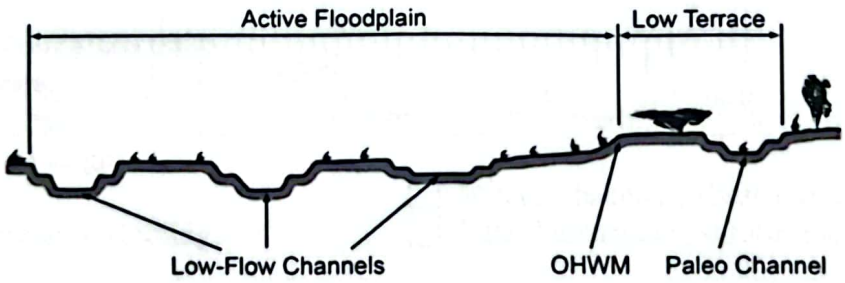
Brief site description:
Small ephemeral drainage feature flowing in a S -> N direction to the east of Sierra Hills Lane. Channel unvegetated. Banks contain scrub species

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

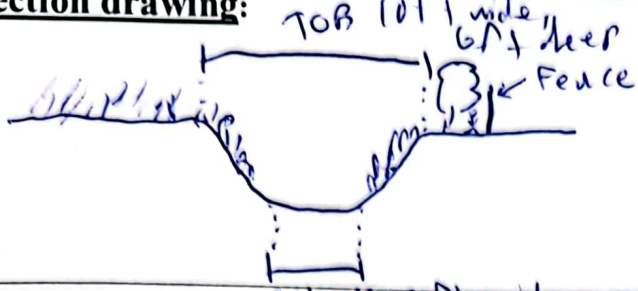
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

CamScanner

Unnamed Drainage

Project ID: 34737 **Cross section ID:** 9 **Date:** 12/21/23 **Time:**

Cross section drawing:



TOB = TOP of Bank

OHWM

GPS point: 34.538881, -118.105649

Indicators:

- [ ] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - Average texture in OHWM is coarse sand, above OHWM is fine sand

2 - More cover outside OHWM

3 - observed break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Coarse sand

Total veg cover: 20 % Tree: 0 % Shrub: 10 % Herb: 10 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch ; TOB = Top of Bank

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD conversion
Project Number: 23-147737
Stream: [redacted] Unnamed Drainage 10
Investigator(s): [redacted] Kyle Gern, Casey Clark

Date: 12/21/23 **Time:**
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details: canal running SE→NW under access road bisecting study Area

Projection: UTMs **Datum:** NAD83
Coordinates: 34.546945, -118.114738

Potential anthropogenic influences on the channel system:
Man-made concrete-lined canal, pollution.

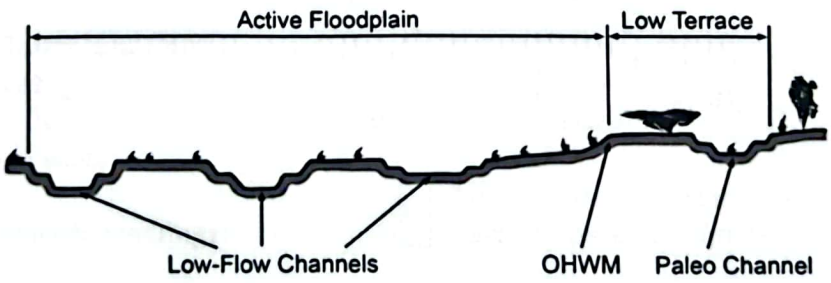
Brief site description:
Man-made concrete-lined canal, OHWM 10ft wide, TOB [redacted] 20 ft wide, entirely unvegetated.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



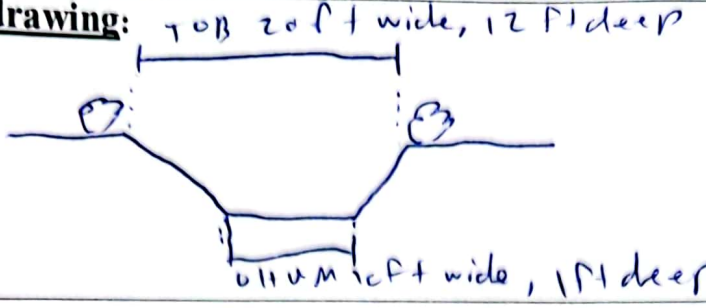
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-141737 Unnamed Drainage **Cross section ID:** 10 **Date:** 12/2/23 **Time:**

Cross section drawing:



OHWM

GPS point: 31.54169415, -118.11417238

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

only break in bank slope evident, entirely concrete-lined drainage without vegetation.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: same as ditch

Characteristics of the floodplain unit:

Average sediment texture: Concrete

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

P. D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: P.D. conversion
Date: 12/21/23
Time:
Project Number: 23-141735
Town: Palmdale
State: CA
Stream: ~~[illegible]~~ unnamed Drainage 11
Photo begin file#:
Photo end file#:
Investigator(s): ~~[illegible]~~ Kyle Gorn, Casey Clark

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Near Tejon Park trail, Palmdale CA

Projection: WGS **Datum:** NAD83
Coordinates: 34.541069, -118.101691

Potential anthropogenic influences on the channel system:
pollution.

Brief site description: Small ephemeral drainage flowing in NW direction, parallel to Tejon Park trail. Mostly unvegetated in OHWM, with one large POPFRE along left bank

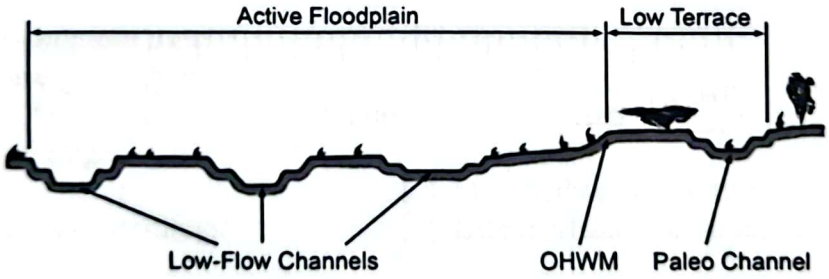
POPFRE = Fremont cottonwood

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

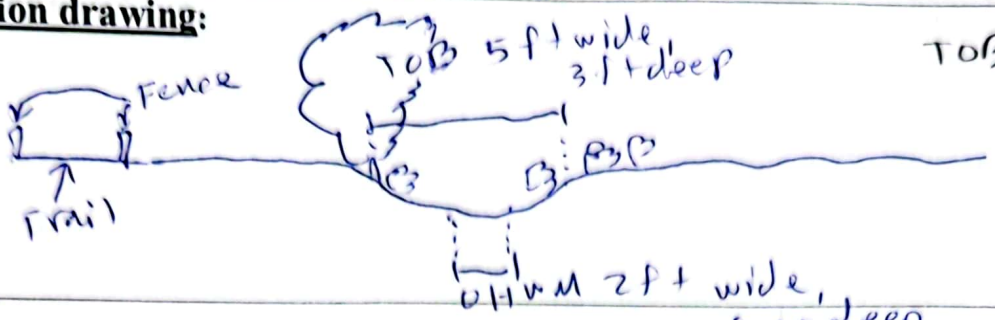
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

unnamed Drainage

Project ID: 23-1-1737 **Cross section ID:** 11 **Date:** 12/21/23 **Time:**

Cross section drawing:



TOB = Top of Bank

OHWM

GPS point: 34.541069, -118.101691

POPFRE = Fremont cottonwood
JUNBAL = Juncus balticus

Indicators:

- [1] Change in average sediment texture
- [2] Change in vegetation species
- [3] Change in vegetation cover
- [4] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

↑ = increase

Comments:

1 – Loam inside OHWM, silt/sand outside
2 – ↑ in wetland species (e.g. POPFRE canopy, JUNBAL) in OHWM. upland species outside OHWM
3 – ↑ in veg cover outside OHWM
4 – observed break in slope

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: same as cl-1 WM

Characteristics of the floodplain unit:

Average sediment texture: Loam
Total veg cover: 25 % Tree: 10 % Shrub: 0 % Herb: 15 %
Community successional stage:

- [ ] NA
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Early (herbaceous & seedlings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Inception point of unnamed Drainage 11 is to North of Palmdale Ditch. Potential subsurface connection to ditch (aquifer?), but no surface connection. originates on side slope

P.D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: P.D. conversion
Project Number: 23-141737
Stream: [redacted] unnamed Drainage 12
Investigator(s): [redacted] Kyle Bern, Casey Clark

Date: 12/21/23
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#: ephemeral

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: small [redacted] drainage under PD bridge crossing 6

Projection: USGS **Datum:** NAD83
Coordinates: 34.594099, -118.093077

Potential anthropogenic influences on the channel system:

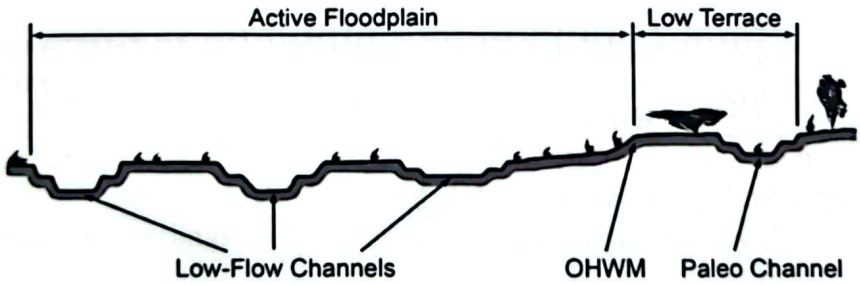
Littering.

Brief site description: small single-channel [redacted] drainage flowing S -> N under P.D. [redacted] where it is bridged across drainage. Vegetated ephemeral with Juniper scrub & annual grasses

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

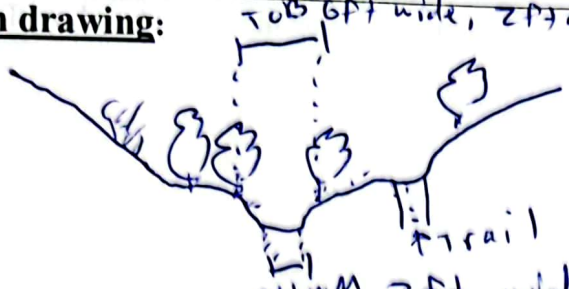
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

CamScanner

Unnamed Drainage

Project ID: 23-141737 **Cross section ID:** 12 **Date:** 12/12/23 **Time:**

Cross section drawing:



TOB = Top of Bank

OHWM

GPS point: 31.540991, -118.093077

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
  - ↑ = increase
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - Fine sand in OHWM, coarse sand outside OHWM

2 - ↑ in vegetative cover above OHWM

3 - observed break in bank slope.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 5 % Tree: 0 % Shrub: 2.5 % Herb: 2.5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: P.D. conversion
Project Number: 23-141737
Stream: ~~[redacted]~~ Unnamed Drainage 13
Investigator(s): ~~[redacted]~~ Kyle Gorn, Casey Clark
Date: 12/21/23 **Time:**
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: P.D., upslope of ditch

Projection: [redacted] **Datum:** NAD83

Coordinates: 34.546119, -118.096528

Potential anthropogenic influences on the channel system:

Pollution, OHV use.

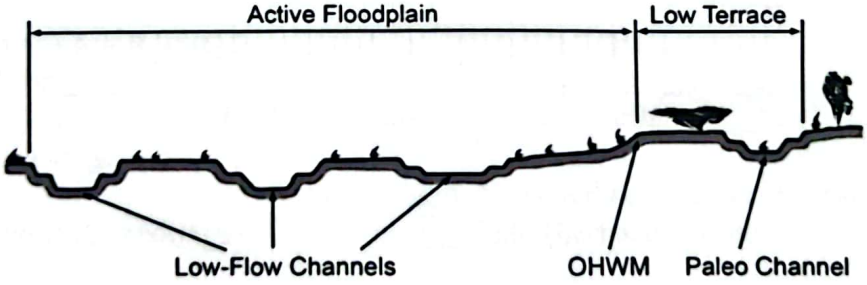
Brief site description:

small ~~[redacted]~~ ephemeral drainage flowing Northalong N-facing slope directly into P.D..

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

CamScanner

Project ID: 23-14737 **Cross section ID:** Unnamed Drainage 13 **Date:** 12/28/23 **Time:**

Cross section drawing:

OHWM

GPS point: 34.540419, -118.090588

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

↑ = increase

Comments:

1 - Sand in ohwm, loam outside ohwm
2 - ↑ in vegetative cover above ohwm
3 - observed break in slope.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: same as ohwm

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 40 % Tree: 30 % Shrub: 5 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Early (herbaceous & seedlings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P.D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD conversion
Project Number: R23-147337
Stream: ~~R~~ unnamed Drainage 14
Investigator(s): ~~K~~ Kyle Goon, Casey Clark
Date: 12/7/23 **Time:**
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Same as Drainage 13

Projection: UTM-3 **Datum:** NAD83

Coordinates: 34.541919, -118.089922

Potential anthropogenic influences on the channel system:

Same as ~~R~~ unnamed Drainage 13

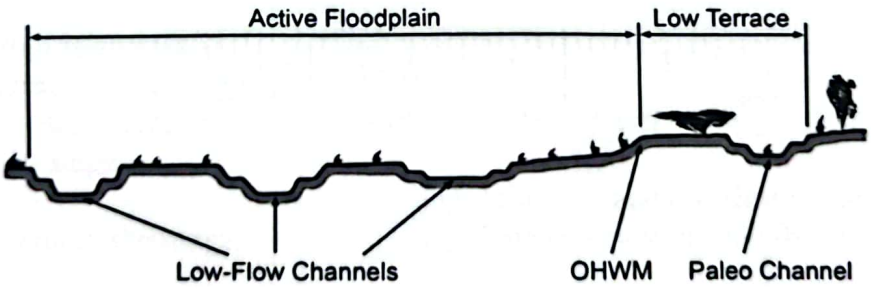
Brief site description:

Same as ~~R~~ unnamed Drainage 13.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

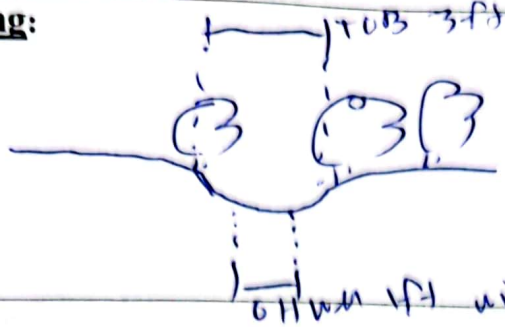
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

unnamed Drainage

Project ID: 23-14733 **Cross section ID:** 161 **Date:** **Time:**

Cross section drawing:



OHWM

GPS point: 34.540119, -118.089922

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Same as ~~13~~ unnamed Drainage 13

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand/pebble

Total veg cover: 35 % Tree 25 % Shrub: 5 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Early (herbaceous & seedlings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P. D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: P.D. conversion
Project Number: 23-141733
Stream: (S) Unnamed Drainage 15
Investigator(s): ~~Kaycee~~ Kyle Bein, Casey Clark

Date: 12/7/23
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#: Drainages

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Same as 13 and 14.

Projection: WGS **Datum:** NAD83
Coordinates: 34.539726, -118.089087

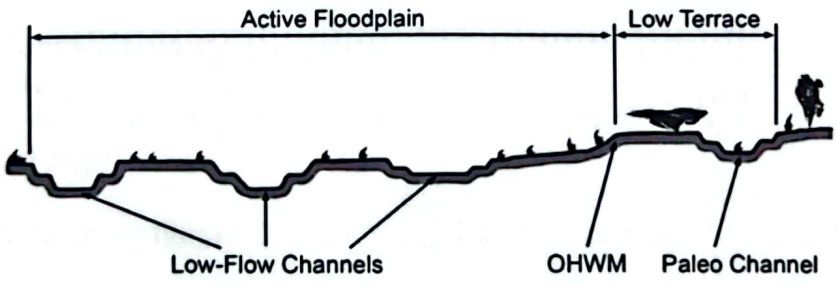
Potential anthropogenic influences on the channel system:
Same as 13 & 14 unnamed Drainages

Brief site description:
Same as 13 & 14 unnamed Drainages

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



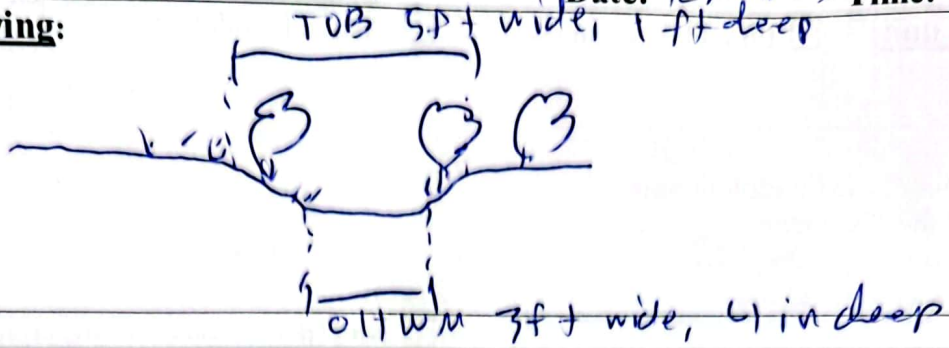
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

CamScanner

Project ID: 23-14737 Cross section ID: 15 (unnamed Drainage) Date: 12/12/23 Time:

Cross section drawing:



OHWM

GPS point: 34.539728, -118.089087

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Same as 13 & 14 (unnamed Drainages)

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand/Pebbles

Total veg cover: 20 % Tree: 15 % Shrub: 2.5 % Herb: 2.5 %

Community successional stage:

- [ ] NA
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Early (herbaceous & seedlings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

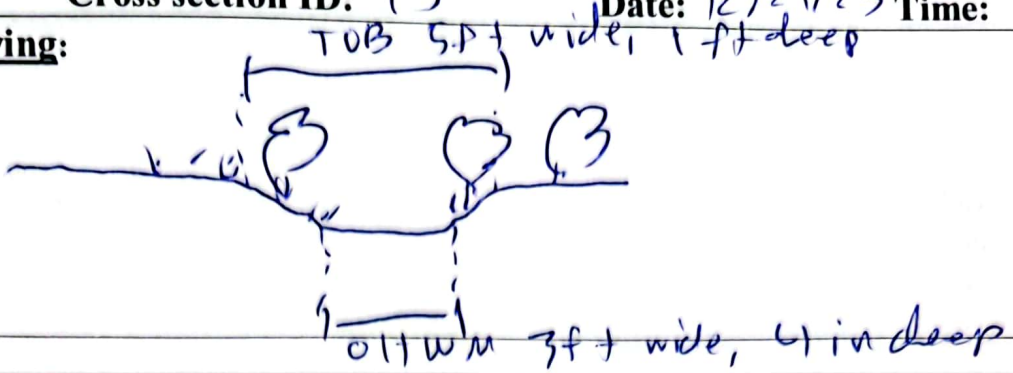
- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Project ID: [illegible] **Cross section ID:** 15 **Date:** 12/12/23 **Time:**

Cross section drawing:



OHWM

GPS point: 34.539728, -118.089087

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

same as 13 & 14 unnamed Drainages

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand / pebbles

Total veg cover: 20 % Tree: 15 % Shrub: 2.5 % Herb: 2.5 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P. D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD inversion
Project Number: 23-[redacted]1117337
Stream: [redacted] Unnamed Drainage 16
Investigator(s): [redacted], [redacted] Kyle Bern, Casey Clark

Date: 1/2/24
Time:
Town: Palmdale
State: CA
Photo begin file#:
Photo end file#:

Y ☐ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☐ Is the site significantly disturbed?

Location Details: small [redacted] drainage flowing SE→NW N. of [redacted]

Projection: WGS 84 **Datum:** NAD83

Coordinates: 34.54040 612, -118.087406

Potential anthropogenic influences on the channel system:
Pollution

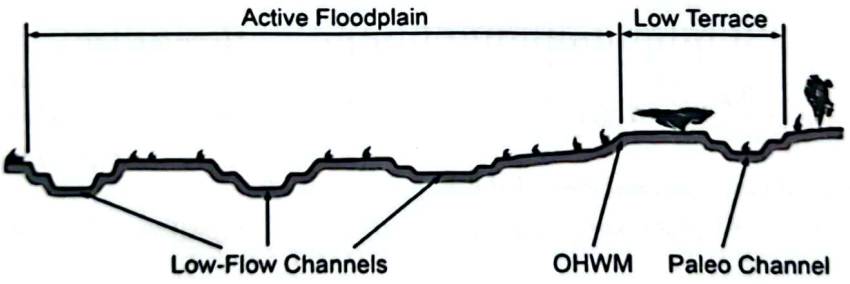
Brief site description:
Small, single-thread ephemeral drainage flowing SE→NW adjacent to access road to north of Palmdale ditch. Unvegetated channel & surrounding vegetation is Juniper woodland.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

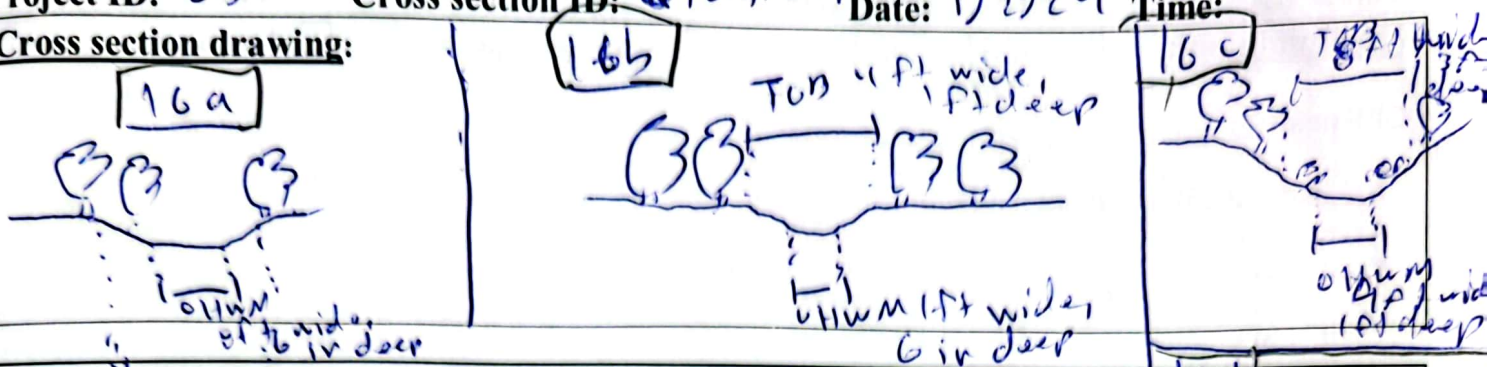
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-1457 Cross section ID: Unnamed Drainage 16a, 16b, 16c, 16d Date: 1/2/24 Time:

TOB = Top of Bank

Cross section drawing:



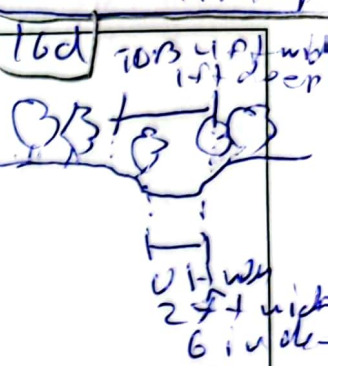
OHWM TOB 12 ft wide, 2 ft deep

GPS point: 16a: 34.540012, -118.087406
16b: 34.539967, -118.087350
16c: 34.539945, -118.085792
16d: 34.539342, -118.085572

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

1 = increase



Comments:

1 - Coarse sand in OHWM, fine sand/loam above OHWM

2 - ↑ in vegetative cover outside OHWM

3 - observed break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Some OS OHWM

Characteristics of the floodplain unit:

Average sediment texture: Coarse sand

Total veg cover: 10 % Tree: 5 % Shrub: 5 % Herb: 0 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

P. D. = Palmdale Ditch

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: PD conversion
Project Number: 23-141737
Stream: Unnamed Drainage 17
Investigator(s): Kyle Gern, Casey Clark

Date: 12/2/24
Town: Palmdale
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: North of Barrel Springs Rd. near intersection with Pearblossom Hwy

Projection: USGS **Datum:** NAD83
Coordinates: 34.538417, -118.082807

Potential anthropogenic influences on the channel system:

pollution

Brief site description:

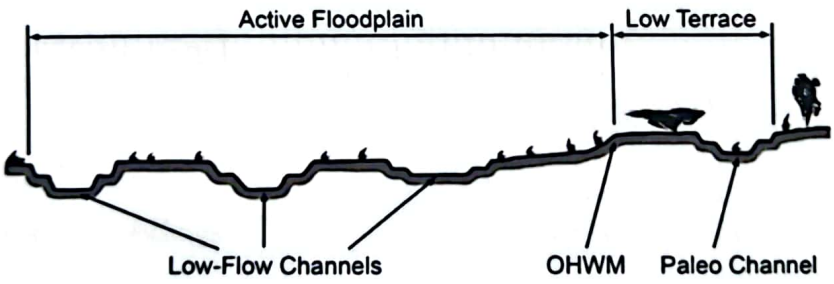
Small single-channel ephemeral drainage flowing in NW-direction parallel to Barrel Springs road. Vegetated with rubber rabbitbrush, big sagebrush, and nuttal

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



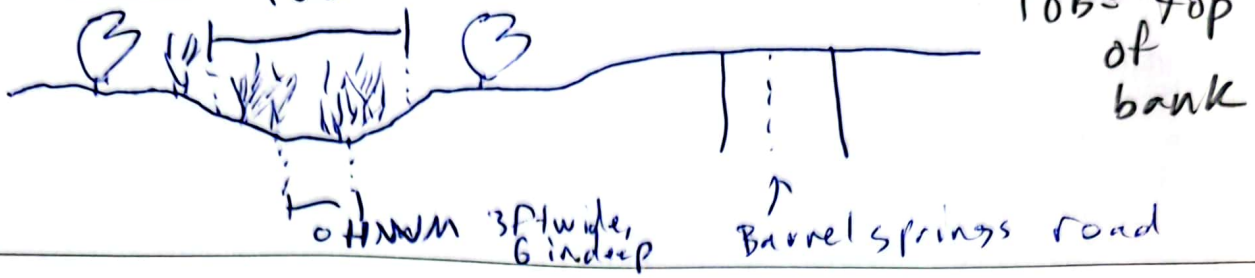
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-14737 Cross section ID: 17 Unnamed Drainage Date: 1/2/24 Time:

Cross section drawing:



OHWM

GPS point: 34.538412, -118.082807

Indicators:

- [1] Change in average sediment texture
- [2] Change in vegetation species
- [ ] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

BACSAL= mulefat

Comments:

1 – Fine sand/coarse sand in OHWM, loam/silt outside OHWM; some concrete rubble in OHWM
2 – BACSAL in OHWM, not outside OHWM
3 – observed break in slope

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 40 % Tree: 0 % Shrub: 30 % Herb: 10 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch Conversion
Project Number: 23-147737
Stream: Unnamed Drainage 1B
Investigator(s): Kyle Gein, Casey Clark

Date: 12/18/23 **Time:** 11:00 am
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Palmdale Northwest of Little Rock Reservoir

Projection: USGS **Datum:** NAD83
Coordinates: 34.501668, -118.034760

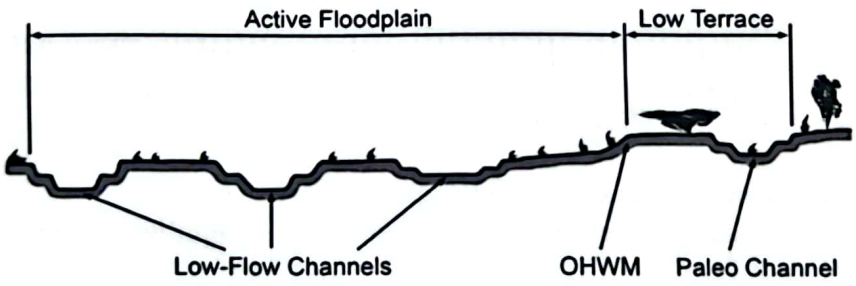
Potential anthropogenic influences on the channel system:
OHV use, trash pollution.

Brief site description:
Wide alluvial ephemeral drainage flowing across (above) Palmdale Ditch via bridge crossing. Vegetated with upland scrub.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



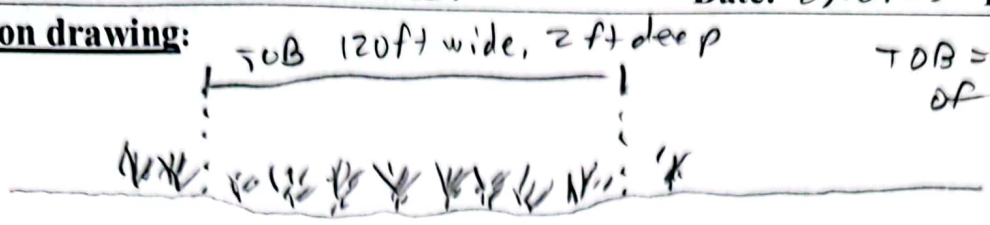
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

CamScanner

Project ID: 23-14535 **Cross section ID:** Unnamed Drainage 18 **Date:** 12/18/23 **Time:** 11:00am

Cross section drawing:



OHWM

GPS point: N/A (No OHWM present)

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

N/A

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 34.501668, -118.034760

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 30 % Tree: 0 % Shrub: 25 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch Conversion
Project Number: 23-14737
Stream: Unnamed Drainage 19
Investigator(s): Kyle Bern, Casey Clark

Date: 12/19/23 **Time:** 10:000m
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Southeast of Bovrel Springs Road near Ditch

Projection: USGS **Datum:** NAD83
Coordinates: 34.522013, -118.046826

Potential anthropogenic influences on the channel system:

OHV use

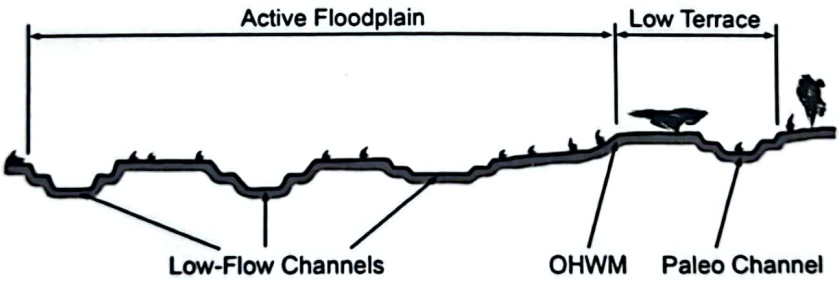
Brief site description:

Small two-thread ephemeral drainage feature flowing in a northeasterly direction to the west of the Palmdale Ditch.

Checklist of resources (if available):

- ☒ Aerial photography
  - Dates: 2023
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  - Gage number:
  - Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

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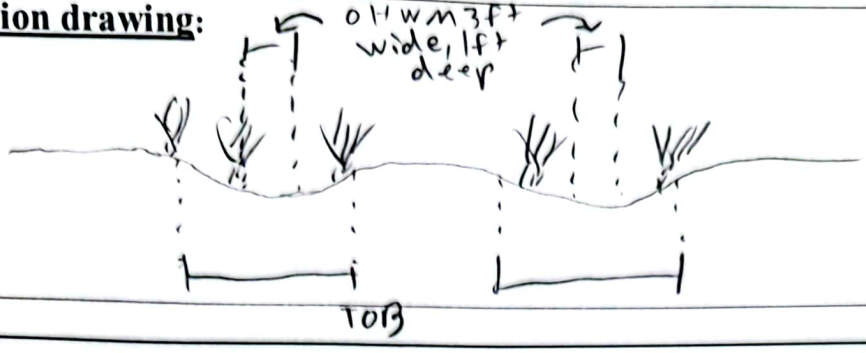
Project ID: 23-14737 **Cross section ID:** Unnamed Drainage 19 **Date:** 12/19/23 **Time:** 10:00am

Cross section drawing:



TOB = Top of bank

OHWM

GPS point: 34.522013, -118.046826

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - sand in OHWM, loam above OHWM
2 - increase in vegetation cover above OHWM
3 - observed break in slope

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 20 % Tree: 0 % Shrub: 15 % Herb: 5 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

CamScanner

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Palmdale Ditch Conversion
Project Number: 23-141737
Stream: Unnamed Drainage 20
Investigator(s): K. Gern

Date: 5/2/2024 **Time:** 1400
Town: Palmdale **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: near intersection between Peorblossom Hwy and Barrell Springs Rd.

Projection: WGS **Datum:** NAD83
Coordinates: 34.537142, -118.082731

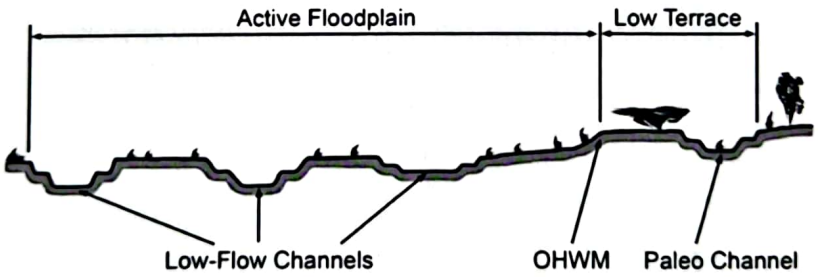
Potential anthropogenic influences on the channel system:
Development

Brief site description:
small single-channel ephemeral drainage that flows in a northwesterly direction to the south of the Palmdale Ditch. Drainage flows directly into the Palmdale Ditch

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2023
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

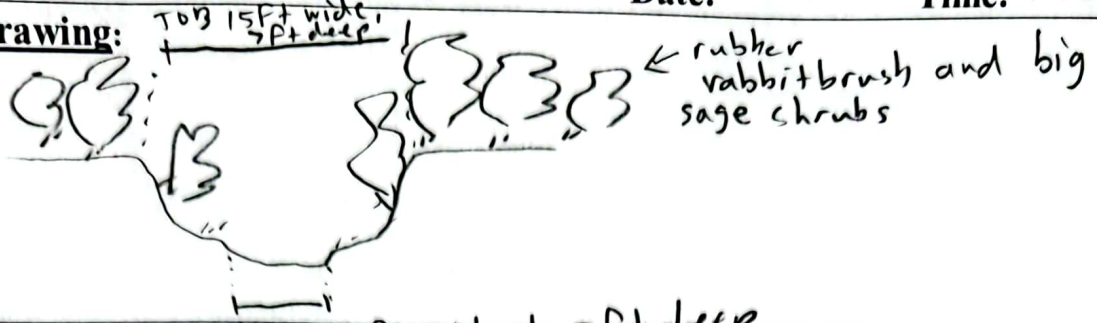


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

Project ID: 23-14737 **Cross section ID:** Unnamed Drainage 20 **Date:** 5/2/24 **Time:** 1400

Cross section drawing:



OHWM

GPS point: 34.537142, -118.082731

Indicators:

- [1] Change in average sediment texture
- [ ] Change in vegetation species
- [2] Change in vegetation cover
- [3] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

1 - sand in OHWM, silt/loam above OHWM
2 - increase in vegetative cover outside OHWM
3 - observed break in slope

Floodplain unit: [X] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: sand
Total veg cover: 40 % Tree: 0 % Shrub: 35 % Herb: 5 %
Community successional stage:

- [ ] NA
- [X] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [X] Presence of bed and bank
- [X] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Vegetated with rubber rabbitbrush and big Sagebrush

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/19/23
Applicant/Owner: PWD State: CA Sampling Point: SP01
Investigator(s): Kyle Gavin, Casey Clark Section, Township, Range: S21, T05N, R11W
Landform (hillslope, terrace, etc.): seep Local relief (concave, convex, none): concave Slope (%): 5
Subregion (LRR): D Lat: 34.511031 Long: -118.083283 Datum: NAD83
Soil Map Unit Name: Ramona gravelly sandy loam, 9 to 30 % slopes NWI classification: Freshwater forested/scrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes X No ____

Remarks: SP01 collected in seep area with predominance of all 3 wetland indicators. wetland delineated to area of standing/slow-moving water of seep.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	80	Y	FACW
2. Juniperus californica	10	N	UPL
3.			
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	75	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: SP01 dominated by redwillow and baltic rush. Some California juniper present, but at low cover.

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SOIL

Sampling Point: SP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/1	100					silty clay loam	
4-12	2.5Y 3/1	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- X Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):
Type: Rock/cobble
Depth (inches): 12

Hydric Soil Present? Yes X No ___

Remarks: Impenetrable rock layer at 12 inches. Soil meets A3 (black histic). Therefore, hydric soils present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes X No ___ Depth (inches): 8
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High water table and saturation present. Additionally, water-stained leaves are present. Therefore, wetland hydrology is present

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale ditch 1D City/County: Palmdale Sampling Date: 12/19/23
Applicant/Owner: PWD State: CA Sampling Point: SP02
Investigator(s): Kyle Gorn, Casey Clark Section, Township, Range: S21, T05N, R 11W
Landform (hillslope, terrace, etc.): sideslope Local relief (concave, convex, none): None Slope (%): 3
Subregion (LRR): D Lat: 34.511053 Long: -118.033317 Datum: NAD83
Soil Map Unit Name: Ramona sandy gravelly loam, 9-30% slopes NWI classification: Freshwater forested/scrub

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: SP02 collected approximately 10 feet north of slow-moving standing water of wetland 1.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	70	Y	FACW
2. Juniperus californica	15	N	UPL
3.			
4.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	1	N	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	1	= Total Cover	
Woody Vine Stratum (Plot size: 5x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Dominated By red willow. No other dominant species

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SOIL

Sampling Point: SP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/2	100					loam	
6-20	10YR 3/2	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes ____ No ✓

Remarks:

No evidence of hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 9in

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation present. Therefore, hydrology present.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/19/23
Applicant/Owner: PWD State: CA Sampling Point: SP03
Investigator(s): Kyle Bean, Casey Clark Section, Township, Range: S21, T05N, R11W
Landform (hillslope, terrace, etc.): Meadow Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): D Lat: 34.512336 Long: -118.033877 Datum: NAD83
Soil Map Unit Name: Hanford Sandy loam, 2-9% slopes NWI classification: Freshwater forested/scrub
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP03 collected in meadow along east-facing slope to the east of the Palmdale Ditch. All 3 indicators present. Therefore, wetland present

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. None			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Baccharis salicifolia	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	75	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Almost entirety of SP03 covered with baltic rush. Some mulefat present. Therefore, hydrophytic vegetation present.

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SOIL

Sampling Point: SP03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10yr 2/1	100					silty clay loam	
8-20	2.5y 4/1	(01)					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- X Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: Black histic(A3) soil present, as peat occurs in first soil layer. Therefore, hydric soils present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 7

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 2

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High water table and saturation present. Therefore, wetland hydrology present

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/19/23
Applicant/Owner: PWD State: CA Sampling Point: SP04
Investigator(s): Kyle Gern, Casey Clark Section, Township, Range: S21, T05N, R11W
Landform (hillslope, terrace, etc.): side slope Local relief (concave, convex, none): convex Slope (%): 3
Subregion (LRR): D Lat: 34.512452 Long: -118.033951 Datum: NAD83
Soil Map Unit Name: Hanford sandy loam, 2-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: SP04 collected to N and outside topographic confines of wetland 2. No wetland indicators present.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. None			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Ericameria nauseosa	25	Y	UPL
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	15	Y	FACW
2. Sonchus oleraceus	10	Y	UPL
3. Amsinckia menziesii	10	Y	UPL
4.			
5.			
6.			
7.			
8.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: No evidence of hydrophytic veg.

CamScanner

SOIL

Sampling Point: SP04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-20	10YR3/3	100					Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes ____ No X

Remarks:

No evidence of hydric soils. Entirely clay loam w/ 10YR3/3

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch TD City/County: Palmdale Sampling Date: 12/19/23

Applicant/Owner: PWD State: CA Sampling Point: SP05

Investigator(s): Kyle Germ, Casey Clark Section, Township, Range: S16, T05N, R11W

Landform (hillslope, terrace, etc.): Seep Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): D Lat: 34.514635 Long: -118.089762 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks: SP05 collected in small seep, approximately 2.5 ft wide and small amount of trickling water. Hydrophytic vegetation, problematic hydric soils, & wetland hydrology present. Therefore wetlands present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	45	Y	UPL
2.			
3.			
4.			
	45	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15X15)			
1. Tricoweria nauseosa	2	N	UPL
2.			
3.			
4.			
5.			
	2	= Total Cover	

Herb Stratum (Plot size: 5x5)			
1. Polypogon monspeliensis	20	Y	FACW
2. Juncus balticus	15	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	35	= Total Cover	

Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Rabbitsfoot grass and baltic rush are dominant. Therefore, hydrophytic vegetation present

CamScanner

SOIL

Sampling Point: SP05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR3/2	100					Loam	
3-9	10YR4/4	100					Sandy loam	
9-20	10YR4/4	80	7.5YR4/6	20	C	M	Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: SP05 does not meet defined hydric soil indicators. However, saturation, hydrophytic vegetation, and wetland hydrology are present. Determined to be recently formed wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 2

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation & High water table present. Wetland hydrology present.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/14/23

Applicant/Owner: PWD State: CA Sampling Point: SPOG

Investigator(s): Kyle Green, Casey Clark Section, Township, Range: S16, T05N, R11W

Landform (hillslope, terrace, etc.): side slope Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): D Lat: 34.5149595 Long: -118.039740 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: SPOG collected to the South (upslope) of wetland 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	60	Y	UPL
2.			
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: No evidence of hydrophytic vegetation.

CamScanner

SOIL

Sampling Point: SP06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/19/23

Applicant/Owner: PWD State: CA Sampling Point: Spot

Investigator(s): [redacted] kylebern, Caseyclark Section, Township, Range: S16, T05N, R11W

Landform (hillslope, terrace, etc.): sideslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): [redacted] D Lat: 34.516220 Long: -118.040382 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Spot collected under black willow canopy where Juncus balticus & moist, damp soils observable. Hydrophytic vegetation observed, but soils/hydrology absent.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix [redacted] gooddingii	45	Y	FACW
2. Juniperus californica	5	N	UPL
3.			
4.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15x15)			
1. Baccharis salicifolia	15	Y	FAC
2.			
3.			
4.			
5.			
	15	= Total Cover	

Herb Stratum (Plot size: 5x5)			
1. Muhlenbergia rigens	30	Y	FAC
2. Juncus balticus	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	

Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Hydrophytic vegetation present due to dominance by Gooding's black willow, mulefat, deergrass, and baltic rush.

CamScanner

SOIL

Sampling Point: SP07

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Sandy loam	
8-20	10YR 3/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes _____ No +

Remarks: No hydric soil evidence.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology evidence.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch Conversion City/County: Palmdale Sampling Date: 12/19
Applicant/Owner: PWD State: CA Sampling Point: SP08
Investigator(s): Kyle Germ, Casey Clark Section, Township, Range: S16, T05N, R11W
Landform (hillslope, terrace, etc.): Slight Slope/Swale Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): D Lat: 34.516861 Long: -118.040872 Datum: W83
Soil Map Unit Name: Ramona gravelly Sandy Loam, 9-30% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californicus	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 10')			
1. Juncus balticus	45	Y	FACW
2. Distichlis spicata	50	Y	FAC
3. Asclepias fascicularis	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Saltgrass & baltic rush dominant, along with California juniper. Therefore, hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: SPO 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					muck	
1-6	10YR 3/1	100					Sandy clay loam	
6-20	2.5Y 3/1	100					sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ✓ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks: Soil fully saturated at time of survey. No Redox visible. Soil likely perennially wet from ditch. 1 inch of muck on soil surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1 cm

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: isolated wetland.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale ditch Conversion City/County: Palmdale Sampling Date: 12/19
Applicant/Owner: PWD State: CA Sampling Point: SP09
Investigator(s): Casey Clark, Kyle Goorn Section, Township, Range: S16, T05N, R 11W
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope (%): 3
Subregion (LRR): D Lat: 34.516843 Long: -118.040802 Datum: W83
Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: No wetland indicators present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus Californicus	20	Y	UPL
2.			
3.			
4.			
	20	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 10')			
1. Juncus balticus	15	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Baltic rush creeping into SP09 from the wetland area adjacent to this point.

CamScanner

SOIL

Sampling Point: SP09

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					Sandy loam	
7-11	10YR 3/3	100					sandy loam	
11-20	7.5YR 4/4	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): —

Hydric Soil Present? Yes ____ No ✓

Remarks:

No hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators present.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch 3D City/County: Palmdale Sampling Date: 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP10

Investigator(s): ~~[redacted]~~, Kyle Beam, Casey Clark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): ~~[redacted]~~ Emergent wetland North of rd. Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): ~~[redacted]~~ D Lat: 34.525913 Long: -118.053320 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP10 collected under overstory of ~~[redacted]~~ Fremont cottonwood trees in emergent wetland area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	55	Y	FAC
2.			
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Baccharis salicifolia	20	Y	FAC
2. Artemisia tridentata	2	N	UPL
3.			
4.			
5.			
	22	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	30	Y	FACW
2. Pseudognaphalium luteoalbum	2	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	32	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Predominance of ~~[redacted]~~ Fremont cottonwood ~~[redacted]~~ observed in overstory w/ ~~[redacted]~~ mulefat. Dominated by ~~[redacted]~~ baltic rush in understory.

CamScanner

SOIL Sampling Point: SP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5YR2/1	100					muck	
1-5	2.5YR3/1	100					clay loam	
5-20	10YR4/3	100					sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes Y No ___

Remarks: Muck presence above first soil layer, and is more than 1cm thick. ~~Therefore, a problematic situation is present~~. Additionally, hydrogen sulfide odor detected. Therefore hydric soils determined to be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 2

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High water table, saturation, and water marks on Fremont cottonwood ~~trees~~ trees present. Therefore, wetland hydrology present.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: ~~9/5/23~~ 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP11

Investigator(s): ~~[redacted]~~ Kyle Germ, Casey Clark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): Side slope Local relief (concave, convex, none): None Slope (%): 12

Subregion (LRR): ~~[redacted]~~ D Lat: 34.525947 Long: -118.053258 Datum: NAD83

Soil Map Unit Name: Hanford coarse sandy loam, 2-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes Y No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: SP11 collected on sideslope immediately northeast of SP10 (Fremont cottonwood) in wetland 5. overstory of ~~[redacted]~~, but no hydric soil or hydrology indicators.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	50	Y	FAC
2.			
3.			
4.			
	50 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15x15)			
1. Artemisia tridentata	10	Y	UPL
2. Ericameria nauseosa	10	Y	UPL
3.			
4.			
5.			
	20 = Total Cover		

Herb Stratum (Plot size: 5x5)			
1. ~~Festuca myuros~~			
2. Bromus tectorum	10	Y	UPL
3. Coreopsis nuttallii	5	Y	UPL
4.			
5.			
6.			
7.			
8.			
	15 = Total Cover		

Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: ~~[redacted]~~ No hydrophytic vegetation.

CamScanner

SOIL

Sampling Point: SP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					clay loam	
4-20	10YR 4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ____ No +

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale pitch JD City/County: Palmdale Sampling Date: 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP12

Investigator(s): [redacted], Kyle Bern, CaseyClark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): Depressional pond Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): [redacted] D Lat: 34.527925 Long: -118.057408 Datum: WGS83

Soil Map Unit Name: Fawora gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP12 collected in depressional area categorized as wetland & defined banks w/ [redacted] cattails present

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	1	N	UPL
2.			
3.			
4.			
	1	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 x 15)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 x 5)			
1. Typha spp	15	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Only dominant species [redacted] is typha. therefore, hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: SP12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 3/2	94	7.5YR 5/6	6	C	M/PL	Clay	
4-12	7.5YR 4/3	100					~~Sandy Clay~~ loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: Redox present in first soil layer, and landform is depressional (closed) area. Therefore, ~~Redox~~ depressions are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 9

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Multiple indicators present, including A3, B2, B6, B7, and B9.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

12/30/23

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/13/23

Applicant/Owner: PWD State: CA Sampling Point: SP13

Investigator(s): Kyle Gorm, Casey Clark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): sideslope Local relief (concave, convex, none): None Slope (%): 20

Subregion (LRR): D Lat: 34.527730 Long: -118.057262 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: SP13 collected upslope and to the Southwest of wetland G. No wetland indicators present

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30+30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	25	Y	UPL
2.			
3.			
4.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Artemisia tridentata	35	Y	UPL
2.			
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Area dominated by [redacted] big sagebrush and California juniper. No hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: SP13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/3	100					Loam	
5-20	10YR 4/4	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ___ No X

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch ID City/County: Palmdale Sampling Date: 12/20

Applicant/Owner: PWD State: CA Sampling Point: SP14

Investigator(s): [redacted] Kyle Goen, Casey Clark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): Depressional wetland Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): [redacted] D Lat: 34.527385 Long: -118.055945 Datum: NAD83

Soil Map Unit Name: Hanford sandy loam, 2-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP14, collected along northern bank of an isolated freshwater emergent wetland feature to the South of Barrel Springs road, and to the north of the Palmdale Ditch.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. Populus fremontii	50	Y	FAC
2.			
3.			
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Distichlis spicata	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: [redacted] Hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: SP14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					Sandy clay loam	
4-20	2.5Y 4/3	95	10YR 4/6	5	C	PL	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: Soils meet F8, therefore hydric soils present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water stained leaves and ① water marks on Fremont cottonwood trees present therefore, wetland hydrology present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: [redacted] Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP15

Investigator(s): [redacted] Kyle Brown, Cose, Clark Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): Isolated wetland area Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): [redacted] D Lat: 34.527293 Long: -118.054339 Datum: NAD83

Soil Map Unit Name: Gaviota Rocky Sandy Loam, 30-50% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP15 collected in isolated wetland (wetland 7) to North of road. All 3 indicators present. Therefore, wetlands present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	25	Y	FAC
2.			
3.			
4.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Tamarix ~~spp.~~	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	50	Y	FACW
2. Typha spp.	20	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Dominant Typha spp. and [redacted] Baltic Rush. Therefore, [redacted] hydrophytic vegetation present.

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SOIL

Sampling Point: SP15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					clay loam	
6-20	5Y 4/1	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks:

Strong hydrogen sulfide odor present. Therefore hydric soils present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 2

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A2, A3, and C1 are present. Therefore, hydrology present. Further [redacted] outside survey area, standing surface water is present.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch conversion City/County: Palmdale Sampling Date: 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP16

Investigator(s): ~~[redacted]~~ Kyle Bova, Lacey Cook Section, Township, Range: S17, T05N, R11W

Landform (hillslope, terrace, etc.): side slope Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): ~~[redacted]~~ D Lat: 34.527164 Long: -118.054511 Datum: NAD83

Soil Map Unit Name: Hanford Sandy Loam, 2-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: SP16 collected to ~~[redacted]~~ southwest of wetland 7 ~~[redacted]~~ along side slope coming down from Barrel Springs road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	25	y	FAC
2.			
3.			
4.			
	25 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15x15)			
1. Artemisia tridentata	20	y	UPL
2. Ericameria nauseosa	5	y	UPL
3.			
4.			
5.			
	25 = Total Cover		

Herb Stratum (Plot size: 5x5)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		

Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: No hydrophytic vegetation. only hydric species is ~~[redacted]~~ Fremont cottonwood, which occurs in the tree overstory

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SOIL

Sampling Point: SP16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/3	100					clay loam	
4-20	10YR3/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ____ No X

Remarks: No hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators present

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WETLAND DETERMINATION DATA FORM – Arid West Region

12/20/23

Project/Site: [redacted] Palmdale Ditch JD City/County: Palmdale Sampling Date: [redacted]

Applicant/Owner: PWD State: CA Sampling Point: SP17

Investigator(s): [redacted] Kyle Bern, Casey Clark Section, Township, Range: S7, T05N, R11W

Landform (hillslope, terrace, etc.): seep wetland/wet meadow Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): [redacted] D Lat: 34.531133 Long: -118.067134 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP17 located in wetland sourced from seep, & inundated depressional area defined by extent of [redacted] Baltic rush and red willow.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	35	Y	FACW
2.			
3.			
4.			
	35 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	80	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		

Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Sole contributors [redacted] are red willow and Baltic rush. Therefore, hydrophytic vegetation is present.

CamScanner

SOIL

Sampling Point: SP17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					clay loam	Lots of roots present
4-20	5Y 3/1	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: Although soil pit did not exhibit defined hydric soil indicators, SP17 located in inundated wetland area sourced from seep. Therefore, problematic soils present and wetlands determined to be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated soil at 0 inches. ~~Therefore,~~ water table at 8 inches. Wetland hydrology present.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/20/23

Applicant/Owner: PWD State: CA Sampling Point: SP18

Investigator(s): Kyle Gern, Casey Clark Section, Township, Range: S7, T05N, R11W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): D Lat: 34.530968 Long: -118.066822 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Seep present w/in a wetmeadow, Potentially sourced from PDD. ↑ Water

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10')			
1. Ericameria nauseosa	15	Y	UPL
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 10')			
1. Bromus rubens	15	Y	UPL
2. Bromus tectorum	5	Y	UPL
3. Lactuca serriola	1	N	UPL
4.			
5.			
6.			
7.			
8.			
	21 = Total Cover		
Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: All dominant species are upland species. Therefore, hydrophytic vegetation is absent.

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SOIL

Sampling Point: SP18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loam	
3-7	10YR 4/3	100					Loam	
7-20	10YR 3/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ___ No ✓

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/21
Applicant/Owner: PWD State: CA Sampling Point: SP19
Investigator(s): Casey Clark, Kyle Gern Section, Township, Range: S2, T05N, R12W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): D Lat: 34.543541 Long: -118.100438 Datum: WGS3
Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓
Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Palmdale Ditch likely ponding and seeping into sloped wetland which extends into a wet meadow north of the study area. Palmdale Ditch seeps/ponds in a topographic low point. Soil parent material very red.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10')			
1. Juniperus californicus	10	Y	UPL
2.			
3.			
4.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10')			
1. Juncus balticus	40	Y	FACW
2. Distichlis spicata	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: SP19 taken near wetland Boundary; hence presence of Baltic rush.

CamScanner

SOIL

Sampling Point: SP19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5YR 4/2	100					Sandy clay loam	
6-20	2.5YR 4/2	50					sandy clay loam	
6-20	10YR 4/4	50					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ✓ No ___

Remarks: Parent Material naturally red. Hard to tell if redox concentrations are present. Evidence of Depleted Conditions observed. Additionally, strong hydrogen sulfide odor present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ✓	No ___	Depth (inches): 14
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 2

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Near the seep. Saturation, water-stained leaves, and hydrogen sulfide odor present.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch JD City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP20

Investigator(s): Casey Clark, Kyle Germ Section, Township, Range: S2, T05N, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex/Flat Slope (%): 10

Subregion (LRR): D Lat: 34.543499 Long: -118.100453 Datum: WGS3

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: No wetland indicators present

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus Californicus	15	Y	UPL
2.			
3.			
4.			
	15 = Total Cover		

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 10')			
1. Gilia sp.	5	Y	UPL
2. Bromus Rubens	5	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: No hydrophytic species present.

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SOIL

Sampling Point: SP 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	2.5Y 4/3	100					Sandy clay loam	
3-20	10Y 4/8	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

No evidence of hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology.

CamScanner

Palmdale Ditch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP21

Investigator(s): ~~[redacted]~~ Kyle Geon, Casey Clark Section, Township, Range: S2, T05N, R12W

Landform (hillslope, terrace, etc.): seep along side slope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): ~~[redacted]~~ D Lat: 34.543107 Long: -118.098682 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: SP21 collected in seep wetland area dominated by ~~[redacted]~~. Although classic hydric soil indicators absent, area determined to have problematic hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	55	Y	FACW
2. ~~[redacted]~~	~~[redacted]~~	~~[redacted]~~	~~[redacted]~~
3. Carex praegracilis	30	Y	FACW
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Dominant species are ~~[redacted]~~ Baltic rush and ~~[redacted]~~ clustered field sedge. Therefore, hydrophytic vegetation ~~[redacted]~~ is present.

CamScanner

SOIL

Sampling Point: SP21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR3/1	100					clay loam	
3-8	7.5YR3/2	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ROCK

Depth (inches): 8"

Hydric Soil Present? Yes ✓ No ___

Remarks:

No evidence of redox in soil, or other hydric soil indicators. However, area located in dense, inundated wetland seep area with sedges and rushes. Therefore, hydric soils determined to be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 2

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation. water table @ and saturation present. Therefore, wetland hydrology present.

CamScanner

Palmdale Ditch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: ~~[illegible]~~ conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP22

Investigator(s): ~~[illegible]~~ Kyle Bean, Casey Clark Section, Township, Range: S2, T05N, R12W

Landform (hillslope, terrace, etc.): side slope Local relief (concave, convex, none): None Slope (%): 8

Subregion (LRR): D Lat: 34.5013202 Long: -118.098733 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30 % slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: SP22 collected upslope and to the west of SP21 where wetlands occur. No wetland indicators present.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. Juniperus californica	35	Y	UPL
2.			
3.			
4.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. ~~[illegible]~~	~~10~~	~~Y~~	~~UPL~~
2. Fraxinus whipplei	10	Y	UPL
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5x5)			
1. Hirschfeldia grandiflora	8	Y	UPL
2. Bromus rubens	10	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	18 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: ~~No hydric soil.~~ All species observed at this sample point are upland. Therefore, hydrophytic vegetation absent.

CamScanner

SOIL

Sampling Point: SP22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	7.5YR3/2	100						
6-20	10YR5/6	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ____ No X

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch City/County: Palmdale Sampling Date: 12/21/23
Applicant/Owner: PWD State: CA Sampling Point: SP 23
Investigator(s): Casey Clark, Kyle Gern Section, Township, Range: S1, T05N, R12W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5
Subregion (LRR): D Lat: 34.542664 Long: -118.097339 Datum: WGS83
Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ____ No ✓
Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Soil parent material very red. Seep/slope wetland potentially coming from the Palmdale Ditch. Comes down natural swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus Californicus	4	N	UPL
2. Salix laevigata	20	Y	FACW
3.			
4.			
	24 = Total Cover		

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Urtica Dioica	30	Y	FAC
2. Hesperoyucca whipplei	5	N	UPL
3. Polypogon Monspeliensis	10	N	FACW
4. Artemisia dracunculus	25	Y	FACU
5.			
6.			
7.			
8.			
	70 = Total Cover		

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Dominant plant species include red willow, stinging nettle, and tarragon. Therefore, hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: SP 23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR2/1	100					Muck	
1-5	10YR2/1	100				Sandy	Clay loam	
5-20	10YR3/2	100				Sandy	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ✓ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A.

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks: 1 inch of muck present on soil surface. Therefore, hydrophytic vegetation present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 0

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: A1, A2, and A3 present. Therefore, wetland hydrology present.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP24

Investigator(s): Casey Clark, Kyle Gern Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 20

Subregion (LRR): D Lat: 34.542645 Long: -118.097345 Datum: WGS3

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: SP24 collected on hillslope adjacent to wetland 11. No evidence of wetlands.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus Californica	25	Y	UPL
2.			
3.			
4.			
	25 = Total Cover		

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Sole dominant is California Juniper.

CamScanner

SOIL

Sampling Point: SP24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2.5/3	100					Sandy loam	
6-20	10YR 4/4	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

No evidence of hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators.

CamScanner

Palmdale Ditch **WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: [redacted] conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP25

Investigator(s): [redacted] Kyle Born, Losey Clark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): small depressional area Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): D Lat: 34.541560 Long: -118.095691 Datum: NAD83

Soil Map Unit Name: Pomona gravelly sandy loam, 9-30% slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP 25 collected in isolated depressional feature that abuts palmdale ditch. Appears to be vegetated swale xyslope that has been blocked by ditch, causing water pooling following storm events

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Polypogon monspeliensis	50	Y	FACW
2. Juncus balticus	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: SP25 passes dominance test.

CamScanner

SOIL

Sampling Point: SP 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					clay	
3-20	2.5Y 3/3	95	7.5YR 4/6	5	C	M/PL	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: Isolated depressional wetland feature. Therefore, redox depression present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: water marks and water-stained leaves present on herbaceous vegetation. Surface soil cracks also present. Therefore, Wetland Hydrology present.

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Palmdale Ditch **WETLAND DETERMINATION DATA FORM – Arid West Region** 12/12/23

Project/Site: ~~P~~ conversion City/County: Palmdale Sampling Date: ~~SP26~~

Applicant/Owner: PWD State: CA Sampling Point: SP26

Investigator(s): ~~[redacted]~~, Kyle Boon, Corey Clark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): D Lat: 34.511593 Long: -118.095744 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: SP 26 collected to the northwest of SP25 and wetland 12 along side slope.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5x5)			
1. Artemisia ~~[redacted]~~, dracunculus	15	Y	FACU
2. Bromus rubens	25	Y	UPL
3. Melilotus albus	15	Y	UPL
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: SP26 does not pass the dominance test ~~[redacted] wetland absent~~

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SOIL

Sampling Point: SP26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100					silty clay loam	
4-20	10YR4/3	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ___ No X

Remarks: No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence.

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Palmdale Ditch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: [redacted] conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP2

Investigator(s): ~~[redacted]~~ Kyle Gera, Casey Clark Section, Township, Range:

Landform (hillslope, terrace, etc.): depressional seep Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): D Lat: 34.5411413 Long: -118.0955318 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP2 collected in seep wetland area to north of Palmdale Ditch on North-facing slope. Area dominated by Baltic rush, red willows, and cattails.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. Salix laevigata	10	Y	FACW
2. Juniperus californica	1	N	UPC
3.			
4.			
	11	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Juncus balticus	80	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: ~~Hydrophytic vegetation present~~ Area dominated by Baltic rush and red willow. Therefore, ~~by [redacted] & SALIX~~. hydrophytic vegetation is present.

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SOIL

Sampling Point: SP 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
~~0-4~~	~~10yr 3/2~~	~~100~~					~~Silty clay loam~~	
~~4-20~~								
0-1	muck	100						mucky material
1-4	10yr 3/2	100					silty clay loam	
4-20	10yr 4/2	100					~~Silty clay loam~~ ~~sandy loam~~ loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: 1 inch of muck present on soil surface. Therefore, hydric soils present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0

Water Table Present? Yes X No ___ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 1

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: A1, A2, and A3 present. Therefore, wetland hydrology is present.

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Palmdale Ditch **WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP2B

Investigator(s): ~~[illegible]~~ Kyle Bein, Corey Clark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): None Slope (%): 8

Subregion (LRR): D Lat: 34.541951 Long: -118.025350 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: SP2B collected to southwest of wetland B3 along hillslope leading down to wetland. No wetland indicators present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	35	Y	UPL
2.			
3.			
4.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15x15)			
1. Artemisia tridentata	25	Y	UPL
2. Larrea tridentata	10	Y	UPL
3.			
4.			
5.			
	35 = Total Cover		

Herb Stratum (Plot size: 5x5)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		

Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: → Juniper woodland adj. to wetland B3

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SOIL

Sampling Point: SP28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 3/2	100					Loam	
4-14	10YR 5/4	100					Loam	
Rock								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 14

Hydric Soil Present? Yes ____ No +

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology.

CamScanner

Palmdale Ditch **WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: [redacted] conversion City/County: Palmdale Sampling Date: 12/21/23

Applicant/Owner: PWD State: CA Sampling Point: SP2a

Investigator(s): ~~[redacted]~~ Kyle Bean, Casey Clark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): small isolated depression Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): D Lat: 34.541693 Long: -118.094881 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: SP2a collected in small (8ft x 2ft) depressional area with saturated soil and drying algae.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	1	UPL	N
2.			
3.			
4.			
	1	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15x15)			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 5x5)			
1. Polypogon monspeliensis	30	Y	FACW
2. Juncus bufonius	15	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	45	= Total Cover	

Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: ~~[redacted]~~ 2/3 species are FACW indicators. Therefore, hydrophytic vegetation is present.

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SOIL

Sampling Point: SPZ9

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	muck	100						
1-6	10YR 3/2	100					clay loam	
6-20	10YR 5/4	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: 1 cm muck (A9) present. Therefore hydric soil present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 5

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation present. Therefore, wetland hydrology is present.

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Palmdale Ditch **WETLAND DETERMINATION DATA FORM – Arid West Region** 12/21/23

Project/Site: [redacted] conversion City/County: Palmdale Sampling Date: ~~SP30~~

Applicant/Owner: PWD State: CA Sampling Point: SP30

Investigator(s): ~~[redacted]~~ Kyle Bevn, Casey Cloik Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 7

Subregion (LRR): D Lat: 34.541169 Long: -118.074903 Datum: NAD83

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: SP30 collected immediately west of wetland 14. No Wetland indicators present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus californica	30	Y	UPL
2.			
3.			
4.			
	30 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Hesperoyucca whipplei	25	Y	UPL
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Heterotheca ~~sp~~ grandiflora	10	Y	~~UPL~~ FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1.			
2.			
	0 = Total Cover		

~~% Bare Ground in Herb Stratum~~ _____ % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ~~0~~ (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ~~0~~ 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

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SOIL

Sampling Point: SP30

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10 YR 2/2	100					clay loam	
5-70	10 YR 4/2	100					clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ____ No +

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No +

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators present.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch conversion City/County: Palmdale Sampling Date: 1/2/24

Applicant/Owner: PWD State: CA Sampling Point: SP31

Investigator(s): Casey Clark, Kyle Bern Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): D Lat: 34.540032 Long: -118.089087 Datum: WGS3

Soil Map Unit Name: Ramona gravelly sandy loam, 9-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: potential seep/sloped wetland along north-facing slope immediately north of the Palmdale Ditch.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	40	Y	FACW
2.			
3.			
4.			
	40	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Small willow thicket within concave landform, surrounded by California Juncus wetland.

CamScanner

SOIL

Sampling Point: SP 3 1

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	100					Silty clay loam	
9-16	10YR 3/3	100	7/5YR 6/6	3	C	M	Sandy loam	
16+	ROCK							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 16"

Hydric Soil Present? Yes ___ No ✓

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ✓ Drift Deposits (B3) (Riverine)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil moist, but not saturated. No indicators of wetland hydrology are present.

CamScanner

Palmdale Ditch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: TP conversion City/County: Palmdale Sampling Date: 1/2/24

Applicant/Owner: PWD State: CA Sampling Point: SP 32

Investigator(s): [redacted] Kyle Beam, Casey Clark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): Isolated depressional wetland Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): D Lat: 34.539195 Long: -118.085058 Datum: NAD83

Soil Map Unit Name: Greenfield sandy loam, 9-15% slopes, eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: SP 32 collected in standing water of wetland 15. Cattails [redacted] dominant in wetland. Standing water present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30x30)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Tamarix ramosissima	1	N	FAC
2. Artemisia tridentata	1	N	UPL
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5x5)			
1. Typha spp.	80	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 15x15)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Typha spp. sole dominant. Therefore, [redacted] hydrophytic vegetation is present.

CamScanner

SOIL

Sampling Point: SP 32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	100					[redacted]	muck layer.
1-4	2.5Y 4/2	100					clay loam	
4-20	2.5Y 5/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks: 1 inch of muck present. Therefore hydric soil present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 5

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: A1, A2, and A3 present. Therefore, hydrology present.

CamScanner

Palmdale Ditch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: [redacted] Conversion City/County: Palmdale Sampling Date: 1/2/24

Applicant/Owner: PWD State: CA Sampling Point: SP33

Investigator(s): ~~[redacted]~~ Kyle Gorn, Caseyclark Section, Township, Range: S1, T05N, R12W

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): None Slope (%): 10

Subregion (LRR): D Lat: 34.539205 Long: -118.085038 Datum: NAD83

Soil Map Unit Name: Greenfield Sandy Loam, 9-15% slopes, eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes Y No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No N	Is the Sampled Area within a Wetland? Yes _____ No Y
Hydric Soil Present?	Yes _____	No N	
Wetland Hydrology Present?	Yes _____	No N	

Remarks: Sideslope to the east of SP32 and wetland 15.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30x30)			
1. None			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15x15)			
1. Artemisia tridentata	30	Y	UPL
2.			
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 5x5)			
1. Descurainia pinnata	5	Y	UPL
2. Bromus rubens	5	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 15x15)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: ~~Hydrophytic vegetation present~~ No hydric plant species present.

CamScanner

SOIL

Sampling Point: SP33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	100					clay loam	
10-20	10YR4/3	100					Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No +

Remarks: No evidence of hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch Conversion City/County: Palmdale Sampling Date: 1/2/24

Applicant/Owner: PWD State: CA Sampling Point: SP34

Investigator(s): Casey Clark, Kyle Germ Section, Township, Range: S12, T05N, R12W

Landform (hillslope, terrace, etc.): Flatland/Bottomland Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): D Lat: 34.537042 Long: -118.080638 Datum: NAD83

Soil Map Unit Name: Chino Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Area dominated by Baltic rush in dry meadow area. However, hydric soil indicators & wetland hydrology indicators are absent. Therefore, wetlands determined to be absent.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10')			
1. Ericameria nauseosa	3	N	UPL
2.			
3.			
4.			
5.			
	3	= Total Cover	
Herb Stratum (Plot size: 10')			
1. Juncus balticus	90	Y	FACW
2. Asclepias fascicularis	5	N	FAC
3. Distichlis spicata	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Not enough Ericameria nauseosa coverage to be considered its own layer.

CamScanner

SOIL

Sampling Point: SP 34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 3/2	100					Silty Clay	
5-20	10YR 4/4	100					Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ____ No ✓

Remarks: No evidence of hydric soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of wetland hydrology.

CamScanner

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale Ditch Conversion City/County: Palmdale Sampling Date: 1/2/24

Applicant/Owner: PWD State: CA Sampling Point: 35

Investigator(s): Kyle Bern, Casey Clark Section, Township, Range: S7, T05N, R11W

Landform (hillslope, terrace, etc.): Flat/Lowland Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): D Lat: 34.533522 Long: -118.073021 Datum: WGS3

Soil Map Unit Name: Chino Loam NWI classification: Palustrine Freshwater Emergent Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: potentially recieving water from Palmdale Ditch.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10')			
1. Juncus balticus	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Dominated by Baltic Rush as sole contributor. Therefore, hydrophytic vegetation present.

CamScanner

SOIL

Sampling Point: 35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	5Y 2.5/1	100					MUCK	
1-6	2.5Y 3/1	100					SANDY CLAY	
6-20	10YR 4/4	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ✓ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 0

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Palmdale City/County: Palmdale Sampling Date: 1/2/24
Applicant/Owner: PWD State: CA Sampling Point: SP 36
Investigator(s): Kyle Gern, Casey Clark Section, Township, Range: S7, T05N, R11W
Landform (hillslope, terrace, etc.): Slight slope Local relief (concave, convex, none): none Slope (%): 3-5
Subregion (LRR): D Lat: 34.533440 Long: -118.072623 Datum: NAD83
Soil Map Unit Name: Chino Loam NWI classification: Palustrine Freshwater Emergent Wetland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: SP36 collected to the east of SP35 and wetland area dominated by Baltic rush.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5')			
1. Artemisia tridentata	50	Y	UPL
2.			
3.			
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Juncus balticus	1	N	FACW
2. Schismus barbatus	10	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	11 = Total Cover		
Woody Vine Stratum (Plot size: 5')			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Hydrophytic vegetation absent.

CamScanner

SOIL

Sampling Point: SP 36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Sandy Clay loam	
6-20	10YR 3/3	100					Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ___ No ✓

Remarks:

No evidence of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of wetland hydrology.

CamScanner

Appendix E

Data Summary By Aquatic Feature

Data Summary by Aquatic Feature

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Palmdale Ditch	10.43 acres 38,490 linear feet Average active channel width 8 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded, Excavated	▪ N/A (no sample point data collected for Palmdale Ditch due to lack of wetland indicators)	34.524942	-118.052641
Lake Palmdale	1.01 acres 381 linear feet Average active channel width 381 feet	▪ Lake, Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked or Impounded	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Other (anaerobic soil conditions) ▪ **Wetland Hydrology:** Surface Water (A1)	34.547471	-118.114777
Little Rock Wash	4.21 acres 2,359 linear feet Average active channel width 25 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Little Rock Wash due to lack of wetland indicators)	34.490247	-118.024765
California Aqueduct	3.32 acres 2,812 linear feet Average active channel width 110 feet	▪ Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated	▪ N/A (no sample point data collected for California Aqueduct due to lack of wetland indicators)	34.531746	-118.066811
Unnamed Pond 1	0.10 acre 215 linear feet Average active channel width 20 feet	▪ Lacustrine, Littoral, Emergent, Non-Persistent	▪ No sample point data collected for Unnamed Pond 1; however, this feature contained wetland hydrology (surface water) and anaerobic soil conditions. Therefore, wetland hydrology and hydric soils were determined to be present.	34.525682	-118.053519
Unnamed Drainage 1	0.58 acre 466 linear feet Average active channel width 30 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 1 due to lack of wetland indicators)	34.498447	-118.030137
Unnamed Drainage 2	0.14 acre 449 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 2 due to lack of wetland indicators)	34.505188	-118.034242
Unnamed Drainage 3	0.33 acre 966 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 3 due to lack of wetland indicators)	34.516761	-118.042869

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Unnamed Drainage 4	0.01 acre 80 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 4 due to lack of wetland indicators)	34.518652	-118.044858
Unnamed Drainage 5	<0.01 acre 97 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 5 due to lack of wetland indicators)	34.528833	-118.061584
Unnamed Drainage 6	0.14 acre 864 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 6 due to lack of wetland indicators)	34.530018	-118.063106
Unnamed Drainage 7	0.04 acre 390 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 7 due to lack of wetland indicators)	34.530824	-118.065900
Unnamed Drainage 8	0.24 acre 898 linear feet Average active channel width 1.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 8 due to lack of wetland indicators)	34.533596	-118.075365
Unnamed Drainage 9	0.15 acre 591 linear feet Average active channel width 1.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded, Excavated	▪ N/A (no sample point data collected for Unnamed Drainage 9 due to lack of wetland indicators)	34.538881	-118.105649
Unnamed Drainage 10	0.20 acre 448 linear feet Average active channel width 3 feet	▪ Riverine, Intermittent Streambed, Intermittently Flooded, Excavated	▪ N/A (no sample point data collected for Unnamed Drainage 10 due to lack of wetland indicators)	34.546945	-118.114238
Unnamed Drainage 11	0.04 acre 342 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 11 due to lack of wetland indicators)	34.541069	-118.101691

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Unnamed Drainage 12	0.05 acre 385 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 12 due to lack of wetland indicators)	34.540991	-118.093077
Unnamed Drainage 13	0.02 acre 203 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 13 due to lack of wetland indicators)	34.540419	-118.090588
Unnamed Drainage 14	0.01 acre 212 linear feet Average active channel width 0.5 feet	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 14 due to lack of wetland indicators)	34.540119	-118.089922
Unnamed Drainage 15	0.03 acre 222 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 15 due to lack of wetland indicators)	34.539726	-118.089087
Unnamed Drainage 16	0.11 acre 629 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 16 due to lack of wetland indicators)	34.540012	-118.087406
Unnamed Drainage 17	0.09 acre 687 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Seasonally Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 17 due to lack of wetland indicators)	34.538412	-118.082807
Unnamed Drainage 18	0.85 acre 427 linear feet Average active channel width 75 feet	▪ Riverine, Intermittent Streambed, Intermittently Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 18 due to lack of wetland indicators)	34.501605	-118.034945
Unnamed Drainage 19	0.05 acre 226 linear feet Average active channel width 1 foot	▪ Riverine, Intermittent Streambed, Intermittently Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 19 due to lack of wetland indicators)	34.521991	-118.046807

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Unnamed Drainage 20	0.08 acre 258 linear feet Average active channel width 1.5 foot	▪ Riverine, Intermittent Streambed, Intermittently Flooded	▪ N/A (no sample point data collected for Unnamed Drainage 20 due to lack of wetland indicators)	34.537142	-118.082731
Wetland 1	0.10 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Black Histic (A3) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), and Water-Stained Leaves (B9)	34.511031	-118.033283
Wetland 2	0.41 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Black Histic (A3) ▪ **Wetland Hydrology:** High Water Table (A2) and Saturation (A3)	34.512336	-118.033877
Wetland 3	0.01 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Other (recently formed wetland) ▪ **Wetland Hydrology:** High Water Table (A2) and Saturation (A3)	34.514635	-118.039762
Wetland 4	0.09 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** 1 cm Muck (A9) ▪ **Wetland Hydrology:** Surface Water (A1), High Water Table (A2), and Saturation (A3)	34.516861	-118.040872
Wetland 5	2.34 acres	▪ Lacustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Hydrogen Sulfide (A4), 1 cm Muck (A9), and Redox Depressions (F8) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), Water Marks (B1), Water-Stained Leaves (B9), and Hydrogen Sulfide Odor (C1)	34.525913	-118.053320
Wetland 6	0.12 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Redox Depressions (F8) ▪ **Wetland Hydrology:** Saturation (A3), Sediment Deposits (B2), Surface Soil Cracks (B6), Inundation Visible on Aerial Imagery (B7), and Water-Stained Leaves (B9)	34.527825	-118.057408
Wetland 7	0.19 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Hydrogen Sulfide (A4) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1)	34.527293	-118.054339

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Wetland 8	0.21 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Other (naturally problematic hydric soils) ▪ **Wetland Hydrology:** Saturation (A3)	34.531133	-118.067134
Wetland 9	0.18 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Hydrogen Sulfide (A4) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1)	34.543541	-118.100438
Wetland 10	0.04 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Other (naturally problematic hydric soils) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1)	34.543107	-118.098682
Wetland 11	0.07 acre	▪ Palustrine Freshwater Forested/Scrub	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** 1 cm Muck (A9) ▪ **Wetland Hydrology:** Surface Water (A1), High Water Table (A2), and Saturation (A3)	34.542664	-118.097339
Wetland 12	0.03 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Redox Depressions (F8) ▪ **Wetland Hydrology:** Water Marks (B1), Surface Soil Cracks (B6), and Water-Stained Leaves (B9)	34.541560	-118.095691
Wetland 13	0.13 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** 1 cm Muck (A9) ▪ **Wetland Hydrology:** Surface Water (A1), High Water Table (A2), and Saturation (A3)	34.541943	-118.095318
Wetland 14	<0.01 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** 1 cm Muck (A9) ▪ **Wetland Hydrology:** Water Table (A2) and Saturation (A3)	34.541693	-118.094881
Wetland 15	0.02 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** 1 cm Muck (A9) ▪ **Wetland Hydrology:** Surface Water (A1), High Water Table (A2), and Saturation (A3)	34.539195	-118.085058
Wetland 16	0.96 acre	▪ Palustrine Freshwater Emergent Wetland	▪ **Hydrophytic Vegetation:** Passed Dominance Test ▪ **Hydric Soils:** Hydrogen Sulfide (A4) and 1 cm Muck (A9) ▪ **Wetland Hydrology:** High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1)	34.533522	-118.073021

Aquatic Resource	Area	Cowardin Class	Wetland Indicator Summary	Latitude	Longitude
Potential Wetland 17	0.02 acre	▪ Palustrine Freshwater Emergent Wetland	▪ N/A (no sample point data collected for Potential Wetland 17 due to access constraints)	34.533210	-118.071280
Potential Wetland 18	0.14 acre	▪ Palustrine Freshwater Forested/Scrub	▪ N/A (no sample point data collected for Potential Wetland 17 due to access constraints)	34.532328	-118.067768

APPENDIX C-5: LITERATURE REVIEW (CNDDB, CNPS, AND IPAC BIOLOGICAL RESOURCES QUERIES)

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Lancaster West (3411862) OR Lancaster East (3411861) OR Alpine Butte (3411768) OR Ritter Ridge (3411852) OR Palmdale (3411851) OR Littlerock (3411758) OR Acton (3411842) OR Pacifico Mountain (3411841) OR Juniper Hills (3411748))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Actinemys pallida southwestern pond turtle	ARAAD02032	Proposed Threatened	None	G2G3	SNR	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S4	WL
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2	SSC
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S2S3	SSC
Anniella spp. California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos glandulosa ssp. gabrielensis San Gabriel manzanita	PDERI042P0	None	None	G5T3	S3	1B.2
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Artemisiospiza belli belli Bell's sparrow	ABPBX97021	None	None	G5T2T3	S3	WL
Astragalus hornii var. hornii Horn's milk-vetch	PDFAB0F421	None	None	GUT1	S1	1B.1
Astragalus preussii var. laxiflorus Lancaster milk-vetch	PDFAB0F721	None	None	G4T2	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Calochortus palmeri var. palmeri Palmer's mariposa-lily	PMLIL0D122	None	None	G3T2	S2	1B.2
Calochortus striatus alkali mariposa-lily	PMLIL0D190	None	None	G3	S2S3	1B.2
Canbya candida white pygmy-poppy	PDPAP05020	None	None	G3G4	S3S4	4.2
Castilleja gleasoni Mt. Gleason paintbrush	PDSCR0D140	None	Rare	G2	S2	1B.2
Catostomus santaanae Santa Ana sucker	AFCJC02190	Threatened	None	G1	S1	SSC
Chaetodipus fallax pallidus pallid San Diego pocket mouse	AMAFD05032	None	None	G5T3T4	S3S4	
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2	SSC
Chorizanthe parryi var. parryi Parry's spineflower	PDPGN040J2	None	None	G3T2	S2	1B.1
Claytonia peirsonii ssp. peirsonii Peirson's spring beauty	PDPOR03121	None	None	G2G3T2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Eriastrum rosamondense Rosamond eriastrum	PDPLM030G0	None	None	G1?	S1?	1B.1
Euphydryas editha quino quino checkerspot butterfly	IILEPK405L	Endangered	None	G4G5T1T2	S1S2	
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Gasterosteus aculeatus williamsoni unarmored threespine stickleback	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
Gopherus agassizii desert tortoise	ARAAF01012	Threatened	Threatened	G3	S2S3	
Helminthoglypta fontiphila Soledad shoulderband	IMGASC2250	None	None	G1	S1	
Helminthoglypta traskii pacoimensis Pacoima shoulderband	IMGASC2472	None	None	G1G2T1	S1	
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lilium parryi lemon lily	PMLIL1A0J0	None	None	G3	S3	1B.2
Linanthus concinnus San Gabriel linanthus	PDPLM090D0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Loeflingia squarrosa var. artemisiarum sagebrush loeflingia	PDCAR0E011	None	None	G5T3	S2	2B.2
Lupinus peirsonii Peirson's lupine	PDFAB2B330	None	None	G3	S3	1B.3
Mojave Riparian Forest Mojave Riparian Forest	CTT61700CA	None	None	G1	S1.1	
Monardella australis ssp. gabrielensis San Gabriel Mountains monardella	PDLAM18114	None	None	G4T2	S2	1B.2
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nemacladus secundiflorus var. robbinsii Robbins' nemacladus	PDCAM0F0B2	None	None	G3T2	S2	1B.2
Opuntia basilaris var. brachyclada short-joint beavertail	PDCAC0D053	None	None	G5T3	S3	1B.2
Oreonana vestita woolly mountain-parsley	PDAPI1G030	None	None	G3	S3	1B.3
Perognathus inornatus San Joaquin pocket mouse	AMAFD01060	None	None	G2G3	S2S3	
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S2	WL
Southern California Threespine Stickleback Stream Southern California Threespine Stickleback Stream	CARE2320CA	None	None	GNR	SNR	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Riparian Scrub Southern Riparian Scrub	CTT63300CA	None	None	G3	S3.2	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Stylocline masonii Mason's neststraw	PDAST8Y080	None	None	G1	S1	1B.1
Symphyotrichum greatae Greata's aster	PDASTE80U0	None	None	G2	S2	1B.3
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Thysanocarpus rigidus rigid fringepod	PDBRA2Q070	None	None	G2	S2	1B.2
Toxostoma lecontei Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S3	
least Bell's vireo						
Xerospermophilus mohavensis	AMAFB05150	None	Threatened	G3	S2	
Mohave ground squirrel						

Record Count: 63

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

54 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3411768:3411861:3411758:3411851:3411748:3411841:3411852:3411862:3411842]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Acanthoscyphus parishii var. *abramsii*	Abrams' oxytheca	Polygonaceae	annual herb	Jun-Aug	None	None	G4? T1T2	S1S2	1B.2	Yes	1994-01-01	© 2007 Steve Matson
Acanthoscyphus parishii var. *parishii*	Parish's oxytheca	Polygonaceae	annual herb	Jun-Sep	None	None	G4? T3T4	S3S4	4.2	Yes	2007-04-05	© 2014 Keir Morse
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5? T3T4	S3S4	4.2		1994-01-01	© 2008 Aaron Schusteff
Arctostaphylos glandulosa ssp. *gabrielensis*	San Gabriel manzanita	Ericaceae	perennial evergreen shrub	Mar	None	None	G5T3	S3	1B.2	Yes	1994-01-01	© 2016 Neal Kramer
Arctostaphylos parryana ssp. *tumescens*	interior manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr	None	None	G4T3T4	S3S4	4.3	Yes	2001-01-01	No Photo Available
Astragalus hornii var. *hornii*	Horn's milk-vetch	Fabaceae	annual herb	May-Oct	None	None	GUT1	S1	1B.1		2006-12-01	No Photo Available
Astragalus preussii var. *laxiflorus*	Lancaster milk-vetch	Fabaceae	perennial herb	Mar-May	None	None	G4T2	S1	1B.1		1988-01-01	No Photo Available
Calochortus palmeri var. *palmeri*	Palmer's mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jul	None	None	G3T2	S2	1B.2	Yes	1994-01-01	No Photo Available

Calochortus plummerae	Plummer's mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G4	S4	4.2	Yes	1994-01-01	No Photo Available
Calochortus striatus	alkali mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G3	S2S3	1B.2		1974-01-01	No Photo Available
Calystegia peirsonii	Peirson's morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	No Photo Available
Canbya candida	white pygmy-poppy	Papaveraceae	annual herb	Mar-Jun	None	None	G3G4	S3S4	4.2	Yes	1974-01-01	No Photo Available
Castilleja gleasoni	Mt. Gleason paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	May-Jun(Sep)	None	CR	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Castilleja plagiotoma	Mojave paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Apr-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Chorizanthe parryi var. *parryi*	Parry's spineflower	Polygonaceae	annual herb	Apr-Jun	None	None	G3T2	S2	1B.1	Yes	1994-01-01	© 2012 Keir Morse
Chorizanthe spinosa	Mojave spineflower	Polygonaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2	Yes	1974-01-01	© 2011 Benjamin Smith
Claytonia peirsonii ssp. *peirsonii*	Peirson's spring beauty	Montiaceae	perennial herb	(Mar)May-Jun	None	None	G2G3T2	S2	1B.2	Yes	1974-01-01	No Photo Available
Clinopodium mimuloides	monkey-flower savory	Lamiaceae	perennial herb	Jun-Oct	None	None	G3	S3	4.2	Yes	2007-05-04	No Photo Available
Diplacus johnstonii	Johnston's monkeyflower	Phrymaceae	annual herb	May-Aug	None	None	G4	S4	4.3	Yes	2001-01-01	No Photo Available
Eriastrum rosamondense	Rosamond eriastrum	Polemoniaceae	annual herb	Apr-May(Jun-Jul)	None	None	G1?	S1?	1B.1	Yes	2013-12-04	No Photo Available
Erigeron breweri var. *jacinteus*	San Jacinto Mountains daisy	Asteraceae	perennial rhizomatous herb	Jun-Sep	None	None	G5T3	S3	4.3	Yes	1994-01-01	No Photo Available
Eriogonum umbellatum var. *minus*	alpine sulfur-flowered buckwheat	Polygonaceae	perennial herb	Jun-Sep	None	None	G5T4	S4	4.3	Yes	1974-01-01	No Photo Available
Frasera neglecta	pine green-gentian	Gentianaceae	perennial herb	May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available

Galium jepsonii	Jepson's bedstraw	Rubiaceae	perennial rhizomatous herb	Jul-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	© 2015 Keir Morse
Galium johnstonii	Johnston's bedstraw	Rubiaceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	© 2015 Keir Morse
Goodmania luteola	golden goodmania	Polygonaceae	annual herb	Apr-Aug	None	None	G3	S3	4.2		1994-01-01	© 2007 Steve Matson
Heuchera caespitosa	urn-flowered alumroot	Saxifragaceae	perennial rhizomatous herb	May-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	© 2015 Keir Morse
Hulsea vestita ssp. *gabrielensis*	San Gabriel Mountains sunflower	Asteraceae	perennial herb	May-Jul	None	None	G5T3	S3	4.3	Yes	1994-01-01	© 2013 Anuja Parikh and Nathan Gale
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	Yes	1994-01-01	© 2020 Zoya Akulova
Lepechinia fragrans	fragrant pitcher sage	Lamiaceae	perennial shrub	Mar-Oct	None	None	G3	S3	4.2	Yes	1974-01-01	© 2014 Debra L. Cook
Lilium parryi	lemon lily	Liliaceae	perennial bulbiferous herb	Jul-Aug	None	None	G3	S3	1B.2		1974-01-01	© 2009 Thomas Stoughton
Linanthus concinnus	San Gabriel linanthus	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2019 RT Hawke
Loeflingia squarrosa var. *artemisiarum*	sagebrush loeflingia	Caryophyllaceae	annual herb	Apr-May	None	None	G5T3	S2	2B.2		1974-01-01	No Photo Available
Lupinus albifrons var. *johnstonii*	interior bush lupine	Fabaceae	perennial shrub	May-Jul	None	None	G4T4	S4	4.3	Yes	1974-01-01	No Photo Available

Lupinus peirsonii	Peirson's lupine	Fabaceae	perennial herb	Apr-Jun	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
Lycium torreyi	Torrey's box-thorn	Solanaceae	perennial shrub	(Jan-Feb)Mar-Jun(Sep-Nov)	None	None	G4G5	S3	4.2		2015-05-05	No Photo Available
Monardella australis ssp. *gabrielensis*	San Gabriel Mountains monardella	Lamiaceae	shrub	Jul-Sep	None	None	G4T2	S2	1B.2		2022-05-23	No Photo Available
Monardella exilis	Mojave monardella	Lamiaceae	annual herb	Apr-Sep	None	None	G3?	S3	4.2		2022-08-04	No Photo Available
Monardella viridis	green monardella	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Muilla coronata	crowned muilla	Themidaceae	perennial bulbiferous herb	Mar-Apr(May)	None	None	G3	S3	4.2		1988-01-01	No Photo Available
Nemacladus secundiflorus var. *robbinsii*	Robbins' nemacladus	Campanulaceae	annual herb	Apr-Jun	None	None	G3T2	S2	1B.2	Yes	2010-06-25	No Photo Available
Opuntia basilaris var. *brachyclada*	short-joint beavertail	Cactaceae	perennial stem	Apr-Jun(Aug)	None	None	G5T3	S3	1B.2	Yes	1980-01-01	No Photo Available
Oreonana vestita	woolly mountain-parsley	Apiaceae	perennial herb	Mar-Sep	None	None	G3	S3	1B.3	Yes	1974-01-01	No Photo Available
Packera ionophylla	Tehachapi ragwort	Asteraceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Perideridia pringlei	adobe yampah	Apiaceae	perennial herb	Apr-Jun(Jul)	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Phacelia mohavensis	Mojave phacelia	Hydrophyllaceae	annual herb	Apr-Aug	None	None	G4Q	S4	4.3	Yes	1994-01-01	No Photo Available
Quercus durata var. *gabrielensis*	San Gabriel oak	Fagaceae	perennial evergreen shrub	Apr-May	None	None	G4T3	S3	4.2	Yes	2001-01-01	No Photo Available
Selaginella asprella	bluish spike-moss	Selaginellaceae	perennial rhizomatous herb	Jul	None	None	G4	S4	4.3		1974-01-01	No Photo Available
Sidotheca caryophylloides	chickweed oxytheca	Polygonaceae	annual herb	Jul-Sep(Oct)	None	None	G4	S4	4.3	Yes	1980-01-01	©2021 Keir Morse

Stylocline masonii	Mason's neststraw	Asteraceae	annual herb	Mar-May	None	None	G1	S1	1B.1	Yes	1994-01-01	No Photo Available
Symphyotrichum greatae	Greata's aster	Asteraceae	perennial rhizomatous herb	Jun-Oct	None	None	G2	S2	1B.3	Yes	1974-01-01	© 2006 Michael Charters
Syntrichopappus lemmonii	Lemmon's syntrichopappus	Asteraceae	annual herb	Apr-May(Jun)	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Thysanocarpus rigidus	rigid fringepod	Brassicaceae	annual herb	Feb-May	None	None	G2	S2	1B.2		2011-03-17	No Photo Available
Yucca brevifolia						CC			CBR		2011-12-13	No Photo Available

Showing 1 to 54 of 54 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 7 July 2024].

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

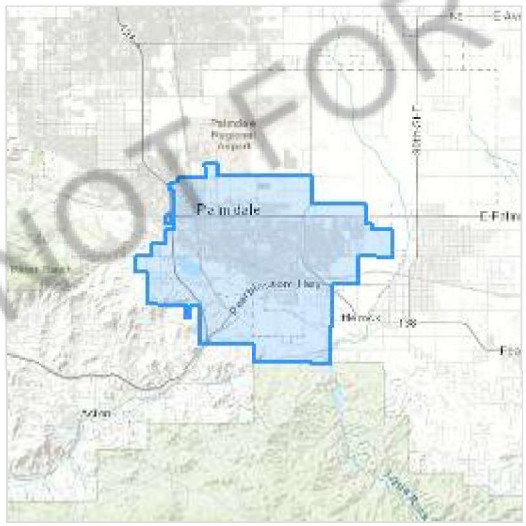
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Los Angeles County, California



Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

NOT FOR CONSULTATION

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo Vireo bellii pusillus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered

Reptiles

NAME	STATUS
Desert Tortoise Gopherus agassizii There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4481	Threatened
Southwestern Pond Turtle Actinemys pallida Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4768	Proposed Threatened

Amphibians

NAME	STATUS

NOT FOR CONSULTATION

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad Anaxyrus californicus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3762	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

NOT FOR CONSULTATION

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

NOT FOR CONSULTATION

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

NOT FOR CONSULTATION

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

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Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1B
- PEM1Ch
- PEM1Ax

FRESHWATER FORESTED/SHRUB WETLAND

- PSSAh
- PSS1Ah
- PSS1B
- PSS1Cx
- PSS1Ch
- PFO1B

FRESHWATER POND

- PUBK
- PUSAx
- PUSJ
- PUSCx
- PUBHh
- PUBFx
- PUSK
- PUSCh

NOT FOR CONSULTATION

PUBHx

LAKE

L1UBHh

RIVERINE

R4SBJ
R2UBHx
R4SBC
R4SBJx
R5UBF
R5UBFx
R4SBA

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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APPENDIX C-6: CROTCH'S BUMBLE BEE SURVEY REPORT FOR THE PALMDALE DITCH CONVERSION PROJECT

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012
213-788-4842

RINCON CONSULTANTS, INC. SINCE 1994

September 5, 2024
Project No: 23-14737

Scott L. Rogers, P.E., Acting Assistant General Manager & Engineering Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, California 93550

Subject: Crotch's Bumble Bee Survey Report for the Palmdale Ditch Conversion Project Los Angeles County, California

Dear Mr. Rogers:

Rincon Consultants, Inc. (Rincon) has prepared this Crotch's bumble bee (CBB; *Bombus crotchii*) survey report to document the methods and results of CBB surveys conducted for the Palmdale Ditch Conversion Project (Project) located in the city of Palmdale and unincorporated Los Angeles County, California. CBB surveys were conducted at the proposed Project site following review and approval of the Project CBB Photo-Only Survey Plan (Rincon 2024a) by California Department of Fish and Wildlife (CDFW) Region 5 via email on May 6, 2024.

Project Location and Description

The Project site consists of an approximately 7.2-mile-long corridor that overlaps 88 parcels in the city of Palmdale and unincorporated Los Angeles County (Attachment 1: Figure 1 and Figure 2). The Project site extends generally southeast to northwest from Littlerock Reservoir in Angeles National Forest (managed by the United States Forest Service) to Lake Palmdale in unincorporated Los Angeles County. The Project site includes the existing Palmdale Ditch (Ditch) and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment). In total, the Project site encompasses approximately 309 acres. The Project site has variable topography, ranging from approximately 3,200 feet above mean sea level in Angeles National Forest to approximately 2,815 feet above mean sea level at Lake Palmdale.

The southeastern end of the Project site begins at the terminus of an existing pipeline that currently feeds into the Palmdale Ditch approximately 0.3 mile downstream of Littlerock Reservoir within the San Gabriel Mountains National Monument in the Angeles National Forest. From Littlerock Reservoir, the Project site extends northwest, parallel to Cheseboro Road and within Angeles National Forest, for approximately 4,000 linear feet. After exiting the Angeles National Forest, the Project site continues to proceed north for approximately one mile, then curves to the northwest and proceeds in a northwesterly direction for approximately 6.2 miles, generally parallel to Barrel Springs Road, until the intersection of Sierra Hills Lane and Sierra Highway. Along this 7.1-mile stretch, the Project site crosses the Governor Edmund F. Brown California Aqueduct (California Aqueduct), Pearblossom Highway (State Route 138), and the Los Angeles County Metropolitan Transportation Authority rail tracks. This portion of the Project site terminates at an existing pipeline that proceeds generally northwest for approximately 0.6 mile. This pipeline discharges into the remaining 0.1-mile stretch of the Ditch that proceeds from a point east of existing residences on Rozalee Drive to the northwest where it ends at Lake Palmdale.

Overall, the Project site consists of two discontinuous areas. The largest area covers approximately 7.1 miles of continuous Ditch from Littlerock Reservoir to the Los Angeles County Metropolitan Transportation Authority rail tracks, while the second area covers approximately 0.1 mile of existing Ditch where it outfalls into Lake Palmdale. These two sections of the Ditch are connected by an existing underground pipeline. The Survey Area encompassed the entire Project site (Attachment 1: Figure 2).

The proposed Project would involve the conversion of approximately 7.2 miles of the Ditch to a buried 48-inch diameter pipeline made from reinforced concrete or high-density polyethylene. Of the 7.2-mile length, approximately 6.4 miles is currently open-channel with a mixture of concrete-lined and earthen-bottomed segments, which would be converted to pipeline. Additional Project components include installation of a future turnout to the California Aqueduct, inspection and rehabilitation of culvert crossings, use of access roads and staging areas, and installation of minor aboveground facilities such as blow-off and air release assemblies and a one-story controls/electrical building.

Vegetation Communities within the Survey Area

Vegetation communities within the Survey Area that could provide potentially suitable habitat for CBB include areas with the potential for nesting, foraging and overwintering. Foraging habitat includes all flowering plants, including non-native and invasive species within the Survey Area. Nesting habitat includes rodent holes/tunnels, rock piles, bunch grasses, and leaf piles. Overwintering habitat includes rodent holes/tunnels, bare soil, rock piles, bunch grasses, brush piles, leaf litter, pine needle duff layer, and mulch. In advance of the CBB surveys, 19 vegetation alliances and two semi-natural vegetation alliances were identified within the Project site as having some potential to support CBB foraging, nesting, and/or overwintering based on the characteristics described above. The vegetation communities were classified according to *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009), and their locations were utilized to help define the Survey Area. They are described in greater detail in *Palmdale Ditch Conversion Project Biological Resources Assessment* (Rincon 2024b).

Natural Vegetation Alliances Within the Survey Area

The following natural vegetation alliances were identified within the Survey Area:

- Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance)
- Baltic and Mexican Rush Marshes (*Juncus balticus, mexicanus* Herbaceous Alliance)
- Big Sagebrush Scrub (*Artemisia tridentata* Shrubland Alliance)
- Brittle Bush Scrub (*Encelia farinosa* Shrubland Alliance)
- California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)
- California Juniper Woodland (*Juniperus californica* Woodland Alliance)
- California Sycamore Woodland (*Platanus racemosa* Woodland Alliance)
- Cattail Marshes (*Typha* [*angustifolia, domingensis, latifolia*] Herbaceous Alliance)
- Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance)
- Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii*, *tessellata*] – *Phacelia* spp. Herbaceous Alliance)
- Fourwing Saltbush Scrub (*Atriplex canescens* Shrubland Alliance)
- Fremont Cottonwood Forest and Woodland (*Populus fremontii* Forest and Woodland Alliance)
- Goodding's Willow – Red Willow Riparian Woodland and Forest (*Salix gooddingii – Salix laevigata* Woodland and Forest Alliance)

- Joshua Tree Woodland (*Yucca brevifolia* Woodland Alliance)
- Mulefat Thickets (*Baccharis salicifolia* Shrubland Alliance)
- Nevada Joint-Fir – Anderson's boxthorn – Spiny Hop Sage Scrub (*Ephedra nevadensis – Lycium andersonii* – Grayia spinosa Shrubland Alliance)
- Rubber Rabbitbrush Scrub (*Ericameria nauseosa* Shrubland Alliance)
- Sandbar Willow Thickets (*Salix exigua* Shrubland Alliance)
- Tucker Oak Chaparral (*Quercus john-tuckeri* Shrubland Alliance)

Semi-Natural Vegetation Alliances Within the Survey Area

The following semi-natural vegetation alliances were identified within the Survey Area:

- Red Brome or Mediterranean Grass Grasslands (*Bromus rubens* Herbaceous Semi-Natural Alliance)
- Tournefort's Mustard and Other Ruderal Desert Forb Patches (*Brassica tournefortii – Strigosella* [*Malcolmia*] *africana* Provisional Herbaceous Semi-Natural Alliance)

Survey Methodology

CBB surveys were conducted because potentially suitable nesting, foraging and overwintering habitat for this species was identified within the Project site during field reconnaissance surveys conducted by Rincon in November and December 2023. The CBB surveys described in this report were conducted in accordance with the *CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* document issued June 6, 2023 (CDFW 2023), and in accordance with the CBB Photo-Only Survey Plan for this Project (Rincon 2024a), as approved by CDFW Region 5 via email on May 6, 2024 (Attachment 2).

Survey Components

Surveys were led by Lead Surveyor, Amber Nichols, who was responsible for overseeing all aspects of the bumble bee surveys, identification, and Field Assistant training, including implementation of the survey methods. Field Assistants assisted the Lead Surveyor in conducting the surveys, recording survey data and taking photographs of the Survey Area and bumble bee observations.

Each CBB survey consisted of foraging bumble bee presence/absence surveys, surveys of potential nesting substrates for presence of potentially active CBB nests, and surveys to assess and document the presence of CBB overwintering habitat within the Survey Area.

Foraging Bumble Bee Surveys

During the foraging bumble bee surveys, floral species in bloom were noted and the percentage of floral resources available was assessed in nine sections along the linear Survey Area (described below under *Data Collection* and depicted in Attachment 1: Figure 2). The final percentage of resources available was calculated as a range (e.g., between 10 percent to 80 percent) because this metric varied across surveys and across the Survey Area. Floral species visited by each observed bumble bee was also recorded during the foraging bumble bee surveys. The Lead Surveyor, Amber Nichols, and the three Field Assistants walked the entire Survey Area using meandering transect surveys. The transect and surveyor spacing varied depending on the quality of the foraging habitat in any given area, with transects spaced closer together in areas with a higher density of blooming floral resources

and farther apart in areas with sparse floral resources in bloom. Every bumble bee observed during the surveys was identified to species and caste and photographed for documentation.

Nesting Surveys

Nesting surveys were conducted to assess presence of suitable nesting resources including rodent holes/tunnels, or cavities within rock piles, brush piles, bunch grasses, leaf litter, pine needle duff, and vegetation mulch. Potential nesting substrates were documented with representative photographs. Potential nesting sites were surveyed for active CBB colonies by looking for concentrated bumble bee activity. If a site was suspected to be occupied, it was observed to identify potential sign of bumble bees entering or exiting the site. If an active CBB colony was identified, the location, vegetation cover type, slope, aspect, and distance to colony foraging location was documented and photographed at a distance to avoid potential disturbance or encroachment.

Overwintering Habitat Surveys

Overwintering habitat surveys were conducted to assess and document the presence of CBB overwintering habitat including loose bare soil, leaf litter, pine needle duff, vegetation mulch, and bunch grasses. Active bumble bee hibernacula observed were documented and photographed.

Surveyor Qualifications

The Lead Surveyor and Field Assistants were approved to conduct the CBB surveys for this Project by CDFW Region 5 via email on May 2 and May 23, 2024. Resumes for the Lead Surveyor and Field Assistants are provided in Attachment 4. The Lead Surveyor, Amber Nichols, was approved by CDFW to serve as a taxonomist for identification of photo vouchers via email on April 24, 2024 (Attachment 5).

Survey Effort and Timing

Surveys were conducted by a team of four surveyors, consisting of one Lead Surveyor and three Field Assistants as outlined in Table 1. Surveys were conducted for a minimum of one person-hour of searching per three acres of potentially suitable habitat. The total potentially suitable CBB habitat for the Project consisted of approximately 309 acres; therefore, a total of 103 person-hours per survey were completed (Table 1). Surveys were conducted two weeks apart during the Colony Active Period for CBB (April through August).

Table 1 CBB Survey Dates, Surveyors, and Person-Hours of Searching

Survey	Dates	Surveyors	24-hour Time (start/end)	Searching Time (hours) Per Person	Person-Hours of Searching
1	5/13/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Liz Shoemaker	0859/1605	6.50	26.0
	5/14/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Liz Shoemaker	0750/1430	6.50	26.0
	5/15/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Stella Moore	0730/1545	6.50	26.0
	5/16/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Stella Moore	0708/1408	6.25	25.0
Total Person-Hours of Searching for Survey 1					**103.0**
2	5/28/2024	Amber Nichols, Kevin Bock, James Butcher, Liz Shoemaker	0730/1438	6.50	26.0
	5/29/2024	Amber Nichols, Kevin Bock, James Butcher, Liz Shoemaker	0705/1335	6.50	26.0
	5/30/2024	Amber Nichols, Kevin Bock, James Butcher, Liz Shoemaker	0635/1540	8.75	35.0
	5/31/2024	Amber Nichols, Kevin Bock, James Butcher, Liz Shoemaker	0740/1140	4.00	16.0
Total Person-Hours of Searching for Survey 2					**103.0**
3	6/11/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Stella Moore	0645/1300	6.25	25.0
	6/12/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Stella Moore	0630/1345	7.25	29.0
	6/13/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Liz Shoemaker	0630/1300	6.50	26.0
	6/14/2024	Amber Nichols, Kevin Bock, Olivia Taylor, Liz Shoemaker	0710/1320	5.75	23.0
Total Person-Hours of Searching for Survey 3					**103.0**

Data Collection

Survey timing, weather conditions, bumble bee observations, floral resource assessments, nesting habitat assessments, and active nest observations were recorded for each of nine sections (comprising the entire Survey Area, depicted in Attachment 1: Figure 2) on a data sheet or a tablet data collection system, such as Survey123, for data accuracy and consistency. The Survey Area was split into nine sections to help surveyors maintain a steady level of effort and adequate survey pacing throughout the Survey Area. The sections were not delineated by any particular changes in habitat type or conditions.

Surveys were conducted using point and shoot digital cameras, DSLR cameras, or smart devices (e.g., phones or tablets) with cameras (>= 8 megapixels). Voucher specimen photographs were taken of each bumble bee species and caste (Attachment 3: Photographs 37 to 41), and whenever feasible included photographs of the following bumble bee morphology: (1) top overview of bee, (2) side view of bee depicting mandible length and hair phenology of thorax and abdomen, (3) face and vertex, (4) tip of abdomen, (5) close-up view of hind tibia, and (6) underneath of bee. During the surveying efforts, a spacer photograph was taken in between the sets of photographs of each individual bumble bee, so that the Lead Surveyor/Taxonomist could distinguish between individual bumble bees when the photos were archived and reviewed after the surveys. Each photograph taken was linked to the corresponding bumble bee specimen through tablet usage and Survey123 mapping, phone GPS applications, or standardized photograph naming conventions including the site location, photo number, and date.

Weather Conditions

Surveys were conducted when weather conditions were suitable for bumble bee activity, on warm, sunny days with low wind (Table 2). Surveys began no earlier than one hour after sunrise and were completed at least two hours before sunset. Surveys were conducted when air temperatures ranged from 60 degrees Fahrenheit (°F) to 95°F, and when winds were less than 8 miles per hour, as outlined

in the CDFW-approved CBB Survey Plan for the Project. Surveys were not conducted during wet conditions (e.g., foggy, raining, or drizzling) and only when cloud cover was less than 100 percent.

Table 2 CBB Survey Weather Conditions

Survey	Date	24-hour Time (start/end)	Begin Air Temp (°F)	End Air Temp (°F)	Begin Wind Speed (mph)	End Wind Speed (mph)	Cloud Cover (%) – Begin	Cloud Cover (%) – End
1	5/13/2024	0859/1605	72.0	81.5	0.0	2.5	0	50
	5/14/2024	0750/1430	68.0	86.9	2.8	6.3	0	10
	5/15/2024	0730/1545	60.6	81.3	5.0	5.0	90	15
	5/16/2024	0708/1408	60.4	93.7	3.1	7.5	0	10
2	5/28/2024	0730/1438	69.2	87.2	5.5	7.1	0	20
	5/29/2024	0705/1335	66.9	80.4	2.4	4.7	0	0
	5/30/2024	0635/1540	66.2	89.6	0.6	1.0	0	0
	5/31/2024	0740/1140	71.6	89.2	4.1	1.4	0	0
3	6/11/2024	0645/1300	71.2	94.9	4.4	0.5	0	0
	6/12/2024	0630/1345	71.4	88.5	2.1	4.2	0	0
	6/13/2024	0630/1300	69.4	91.2	2.4	3.2	0	0
	6/14/2024	0710/1320	75.2	94.9	0.7	4.8	0	30

Survey Results

This section describes the results of the CBB surveys conducted within the Survey Area, as depicted in Figure 2 through Figure 5 (Attachment 1).

Foraging Bumble Bee Surveys

Bumble bee species observed during the surveys (Attachment 1: Figure 2 through Figure 5) included CBB, yellow-faced bumble bee (*Bombus vosnesenskii*), and yellow bumble bee (*Bombus fervidus*). A total of 24 CBB were observed (12 workers and 12 males); a total of 17 yellow-faced bumble bees (14 workers and three queens) were observed; and one yellow bumble bee worker was observed. A total of 58 floral species were in bloom during the surveys, with three floral species observed being visited by bumble bees (Table 3), including thick-leaved yerba santa, desert prince's plume, and bladder sage. CBB were only observed visiting thick-leaved yerba santa.

The percentage of floral resources in bloom during surveys ranged between 10 and 30 percent, varying across surveys and across the Survey Area.

Table 3 Floral Species in Bloom During CBB Surveys and Bumble Bee Species Observed Visiting

Scientific Name	Common Name	Bumble Bee Species Observed Visiting
Acmispon glaber	deerweed	–
Amsinckia tessellata	bristly fiddleneck	–
Asclepias fascicularis	narrow leaf milkweed	–
Asclepias speciosa	showy milkweed	–
Baccharis salicifolia	mulefat	–

Scientific Name	Common Name	Bumble Bee Species Observed Visiting
Calochortus Kennedy	desert mariposa lily	–
Camissonia campestris	Mojave suncup	–
Castilleja chromosa	desert paintbrush	–
Chaenactis glabriuscula	yellow pincushion	–
Chorizanthe staticoides	Turkish rugging	–
Cryptantha pterocarya	wingnut cryptantha	–
Datura wrightii	sacred datura	–
Eulobus californicus	California primrose	–
Encelia actoni	Acton's brittlebush	–
Eriastrum densifolium	giant eriastrum	–
Eriastrum sapphirinum	sapphire woollystar	–
Ericameria linearifolia	linear leaved goldenbush	–
Ericameria nauseosa	rubber rabbitbrush	–
Eriodictyon crassifolium	thick-leaved yerba santa	*B. crotchii, B. vosnesenskii*
Eriogonum deflexum	flat-crown buckwheat	–
Eriogonum fasciculatum	California buckwheat	–
Eriogonum gracillimum	rose and white buckwheat	–
Eriophyllum confertiflorum	golden yarrow	–
Erodium cicutarium	common storks-bill	–
Erythranthe guttata	seep monkeyflower	–
Fremontodendron californicum	California flannelbush	–
Gilia latiflora	hollyleaf gilia	–
Gutierrezia californica	California matchweed	–
Heliotropium curassavicum	alkali heliotrope	–
Hirschfeldia incana	shortpod mustard	–
Larrea tridentata	creosote bush	–
Lessingia glandulifera	valley lessingia	–
Lupinus microcarpus	chick lupine	–
Malacothrix glabrata	desert dandelion	–
Marrubium vulgare	white horehound	–
Melilotus indicus	small melilot	–
Melilotus officinalis	yellow sweet clover	–
Mirabilis laevis	desert wishbone-bush	–
Nicotiana quadrivalvis	Indian tobacco	–
Phacelia cicutaria	caterpillar scorpionweed	–
Phacelia distans	distant phacelia	–
Prosopis glandulosa	honey mesquite	–
Salvia carduacea	thistle sage	–
Salvia columbariae	chia sage	–
Salvia dorrii	Dorr's sage	–
Sambucus mexicana	blue elderberry	–

Scientific Name	Common Name	Bumble Bee Species Observed Visiting
Scutellaria mexicana	bladder sage	*B. fervidus*
Senecio flaccidus	threadleaf ragwort	–
Sisymbrium altissimum	tall tumblemustard	–
Solanum douglasii	greenspot nightshade	–
Solanum umbelliferum	bluewitch nightshade	–
Sonchus asper	spiny sowthistle	–
Stanleya pinnata	desert prince's plume	*B. vosnesenskii*
Stephanomeria exigua	small wirelettuce	–
Stephanomeria pauciflora	brownplume wirelettuce	–
Verbena lasiostachys	western vervain	–
Veronica anagallis-aquatica	blue water-speedwell	–
Xylorhiza tortifolia	Mojave woodyaster	–

Vegetation Communities Where Bumble Bees Were Observed

Bumble bees were observed in five vegetation communities in the Survey Area: California buckwheat scrub, rubber rabbitbrush scrub, California juniper woodland, big sagebrush scrub, and Goodding's willow – red willow riparian woodland (Table 4). CBB were only observed in the big sagebrush scrub and California juniper woodland vegetation communities. Bumble bees were not observed in Sections 1, 3, 8 or 9 of the Survey Area, and CBB specifically were not observed in Sections 1, 2, 3, 6, 8, or 9 of the Survey Area.

Table 4 Bumble Bee Observations

Vegetation Community	Bumble Bee(s) Observed (Species, Caste and Number of Individuals)	Bumble Bee Behavior Observed
Big Sagebrush Scrub	17 CBB (12 workers, 5 males) 3 yellow-faced bumble bees (*Bombus vosnesenskii*, workers)	All observed foraging on thick-leaved yerba santa within Section 5 of the Survey Area
California Buckwheat – Brittle Bush Scrub, Rubber Rabbitbrush Scrub	1 yellow bumble bee (*Bombus fervidus*, worker)	Foraging on a bladder sage bush in Section 2 of the Survey Area
California Juniper Woodland	7 CBB (males)	Perching on California juniper tree and flying/searching for a mate in Section 4 and Section 7 of the Survey Area
Goodding's Willow – Red Willow Riparian Woodland and Forest	10 yellow-faced bumble bees (7 workers, 3 queens)	Foraging desert prince's plume in Section 6 of the Survey Area
Rubber Rabbitbrush Scrub	4 yellow-faced bumble bees (workers)	Foraging on thick-leaved yerba santa in Section 2 and Section 6 of the Survey Area

Nesting Surveys

Potential CBB nesting substrates identified in the Survey Area included small mammal burrows and tunnels, rock piles, brush piles, bunch grasses, leaf litter, areas of vegetation mulch, and layers of pine needle duff. Potential nesting substrates were surveyed within areas of foraging resources and within areas of California juniper woodland and along woodland edges. Potential nesting substrates were documented with representative photographs (Attachment 3: Photographs 32 to 39). No bumble bees

were observed at any potential nesting substrate locations; no queens exhibiting nest-searching behavior were observed; and bumble bee movement from a potential nesting substrate was not observed during the surveys. No potentially active CBB nesting sites were observed during the surveys.

Overwintering Habitat Surveys

Potential CBB overwintering habitat assessed and documented within the Survey Area included bare ground, leaf litter, pine needle duff layer, and bunch grasses. These types of overwintering habitat were observed throughout the Survey Area. Potential overwintering habitats in the Survey Area were documented with representative photographs (Attachment 3: Photographs 37 to 41). The surveys occurred during the CBB Colony Active Period; thus, no bumble bee hibernacula were observed during the surveys.

Observations within the Angeles National Forest

No bumble bees were observed within the boundaries of Angeles National Forest; however, Rincon biologists observed one yellow-faced bumble bee approximately 80 feet north of the ANF boundary in Section 2 of the Survey Area.

Conclusion

Based on the results of these CBB surveys, there is potential for CBB nesting, foraging and overwintering in the Survey Area. All CBB observations were submitted to the California Natural Diversity Database as required in the CDFW Survey Considerations document.

Rincon is committed to providing exceptional surveying and reporting services for this project. Please contact us if you have any questions or need any additional information.

Sincerely,
Rincon Consultants, Inc.

Amber Nichols
Senior Biologist
Crotch's Bumble Bee Lead Surveyor

Stella Moore
Biologist, Crotch's Bumble Bee Field Assistant

Brenna Vredeveld
Supervising Biologist

Attachments

Attachment 1	Figures
Attachment 2	Crotch's Bumble Bee Photo-Only Survey Plan
Attachment 3	Site Photographs
Attachment 4	Resumes
Attachment 5	Crotch's Bumble Bee Identification Qualifications

References

California Department of Fish and Wildlife (CDFW). 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline (accessed April 2024).

Rincon Consultants, Inc. (Rincon). 2024a. Crotch's Bumble Bee Photo-Only Survey Plan for the Palmdale Ditch Conversion Project. May 2024.

_____. 2024b. Palmdale Ditch Conversion Project Biological Resources Assessment. Palmdale, California. Prepared for Palmdale Water District.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, 2nd edition. California Native Plant Society, Sacramento, California.

Attachment 1

Figures

Figure 1 Regional Project Location

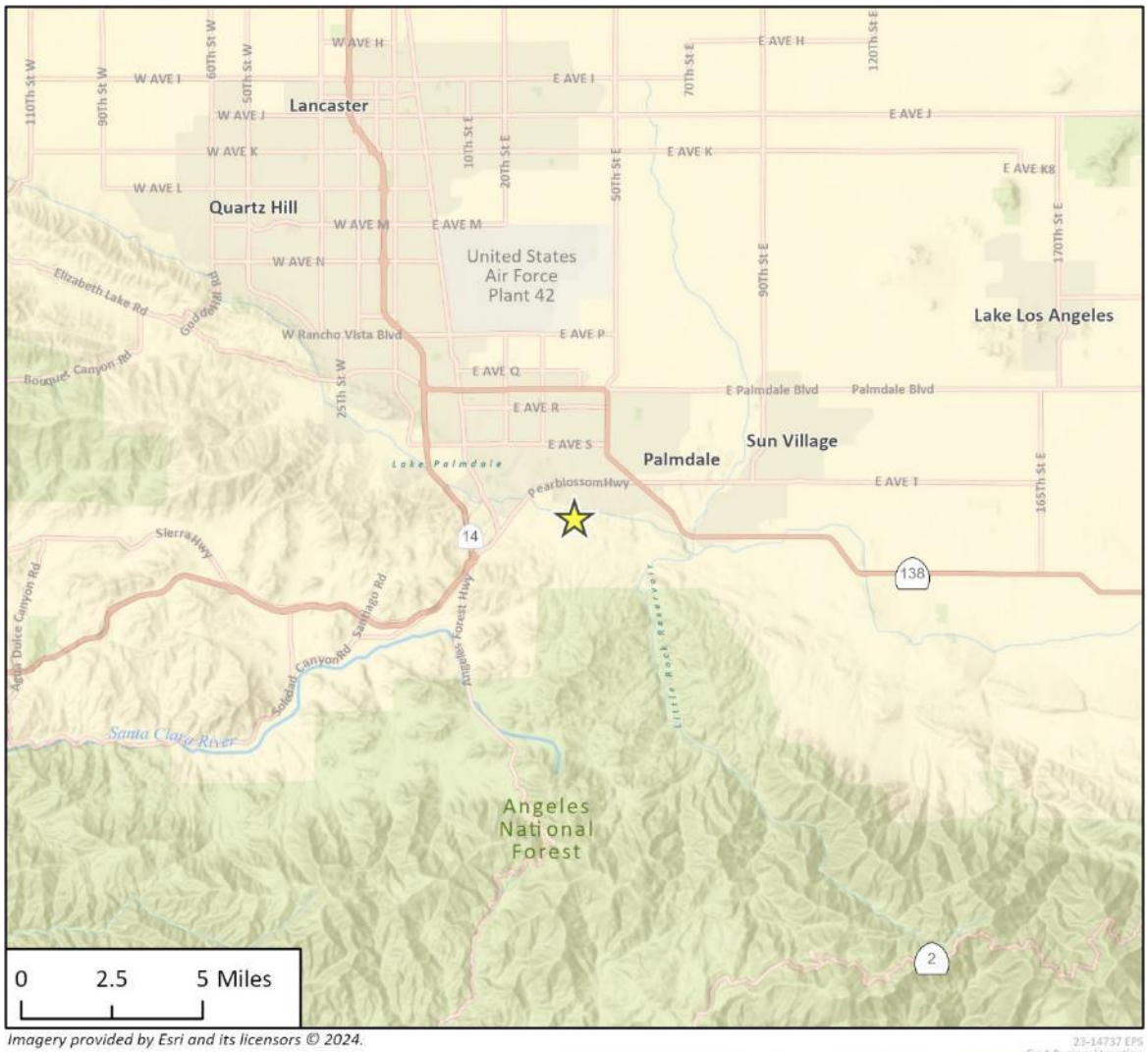

Figure 2 Survey Area and Overview of Bumble Bee Observations

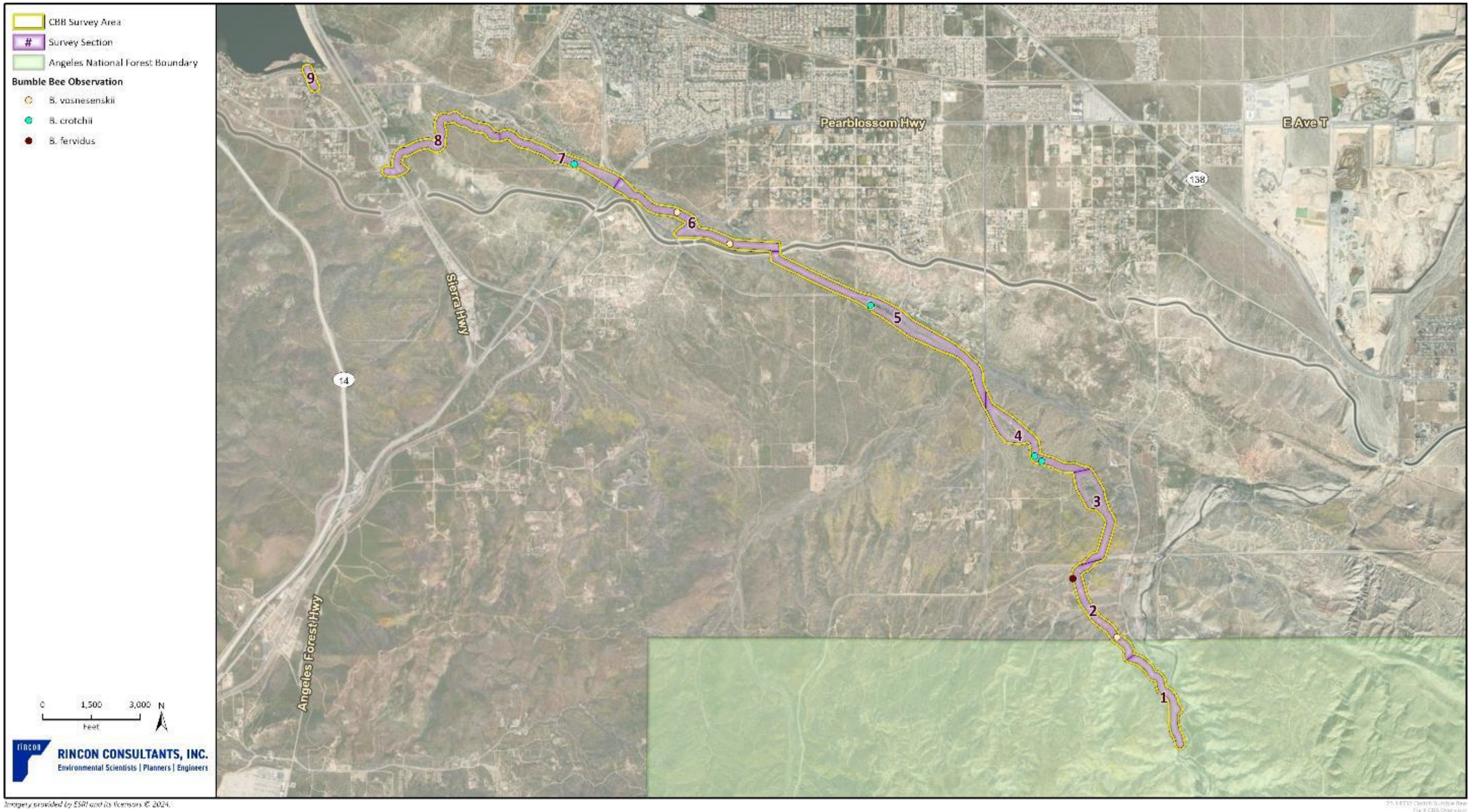

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Figure 3 Bumble Bee Observations – Page 1

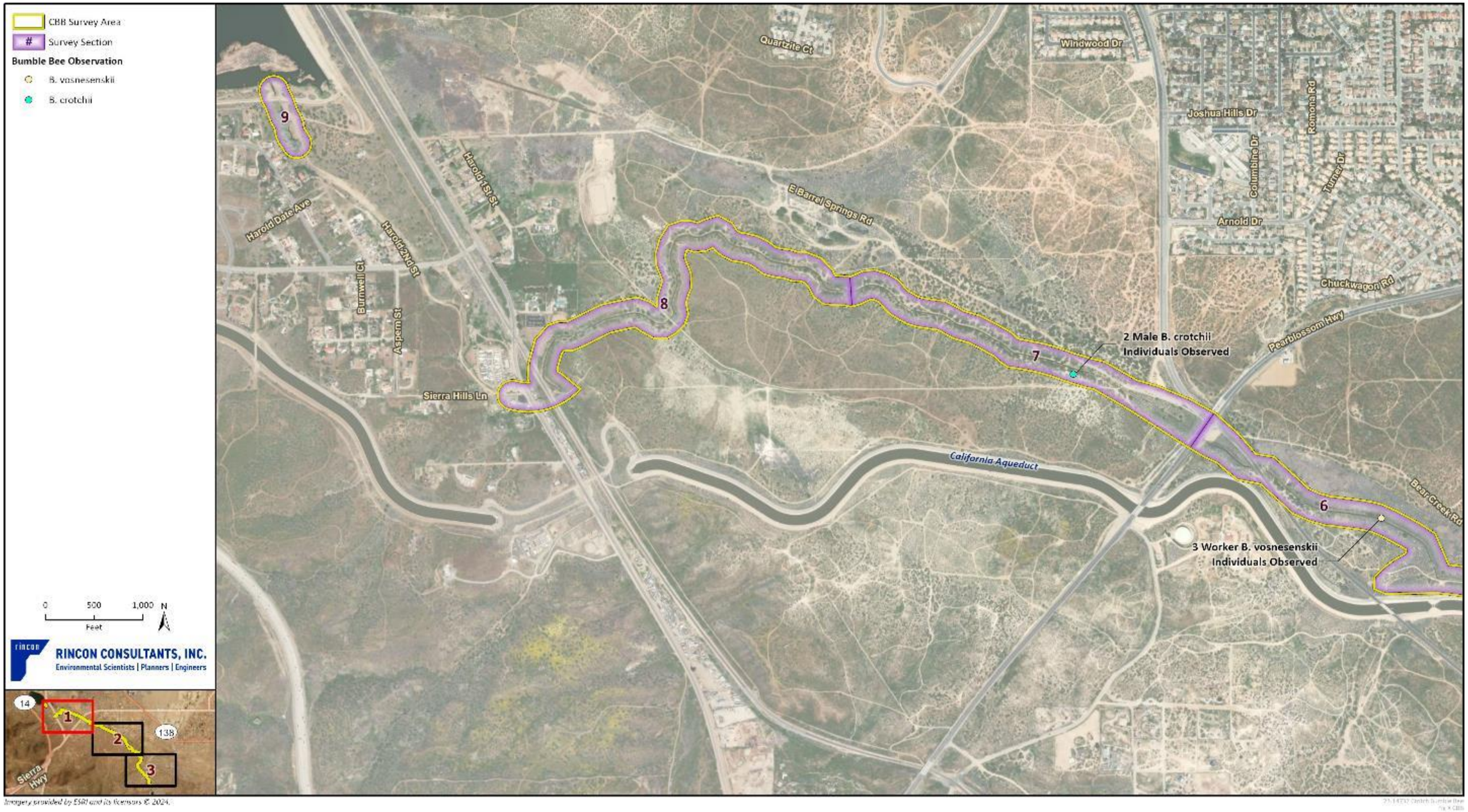


Figure 4 Bumble Bee Observations – Page 2

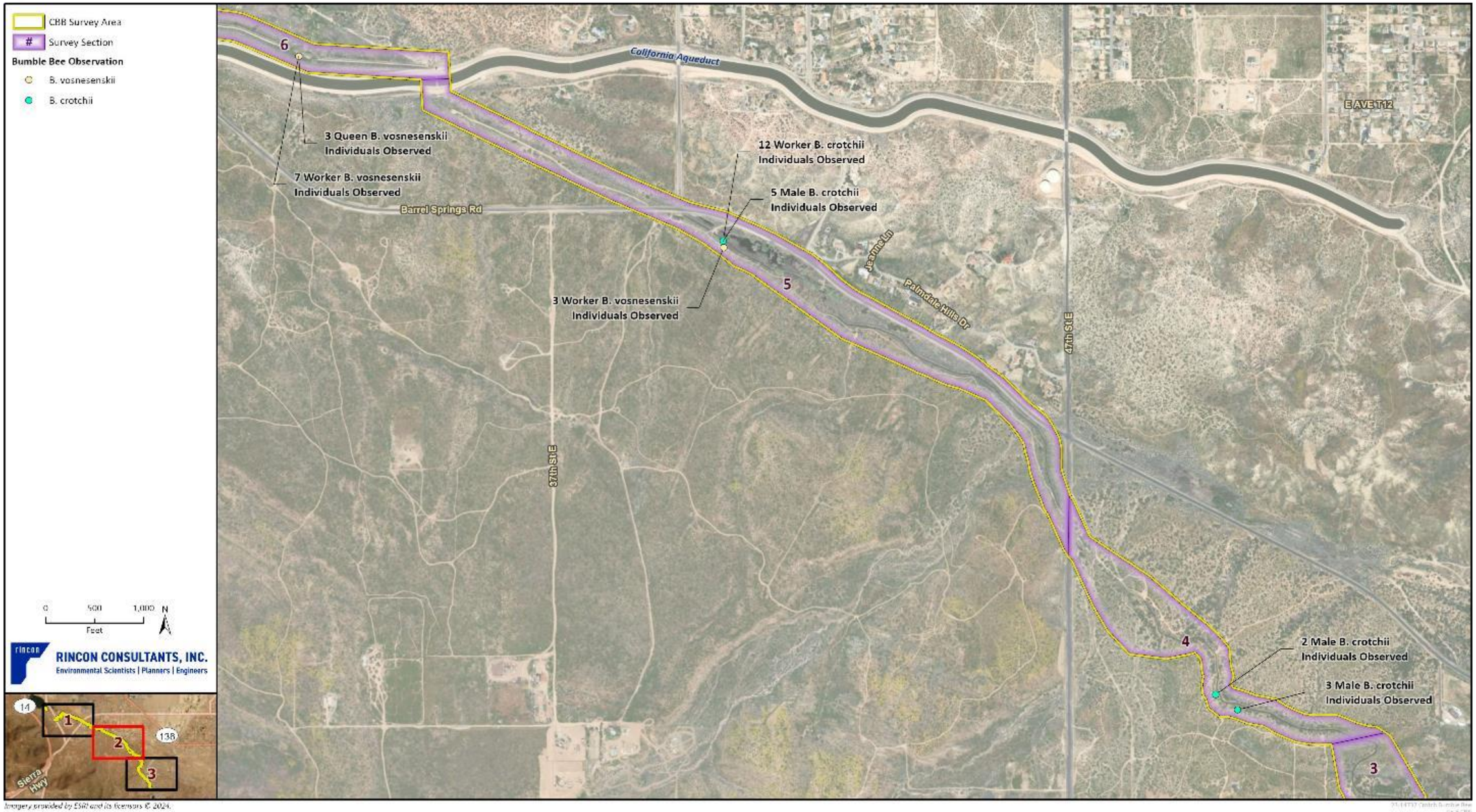
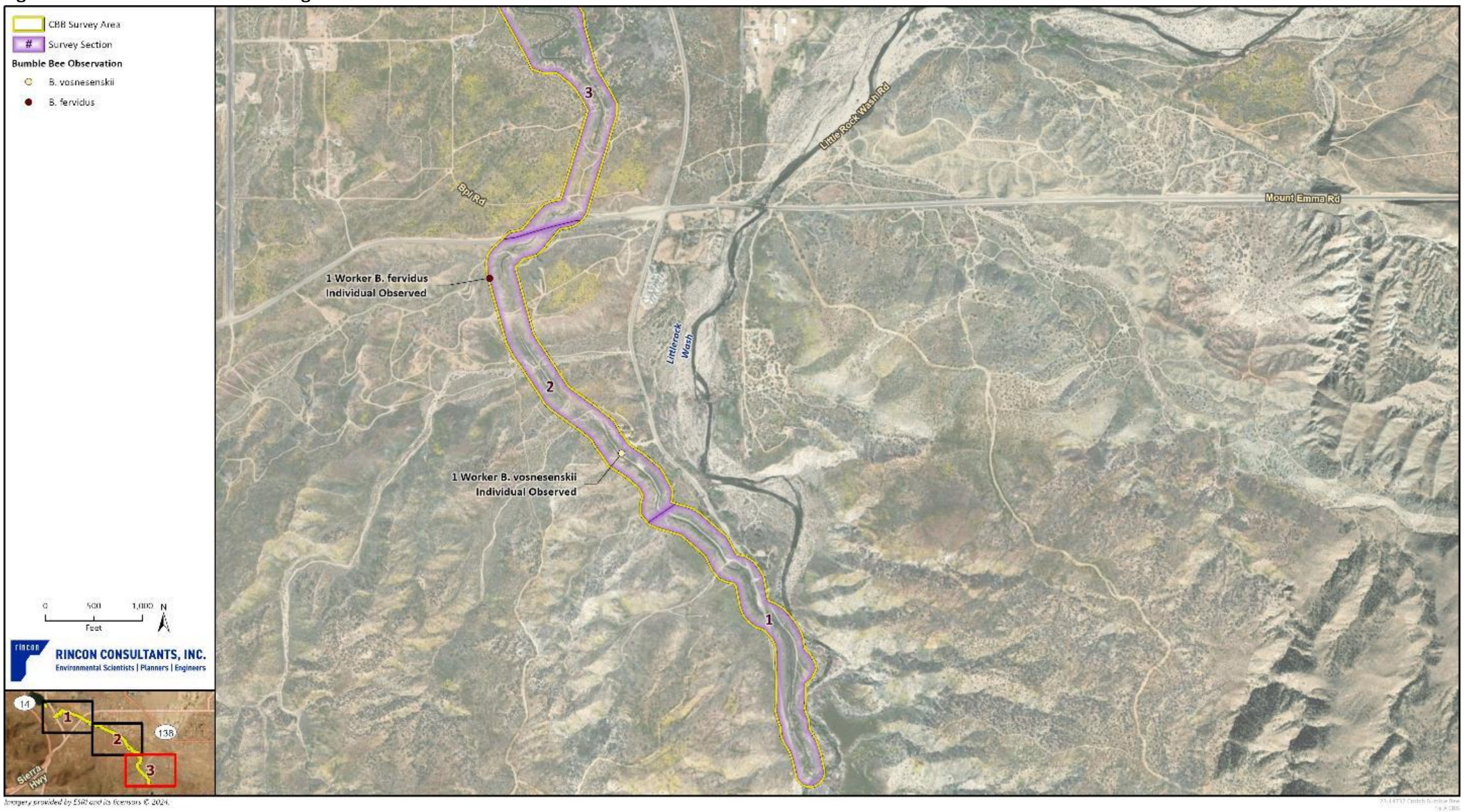


Figure 5 Bumble Bee Observations – Page 3



Attachment 2

Crotch's Bumble Bee Photo-Only Survey Plan

From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Monday, May 6, 2024 11:07 AM
To: Brenna Vredeveld
Cc: Amber Nichols; Turner, Jennifer@Wildlife; Steven Hongola; Jacob Hargis; Robin Murray; Annaliese Torres; Christopher Julian; Romero, Ben; Brown, Adam; Borchardt, Jerimy
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

Thank you for the quick response and final survey plan. We have no additional comments, and you may proceed with surveys according to the Survey Plan. We appreciate your coordination and let us know if you have any questions or concerns.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Monday, May 6, 2024 10:58 AM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Steven Hongola <shongola@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Robin Murray <rmurray@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Thank you, Julisa!

Please find attached the updated Survey Plan with Survey #1 dates revised.

Thanks!

Brenna Vredeveld, MESc, Supervising Biologist/ Project Manager
(*She/Her/Hers*)
805-644-4455 Main | 323-538-4950 Direct
bvredeveld@rinconconsultants.com

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From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Monday, May 6, 2024 10:38 AM
To: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

We have completed our review of the revised Survey Plan and have a minor revision. Please update the first week of surveys dates under Survey #1 in the Survey Schedule since surveys did not start May 6th. Aside from this minor revision, we have no additional comments. Thanks.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Thursday, May 2, 2024 5:59 PM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Steven Hongola <shongola@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Robin Murray <rmurray@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Thank you, Julisa. We appreciate the quick review! Great to know that our proposed surveyors are approved.

Please find attached the revised Survey Plan, which addresses CDFW comments. A clean version and track changes version are attached.

Let us know if you have any questions.

Thanks!

Brenna Vredeveld, MESc, Supervising Biologist/ Project Manager
(*She/Her/Hers*)
805-644-4455 Main | 323-538-4950 Direct
bvredeveld@rinconconsultants.com

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---

From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Thursday, May 2, 2024 8:51 AM
To: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Steven Hongola <shongola@rinconconsultants.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

We have completed our review of the resumes and Crotch's Bumble Bee Survey Plan for the Palmdale Ditch Conversion Project. Please see the attached plan for edits and comments. Additionally, below is a list of the biologists approved to assist the lead surveyor during surveys efforts for this Project. If you have questions, feel free to reach out. Thanks, and I look forward to receiving an updated version of the plan for review.

Lead Surveyor
Amber Nichols

Field Assistants
Kevin Bock
Stella Moore
Olivia Taylor
Elizabeth Shoemaker

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Tuesday, April 30, 2024 8:59 AM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Thanks, Julisa.

Please find attached resumes for Stella Moore, Elizabeth Shoemaker, and Olivia Taylor. They will be assisting with the Crotch's bumble bee surveys for the Palmdale Ditch Conversion project.

Please let us know if you have any questions.

Thanks!

Brenna Vredeveld, MESc, Supervising Biologist/ Project Manager
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From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Monday, April 29, 2024 9:48 AM

To: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

Thank you for the documents, they have been received.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Friday, April 26, 2024 10:24 AM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Thanks, Julisa. We will be sure to include that information.

Please find attached Rincon's CBB survey plan and resumes for Amber Nichols as lead surveyor, and Kevin Bock who will be assisting. We are preparing additional resumes for review and will send those along once they are ready.

I appreciate the potential timing constraints on review of the survey plan and resumes. Please let us know if you have any questions about the plan. We will reach out next week to check-in on CDFW's review.

Thanks!

Brenna Vredeveld, MESc, Supervising Biologist/ Project Manager
(*She/Her/Hers*)
805-644-4455 Main | 323-538-4950 Direct
bvredeveld@rinconconsultants.com

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From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Thursday, April 25, 2024 1:50 PM
To: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

Thank you for the update regarding the EIR. The discussion of Crotch's bumble bee in the EIR should also include the Project's impact on Crotch's bumble bee and suitable habitat present within the Project site. As for surveys, I cannot guarantee that you will be able to start surveys by the week of May 6th. It depends on multiple factors such as timing of when the survey plan is received, if edits or feedback are necessary, and upper management review time. Additionally, we still need to review the resumes of your additional staff that you want to assist in the surveying efforts. With that said, we will do our best to review the plan and resumes in a timely manner. Feel free to reach out if you have CEQA questions regarding Crotch's bumble bee and I look forward to receiving the survey plan/resumes soon. Thanks.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Thursday, April 25, 2024 11:34 AM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Hi Julisa,

Thanks to you and Jen for taking the time to speak with us yesterday afternoon. We appreciated the productive discussion.

Survey Plan
We are working on the Survey Plan now and will send asap once it's ready. As I mentioned on the call, ideally we'd like to start the first of the three surveys on Monday, May 6 (through May 9). I understand you and the regional CDFW office handle many projects, which are likely keeping you busy. Any efforts to expedite review of the draft Survey Plan would be greatly appreciated. Our goal is to complete the 3 surveys by the middle of June in anticipation of an earlier end to the colony active period in this particular project location.

EIR timing and survey findings
Unfortunately, the timing of the EIR relative to the surveys likely won't allow us to incorporate survey results into the EIR. I realize we didn't discuss this on the call, but I see the note about it in your email. Requirements associated with the project funding stipulate strict deadlines for construction completion. At this time, the District is aiming to complete construction by December 2025. To stay on schedule, the EIR is already being prepared. The discussion of Crotch's bumble bee in the document will focus on potential occurrence based on habitat suitability and includes measures requiring surveys and additional avoidance/minimization/mitigation actions in the event it is present.

Thanks!

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bvredeveld@rinconconsultants.com

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From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Wednesday, April 24, 2024 2:56 PM
To: Brenna Vredeveld <bvredeveld@rinconconsultants.com>

Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>
Subject: [EXT] Palmdale Ditch Conversion Project

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Hi Brenna,

Thank you for organizing the call. As discussed in the meeting, the Palmdale Ditch Conversion Project may proceed with photo-only surveys to determine presence of Crotch's bumble bee within the Project site. Please note that the appropriateness of photo-only survey methodology is determined in Region on a Project-by-Project basis; CDFW has determined that it is appropriate only for this specific Project. Additionally, Amber Nichols is currently the only biologist approved to conduct photo only surveys and ID the photo vouchers for bumble bee identification. Prior to any surveys being conducted, CDFW would like to review and approve a Survey Plan. Below outlines components of a Survey Area Plan that we would like to see described in detail. Please also use CDFW's Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species for guidance when drafting the plan. Given the tight time crunch, you may start sending resumes of other Rincon staff that would like to assist in surveying efforts for this Project. I have also included measures that CDFW recommends in a CEQA document regarding Crotch's bumble bee. In addition to measures, survey findings should be discussed in the Environmental Impact Report. If you have questions, feel free to reach out. Thanks.

Survey Plan should include the following:

- Survey Methodology
  - Location (i.e., latitude and longitude), acreage of the site, and extent of surveyed area (maps recommended);
  - Number and timing of surveys (recommended 3 surveys spaced 2-4 weeks apart);
  - Duration of survey (minimum of 1 person-hour searching per 3 acres);
  - Weather conditions (i.e., temperature, wind speed, and cloud cover);
  - Photo Equipment (e.g., DSLR camera);
  - Foraging habitat - vegetation composition and host plants data;
  - Nesting habitat – nest substrate and nest locations, if observed;
  - Overwintering habitat – burrow materials and burrow locations, if observed; and,
  - Set of photos of bee species observed with multiple angles to capture key identification features.
- Define roles and responsibilities of each person present during the surveys. Include contact information and any relevant information (e.g., qualifications)
- Describe any training additional surveyors will be provided by the principal biologist leading the surveys.
- Actions in the event that photos are not definitive (e.g., assume presence, additional surveys)
- Actions taken if bumble bees are injured during survey (e.g., stop work and notify)

Crotch's Bumble Bee Measures:

Avoidance Plan - If Crotch's bumble bee is detected, the Project proponent in consultation with a qualified entomologist shall develop a plan to fully avoid impacts to Crotch's bumble bee. The plan shall include effective, specific, enforceable, and feasible measures. An avoidance plan shall be submitted to the City and CDFW prior to implementing Project-related ground-disturbing activities and/or vegetation removal where there may be impacts to Crotch's bumble bee.

Incidental Take Permit - If impacts to Crotch's bumble bee cannot be feasibly avoided, the Project applicant shall consult with CDFW and obtain appropriate take authorization from CDFW (pursuant to Fish & Game Code, § 2080 et seq). The Project applicant shall comply with the mitigation measures detailed in the take authorization issued by CDFW. The Project applicant shall provide a copy of a fully executed take authorization prior to the issuance of a grading permit and before any ground disturbance and vegetation removal.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012
213-788-4842

May 6, 2024
Rincon Project No: 23-14737

Julisa Portugal
California Department of Fish and Wildlife
South Coast Region 5
3030 Old Ranch Parkway, Suite 400
Seal Beach, CA 90740

Via email: Julisa.Portugal@wildlife.ca.gov

Subject: Crotch's Bumble Bee Photo-Only Survey Plan for the Palmdale Ditch Conversion Project, Los Angeles County, California

Dear Ms. Portugal:

This Survey Plan outlines the survey methodology, surveyor qualifications and training, surveyor roles and responsibilities, bumble bee identification methods, and bumble bee injury protocol, for the photo-only focused Crotch's bumble bee (*Bombus crotchii*) surveys for the Palmdale Ditch Conversion Project (Project) located in Los Angeles County (County), California. This Survey Plan has been prepared for California Department of Fish and Wildlife (CDFW) review and approval prior to initiation of the focused Crotch's bumble bee photo-only surveys for this Project.

Project Description

The Project would involve the conversion of approximately 7.2 miles of the Palmdale Ditch (Ditch) with a buried 48-inch diameter pipeline made from reinforced concrete or high-density polyethylene. Of the 7.2-mile length, approximately 6.4 miles is currently open-channel with a mixture of concrete-lined and earthen-bottomed segments, which would be converted to pipeline. Approximately 0.5 mile of the Ditch is currently within pipelines, specifically at its overcrossing of the California Aqueduct and below Los Angeles Department of Water and Power electrical lines, or concrete tunnels. These pipelines and tunnels would be inspected and rehabilitated as part of the proposed Project. Approximately 0.1 mile of the Ditch currently feeds through road culvert crossings under various city of Palmdale (City) and County roads. The proposed Project involves inspection, rehabilitation, and replacement of these crossings, as needed. The proposed Project would also include installation of a new water conveyance turnout to the California Aqueduct, which would be located within the Project site on the north side of the California Aqueduct and west of the Ditch's overcrossing of the aqueduct. The turnout would include a connection to the proposed pipeline, a new headwall, a trash rack, a meter, and other required appurtenances. The turnout may also include a one-story controls/electrical building that would have a footprint of approximately 100 square feet.

Project Location

The Project site consists of an approximately 7.2-mile-long corridor in the city of Palmdale and unincorporated Los Angeles County (Appendix A, Figure 1). The Project footprint encompasses portions of Section 7 of Township 5 North, Range 11 West; Sections 1, 2, 11, and 12 of Township 5 North, Range 12 West; Sections 7, 8, 16, and 17 of Township 5 North, Range 11 West; and Sections 16, 17,

21, 27, and 28 of Township 5 North, Range 11 West on the *Palmdale and Pacifico*, *California* United States Geological Survey (USGS) 7.5-minute topographic quadrangles (USGS 2024).

Survey Methods

Focused Crotch's bumble bee surveys would be photo-only with no handling of individual bumble bees, and would be conducted in accordance with the CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species document that was issued June 6, 2023 (CDFW 2023) and would follow the methods outlined below.

Survey Area

Surveys would be conducted throughout the entire Project site, which totals approximately 309 acres along an approximately 7.2-mile-long corridor (Appendix A, Figure 2). The approximate center of the Project is located at latitude 34.527934°N and longitude -118.058357°W.

Survey Effort and Timing

Surveys would be conducted for a minimum of one person-hour of searching per three acres of suitable habitat and thus would total 103 person hours per survey. This minimum survey time does not include the time for photography or identification. One Lead Surveyor and three Field Assistants would survey the entire project footprint in 25.75 hours per survey, which would be spread out over four consecutive sub-survey days, thus each sub-survey day would total 6.5 hours of searching time per biologist.

A total of three surveys would occur between 2 to 4 weeks apart (Table 1) during the Colony Active Period for Crotch's bumble bee (April through August). Due to the Project location in the semi-arid Antelope Valley, surveys are planned for earlier in the Colony Active Period to ensure all surveys are completed during peak colony size when bumble bee detection is optimal.

Table 1 Survey Schedule

Survey #1	Survey #2	Survey #3
May 13, 2024	May 28, 2024	June 11, 2024
May 14, 2024	May 29, 2024	June 12, 2024
May 15, 2024	May 30, 2024	June 13, 2024
May 16, 2024	May 31, 2024	June 14, 2024

Surveys would begin no earlier than one hour after sunrise and be completed at least two hours before sunset.

Weather Conditions

Surveys would be conducted when weather conditions are suitable for bumble bee activity, ideally on warm, sunny days with low wind (less than 8mph). Surveys would not occur during wet conditions (e.g. foggy, raining, or drizzling) or within 1 hour after rain subsides. Surveys may occur when cloud cover is 100 percent as long as the surveyors can still see their shadow (USFWS 2019). Due to the large project site size and the minimum number of searching hours required, every effort would be made to limit surveys to time periods that are warmer than 65 degrees Fahrenheit (°F) and less than 90°F; however, there may be periods of time during the 6.5-hour-long surveys when temperatures are outside of these

ideal ranges. Surveys would not occur however, when temperatures are less than 60°F or greater than 95°F.

Equipment and Photography Methods

The surveys would be conducted using point and shoot digital cameras, DLSR cameras, or smart devices (e.g., phones or tablets) with cameras (>= 8 megapixels; USFWS 2019) and would depend on the surveyor preference for ease of use.

Photographs would be taken of each bumble bee species and caste, and whenever possible would include photographs of the following bumble bee morphology: (1) top overview of bee, (2) side view of bee depicting mandible length and hair phenology of thorax and abdomen, (3) face and vertex, (4) tip of abdomen, (5) close-up view of hind tibia, and (6) underneath of bee (whenever feasible).

During the surveying efforts, a spacer photograph should be taken in between the sets of photographs of each individual bumble bee, so that the Lead Surveyor/Taxonomist can distinguish between individual bumble bees when the photos are archived and reviewed after the surveys. Each photograph taken should be linked to the corresponding bumble bee specimen such as through tablet usage and Survey 1,2,3 mapping, phone GPS applications, or standardized photograph naming conventions including the site location, photo number, and date.

Data Collection

Survey timing, weather conditions, bumble bee observations, floral resource assessments, nesting habitat assessments, and active nest observations would be recorded on a data sheet or a tablet data collection system such as Survey 1, 2, 3 for data accuracy and consistency. An example photo-only survey data sheet is provided in Attachment 2; however, the format and organization of the data sheet used for this Project is subject to change to allow for the most efficient collection of field data and bumble bee observations.

Surveys

Foraging Bumble Bee Surveys

During the foraging bumble bee surveys, floral species in bloom would be noted, and the percentage of floral resources available would be assessed in various sections along the linear project site, with the final percentage of resources available calculated as a range (e.g. between 10% to 80%), as this metric is likely to vary across the Project site.

Floral species visited by each bumble bee observed would also be recorded during the foraging bumble bee surveys. A list of floral species in bloom and whether bumble bees were observed on them would be created.

The Lead Surveyor, Amber Nichols, and the three Field Assistants would walk the entire Project site using meandering transect surveys. The transect and surveyor spacing would vary depending on the quality of the foraging habitat in any given area, with transects closer together in areas with a higher density of blooming floral resources and farther apart in areas with sparse or no blooming floral resources.

Every bumble bee observed during the surveys would be identified to species and caste (whenever feasible).

Overwintering Habitat Surveys

The Project site would be surveyed to assess and document the presence of overwintering habitat including rodent holes/tunnels, bare soil, rock piles, bunch grasses, brush piles, leaf litter, pine needle duff layer, and mulch. Should an active hibernaculum be observed, the location of the hibernaculum and bumble bee species would be documented and photographed.

Nesting Surveys

The Project site would also be surveyed for presence of suitable nesting substrates including rodent holes/tunnels, rock piles, bunch grasses, and leaf piles, and such potential nesting substrates would be documented with representative photographs. Potential nesting sites would be surveyed for active Crotch's bumble bee colonies by looking for concentrated bumble bee activity, and if a site is suspected to be occupied, it would be observed to identify signs of bumble bees entering or exiting the entrance. If an active Crotch's colony is observed, the location, vegetation cover type, slope, aspect, and distance to colony foraging location would be documented and photographed. Additionally, the active Crotch's colony would be photographed at a distance to avoid any potential disturbance or encroachment upon the colony.

Injured Candidate Bumble Bees

If a Crotch's bumble bee individual is injured during the survey, the surveyors would immediately stop work and the Lead Surveyor, Amber Nichols, would immediately notify CDFW by calling and emailing the Project CDFW Environmental Scientist:

Julisa Portugal
(562) 330-7563
Julisa.Portugal@wildlife.ca.gov

Photograph Verifications

Lead Surveyor, Amber Nichols, would serve as the Taxonomist confirming bumble bee species identifications, and would review all survey bumble bee photographs to verify species and caste. Photographs of voucher specimens for each species and caste would be compiled.

In the event photographs of potential Crotch's bumble bees are not definitive, additional surveys would be conducted in the area where the potential Crotch's bumble bee was observed to confirm presence or absence.

Survey Staff

Surveyor Roles and Responsibilities

Lead Surveyor

The Lead Surveyor, Amber Nichols, would be responsible for overseeing all aspects of the bumble bee surveys, identification, and Field Assistant training, including implementation of the survey methods outlined in this Survey Plan. The Lead Surveyor would provide training for the Field Assistants as outlined below. The Lead Surveyor would set the pace of the surveys, adjust the spacing of transects for floral resource density changes, and ensure required photographs and data are obtained. The Lead Surveyor would be responsible for verifying identifications of bumble bees in photographs.

Field Assistants

The Field Assistants would assist the Lead Surveyor in conducting the surveys, recording survey data and taking survey area and bumble bee photographs. During the meandering transects, the Field Assistants would be in close proximity to the Lead Surveyor during the survey efforts and not conducting surveys on their own.

Training for Field Assistants

Prior to initiating the surveys, the Lead Surveyor would prepare an identification photo guide specific to the bumble bee species with potential to occur in the Project site and provide a training session to Field Assistants on the identification of queens, workers, and males of each species and caste, with particular focus on identification of Crotch's bumble bee and how to distinguish individuals from each caste from the other potentially occurring species. The Lead Surveyor would also go over the methods outlined in this Survey Plan, including the bumble bee photo angles needed for species and caste identification. Additionally, the Lead Surveyor would ensure Field Assistants have viewed the following Xerces Society for Invertebrate Conservation training videos: *Western Bumble Bee Identification for Bumble Bee Atlas Volunteers* (Xerces 2023a), and *Male Bumble Bee Identification along the Pacific Coast of North America* (Xerces 2023b).

Conclusions

The methods and materials outlined in this Survey Plan would ensure the Project site is adequately surveyed to determine presence/absence of Crotch's bumble bee following the 2023 CDFW Survey Considerations for CESA Candidate Bumble Bee Species document.

Thank you for your review of this Survey Plan. Please contact us with questions.

Sincerely,
Rincon Consultants, Inc.

Amber Nichols
Senior Biologist
Lead Crotch's Surveyor

Steven Hongola
Principal Biologist

Brenna Vredeveld, MESc
Supervising Biologist/Project Manager

Attachments

Attachment 1 Figures
Attachment 2 Data Sheet

References

California Department of Fish and Wildlife (CDFW). 2023. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline

United States Fish and Wildlife Service (USFWS). 2019. Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*) Version 2.2. Available at: https://www.fws.gov/sites/default/files/documents/Survey_Protocols_RPBB_12April2019.pdf

United States Geological Survey (USGS). 2024. *Pacifico Mountain* and *Palmdale*, California 5-minute topographic quadrangle. Accessed January 2024 via The National Map. https://viewer.nationalmap.gov/advanced-viewer/.

Xerces Society for Invertebrate Conservation. 2023a. Western Bumble Bee Identification for Bumble Bee Atlas Volunteers. Available at: *https://www.youtube.com/watch?v=-TlkR59Q1uQ*

Xerces Society for Invertebrate Conservation. 2023b. Male Bumble Bee Identification along the Pacific Coast of North America. Available at: https://www.youtube.com/watch?v=M-lRUGg-qeQ

Attachment 1

Figures

Figure 1 Regional Location

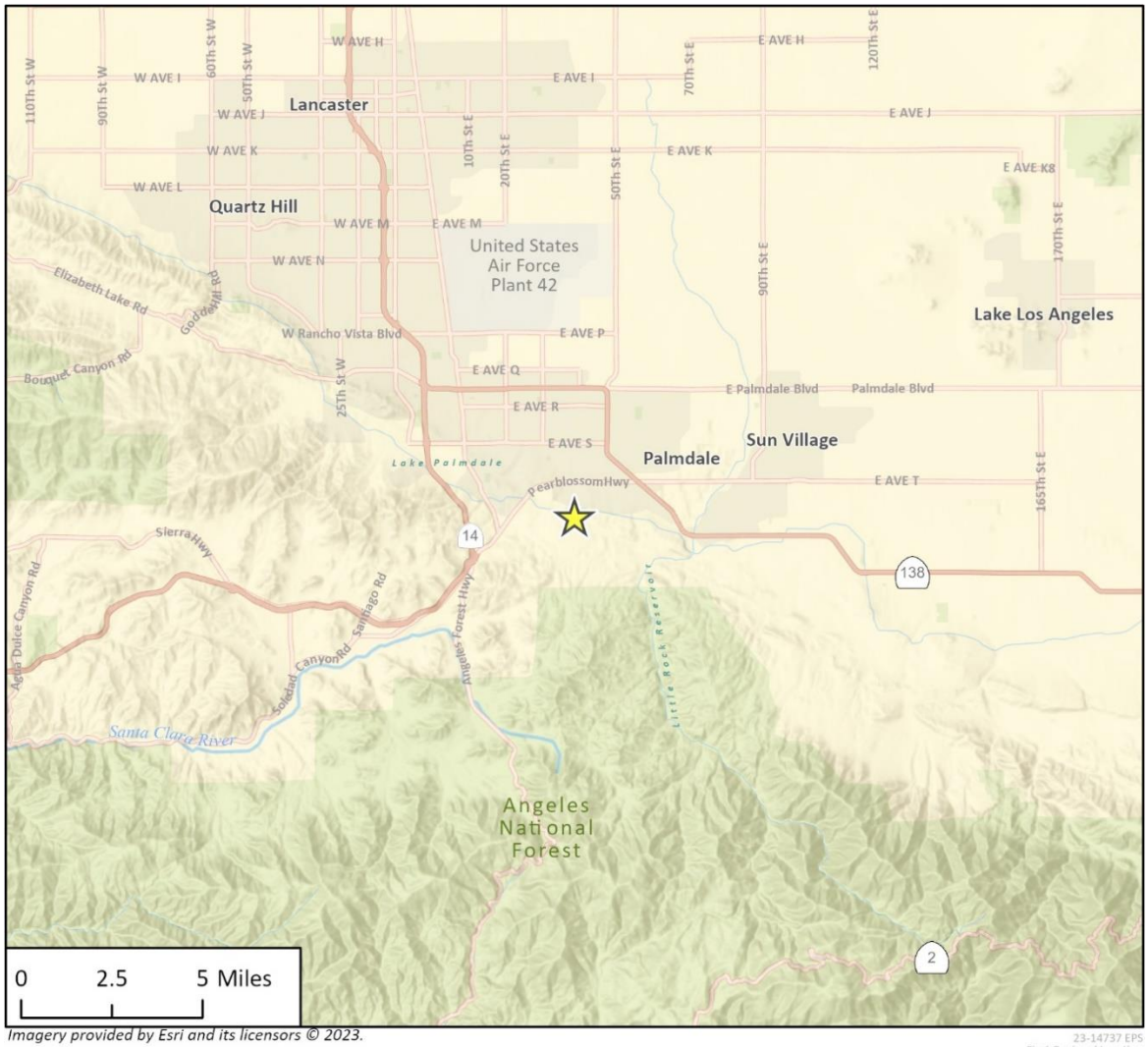
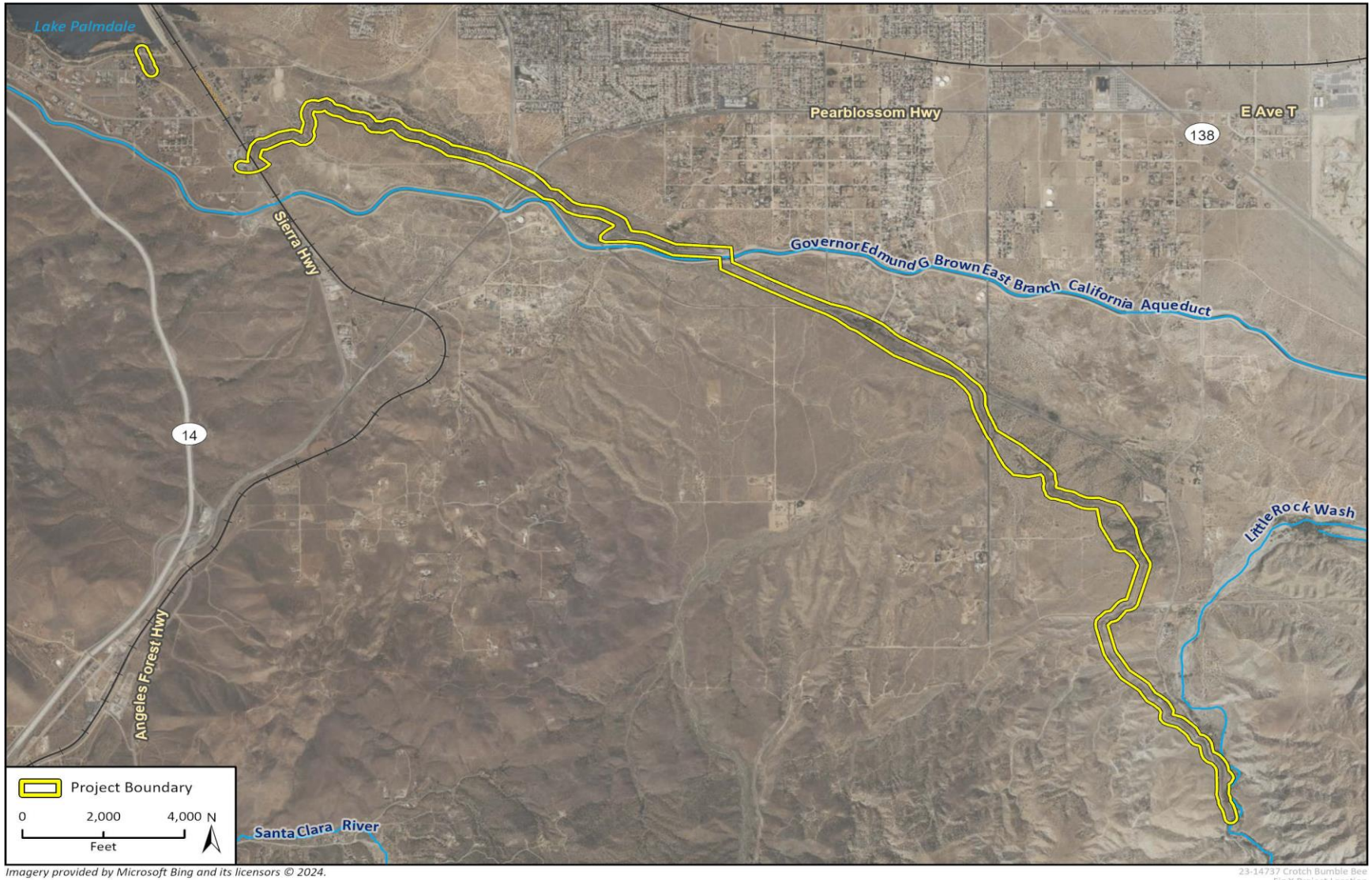


Figure 2 Project Area



Attachment 2

Data Sheet

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

Crotch's Bumble Bee Survey Form – Southern California

Surveyor:	**Project Name:**	**Start Wind Speed (MPH):**
Date:	**Rincon Project #:**	**End Wind Speed (MPH):**
Start Survey Time:	**Start Air Temp (°F):**	**Start Cloud Cover (%):**
End Survey Time:	**End Air Temp (°F):**	**End Cloud Cover (%):**

Photos (Required)

- ☐ Voucher photos of each bumble bee species and caste (queen/worker/male)
- ☐ Survey Areas (to document floral habitat during each survey)
- ☐ Suitable nesting and overwintering habitats (within Project site)
- ☐ Active bumble bee nests (of any species) & GPS Coordinates

1. Foraging Bumble Bee Surveys (Required)

Bee #	Species	Caste	Behavior	Photo	Floral Genus/Species Visited
1	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
2	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
3	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
4	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
5	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
6	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
7	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
8	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
9	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
10	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
11	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
12	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
13	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
14	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
15	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
16	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
17	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
18	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
19	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
20	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
21	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
22	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
23	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
24	Crotch mel vos van fer pen morr nev	q w m	fly flwr		

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Date: _____

Bee #	Species	Caste	Behavior	Photo	Floral Genus/Species Visited
25	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
26	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
27	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
28	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
29	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
30	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
31	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
32	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
33	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
34	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
35	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
36	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
37	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
38	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
39	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
40	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
41	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
42	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
43	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
44	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
45	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
46	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
47	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
48	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
49	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
50	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
51	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
52	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
53	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
54	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
55	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
56	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
57	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
58	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
59	Crotch mel vos van fer pen morr nev	q w m	fly flwr		
60	Crotch mel vos van fer pen morr nev	q w m	fly flwr		

Date: _____

2. Habitat Information –Survey Area (Required)

How much of the **survey area** has flowering resources available? (Circle one – closest match)

0 10% 20% 30% 40% 50% 60% 70% 80% >=90%

Which nesting/overwintering habitat features are within **survey area** (Circle all that are present)

Bunch grasses

Evidence of rodent holes/tunnels

Brush piles

Bare soil

Leaf Litter

Pine needle duff layer

Rock piles

Mulch

Plant species in bloom within **survey area**:

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17
8.	18.
9.	19.
10.	20.

3. Nesting Habitat Surveys – Survey Area (Required)

Types of potential nesting sites surveyed within **survey area** (Circle all that apply)

Rodent holes/tunnels

Rock piles

Leaf piles

Tall grasses

Bird houses

Active nest (Crotch's bumble bee) observations within **survey area**:

	GPS Coordinates of Nest Site	**Bombus Species**	**Photos***	**Vegetation Cover Type**	**Slope**	**Aspect**	**Distance to Colony Foraging Location (if known)**
1							
2							
3							
4							
5							

* Photographs of the active nest site as well as of the high levels of bumble bee activity at the nest entrance.

Nest Survey Methods:

- Nests may occur away from floral resources, in forest edges, unmowed areas, or areas with rodent burrows, etc.
- Search potential nesting sites within the Survey Area for presence of active colonies. Look for high levels of bee movement from a given location.

Suspected Active Crotch's Bumble Bee Nest

- For suspected Crotch's bumble bee nest sites, the opening should be observed for several minutes to detect bumble bees entering or exiting.
- GPS coordinates of the potential nest location should be recorded, so that the potential nest site can be re-evaluated during subsequent surveys to confirm whether a colony has been established.

Note: Suspected or active Crotch's nest sites should **not** be flagged or marked in the field to avoid drawing attention to them.

Extra Observation Data Sheet

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Date: _____

Bee #	Species	Caste	Behavior	Photo	Floral Genus/Species Visited
	Crotch mel vos van fer pen morr nev	q w m	fly flwr		

Attachment 3

Site Photographs

Photograph 1. Section 1 depicting blooming floral resources along the Palmdale Ditch within the Survey Area in the Angeles National Forest (aspect: northwest, May 28, 2024).

Photograph 2. Section 1 depicting brittle bush scrub within the Survey Area in the Angeles National Forest (aspect: southeast, June 11, 2024).

Photograph 3. Section 1 depicting blooming California buckwheat and other blooming floral resources within the Survey Area in the Angeles National Forest (aspect: southeast, June 11, 2024).

Photograph 4. Section 2 depicting blooming floral resources within the Survey Area in the Angeles National Forest (aspect: south, May 13, 2024).

Photograph 5. Section 2 depicting blooming floral resources within the Survey Area (aspect: northeast, May 28, 2024).

Photograph 6. Section 2 depicting blooming deerweed along the Palmdale Ditch within the Survey Area (aspect: southeast, May 28, 2024).

Photograph 7. Section 3 depicting California buckwheat scrub and blooming floral resources within the Survey Area (aspect: east, May 13, 2024).

Photograph 8. Section 3 depicting bunch grasses and blooming floral resources within the Survey Area (aspect: northeast, May 29, 2024).

Photograph 9. Section 3 depicting California juniper woodland within the Survey Area (aspect: northeast, May 13, 2024).

Photograph 10. Section 4 depicting blooming floral resources within the Survey Area (aspect: northwest, May 14, 2024).

Photograph 11. Section 4 depicting blooming California buckwheat within the Survey Area (aspect: west, June 12, 2024).

Photograph 12. Section 4 depicting California juniper woodland within the Survey Area (aspect: north, June 12, 2024).

Photograph 13. Section 4 depicting California juniper woodland where male Crotch's bumblebee (CBB) were observed perching and patroling (aspect: northwest, June 12, 2024).

Photograph 14. Section 4 depicting big sagebrush scrub along the Palmdale Ditch and California juniper woodland habitat where male CBB were observed (aspect: southeast, June 12, 2024).

Photograph 15. Section 5 depicting blooming thick-leaved yerba santa scrub where CBB workers and males were observed along the Palmdale Ditch (aspect: northwest, May 30, 2024).

Photograph 16. Section 5 depicting thick-leaved yerba santa scrub where male and worker CBB were observed in the Survey Area (aspect: northwest, May 30, 2024).

Photograph 17. Section 5 depicting blooming floral resources along the Palmdale Ditch within the Survey Area (aspect: east, June 13, 2024).

Photograph 18. Section 5 depicting blooming floral resources within the Survey Area (aspect: northwest, May 15, 2024).

Photograph 19. Section 5 depicting an overview of big sagebrush scrub within the Survey Area (aspect: west, June 13, 2024).

Photograph 20. Section 6 depicting blooming desert prince's plume within the Survey Area (aspect: south, May 30, 2024).

Photograph 21. Section 6 depicting blooming floral resources along the Palmdale Ditch (aspect: southeast, June 13, 2024).

Photograph 22. Section 6 depicting an overview of big sagebrush scrub within the Survey Area (aspect: northwest, June 13, 2024).

Photograph 23. Section 7 depicting vegetation along the Palmdale Ditch with California juniper woodland in the background (aspect: northwest, May 16, 2024).

Photograph 24. Section 7 depicting blooming floral resources along the Palmdale Ditch (aspect: northwest, May 16, 2024).

Photograph 25. Section 7 depicting blooming floral resources along the Palmdale Ditch (aspect: east, June 14, 2024).

Photograph 26. Section 8 depicting blooming floral resources within the Survey Area (aspect: northwest, May 16, 2024).

Photograph 27. Section 8 depicting blooming floral resources within the Survey Area (aspect: southwest, May 31, 2024).

Photograph 28. Section 8 depicting blooming floral resources and California juniper woodland within the Survey Area (aspect: southwest, May 31, 2024).

Photograph 29. Section 9 depicting blooming deerweed along the Palmdale Ditch (aspect: north, May 16, 2024).

Photograph 30. Section 9 depicting blooming floral resources (aspect: northwest, May 28, 2024).

Photograph 31. Section 9 depicting blooming floral resources within the Survey Area (aspect: northeast, May 28, 2024).

Photograph 32. Section 1 depicting brush pile that could serve as potential CBB nesting habitat (aspect: south, May 13, 2024).

Photograph 33. Section 3 depicting brush pile that could serve as potential CBB nesting habitat (aspect: northwest, May 29, 2024).

Photograph 34. Section 4 depicting small mammal burrow that could serve as potential CBB nesting habitat (aspect: southeast, May 14, 2024).

Photograph 35. Section 5 depicting vegetation mulch that could service as potential CBB nesting habitat (aspect: southeast, May 14, 2024).

Photograph 36. Section 6 depicting rock pile that could serve as potential CBB nesting habitat (aspect: northwest, May 15, 2024).

Photograph 37. Section 1 depicting leaf litter that could serve as potential CBB nesting and/or overwintering habitat (aspect: south, May 28, 2024).

Photograph 38. Section 3 depicting bunch grass that could serve as potential CBB nesting and/or overwintering habitat (aspect: northeast, June 12, 2024).

Photograph 39. Section 4 depicting California juniper needle duff that could serve as potential CBB nesting and/or overwintering habitat (aspect: south, May 14, 2024).

Photograph 40. Section 2 depicting loose bare ground that could serve as potential CBB overwintering habitat (aspect: northeast, May 28, 2024).

Photograph 41. View of the face and vertex of a CBB worker foraging on thick-leaved yerba santa.

Photograph 42. Top overview of a CBB worker foraging on thick-leaved yerba santa.

Photograph 43. View of the face and top overview of a CBB worker foraging on thick-leaved yerba santa.

Photograph 44. View of the side and face of a CBB male perching on a California juniper branch.

Photograph 45. View of the side and face of a CBB male perching on a California juniper branch.

Photograph 46. Side view of a CBB male perching on a California juniper branch.

Photograph 47. Side view of a yellow-faced bumble bee worker foraging on thick-leaved yerba santa.

Photograph 48. View of the tip of the abdomen of a yellow-faced bumble bee worker foraging on thick-leaved yerba santa.

Photograph 49. View of the underneath of a yellow-faced bumble bee worker foraging on thick-leaved yerba santa.

Photograph 50. Top overview of a yellow-faced bumble bee worker foraging on thick-leaved yerba santa.

Photograph 51. Top overview of a yellow-faced bumble bee queen foraging on desert prince's plume.

Photograph 52. Side view of a yellow-faced bumble bee queen foraging on desert prince's plume.

Photograph 53. View of the tip of the abdomen of a yellow-faced bumble bee queen foraging on desert prince's plume.

Photograph 54. View of the side and underneath of a yellow-faced bumble bee queen foraging on desert prince's plume.

Photograph 55. View of the face of a yellow bumble bee worker foraging on bladder sage.

Photograph 56. Side view of a yellow bumble bee worker foraging on bladder sage.

Photograph 57. Top overview of a yellow bumble bee worker foraging on bladder sage.

Attachment 4

Resumes

From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Thursday, May 2, 2024 8:51 AM
To: Brenna Vredeveld
Cc: Amber Nichols; Turner, Jennifer@Wildlife; Kwan-Davis, Ruby@Wildlife; Steven Hongola
Subject: RE: [EXT] Palmdale Ditch Conversion Project
Attachments: Crotch's Photo-Only Survey Plan_23-14737_JP.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

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Hi Brenna,

We have completed our review of the resumes and Crotch's Bumble Bee Survey Plan for the Palmdale Ditch Conversion Project. Please see the attached plan for edits and comments. Additionally, below is a list of the biologists approved to assist the lead surveyor during surveys efforts for this Project. If you have questions, feel free to reach out. Thanks, and I look forward to receiving an updated version of the plan for review.

Lead Surveyor
Amber Nichols

Field Assistants
Kevin Bock
Stella Moore
Olivia Taylor
Elizabeth Shoemaker

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Tuesday, April 30, 2024 8:59 AM
To: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Kwan-Davis, Ruby@Wildlife <Ruby.Kwan-Davis@Wildlife.ca.gov>; Robin Murray <rmurray@rinconconsultants.com>;

From: Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>
Sent: Thursday, May 23, 2024 11:48 AM
To: Brenna Vredeveld; Portugal, Julisa@Wildlife
Cc: Amber Nichols; Steven Hongola; Jacob Hargis; Robin Murray; Annaliese Torres; Christopher Julian; Romero, Ben; Brown, Adam; Borchardt, Jerimy
Subject: RE: [EXT] Palmdale Ditch Conversion Project

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Approved, thank you.

From: Brenna Vredeveld <bvredeveld@rinconconsultants.com>
Sent: Wednesday, May 22, 2024 10:32 AM
To: Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Cc: Amber Nichols <anichols@rinconconsultants.com>; Steven Hongola <shongola@rinconconsultants.com>; Jacob Hargis <jhargis@rinconconsultants.com>; Robin Murray <rmurray@rinconconsultants.com>; Annaliese Torres <atorres@rinconconsultants.com>; Christopher Julian <cjulian@rinconconsultants.com>; Romero, Ben <BRomero@hazenandsawyer.com>; Brown, Adam <ABrown@hazenandsawyer.com>; Borchardt, Jerimy <JBorchardt@hazenandsawyer.com>
Subject: RE: [EXT] Palmdale Ditch Conversion Project

WARNING: This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Hi Jennifer,

I received an out of office response from Julisa indicating to reach out to you in her absence.

Would you be able to facilitate CDFW's review of James Butcher's resume as a CBB field assistant surveyor for the Palmdale Ditch Conversion Project? (resume attached again for convenience)

We'd like to have him support the **next survey on Tuesday, May 28, and Wednesday, May 29**, which is coming up quickly.

Please let me know if you have any questions.

Thanks!

Brenna Vredeveld, MESc, Supervising Biologist/ Project Manager
(*She/Her/Hers*)
805-644-4455 Main | 323-538-4950 Direct
bvredeveld@rinconconsultants.com

Amber Nichols, MS

Senior Biologist

Ms. Nichols works as a Senior Biologist and has direct experience conducting bumble bee surveys using both the CA Bumble Bee Atlas non-lethal protocol, as well as transect capture and identification surveys conducted for her master's research studying bumble bees in the Sierra Nevada mountains of California. Ms. Nichols captured and identified 3 western bumble bee (*Bombus occidentalis*) individuals during her master's research and captured or incidentally observed 49 Crotch's bumble bee (*B. crotchii*) individuals while participating in the 2023 and 2024 CA Bumble Bee Atlas Project. Ms. Nichols has conducted approximately 292 survey hours and captured and/or incidentally observed and identified a total of 439 individual bumble bees of 14 species during her master's research and CA Bumble Bee Atlas Project participation. Ms. Nichols also completed graduate coursework in entomology, as well as in-person bumble bee identification training with Dr. Robbin Thorpe.

EDUCATION

MS, Ecology and Systematic Biology, San Francisco State University

BS, Biological Sciences, Washington State University

YEARS OF EXPERIENCE

19

EXPERIENCE

Rincon Consultants, Inc.
Senior Biologist
(2020 to present)

AECOM
Biologist
(2011 to 2015)

Great Sunflower Project
Citizen Science Assistant
(2010 to 2012)

USDA – NRCS PLANTS Database
Plants and Pollinator Reviewer
(2009 to 2013)

Sonoma State University
Biological Technician
(2005 to 2008)

SELECT PROJECT EXPERIENCE

Bumble Bee Surveys – Xerces California Bumble Bee Atlas Project
Conducted roadside surveys and incidental observations for bumble bees under the Atlas Project CDFW Scientific Collecting Permit and Memorandum of Understanding. Prepared data sheets and habitat assessments. Conducted 28 survey hours and captured or incidentally observed and photographed 50 individual bumble bees of 5 species, including B. crotchii, *B. vosnesenskii*, *B. melanopygus*, *B. fervidus, and* B. *insularis*. Observations of *B. crotchii* totaled 44 queens, including 2 captured during point surveys, 27 incidentally observed and photographed and 15 observed but not able to be photographed. April 2024.

Bumble Bee Surveys – Xerces California Bumble Bee Atlas Project
Conducted point and roadside surveys, and incidental observations for bumble bees under the Atlas Project CDFW Scientific Collecting Permit and Memorandum of Understanding. Prepared data sheets and habitat assessments. Conducted 9 survey hours and captured or incidentally observed 84 individual bumble bees of 6 species, including *B. crotchii*, *B. vosnesenskii*, *B. vandykei*, *B. melanopygus*, *B. fervidus,* and *B. insularis*. Observations of *B. crotchii* totaled 2 queens and 3 males incidentally observed and photographed. June 2023.

Candidate Bumble Bee Surveys – Rincon Consultants, North San Ardo Rehabilitation Project, Monterey County
Visual field surveys for *B. crotchii* and *B. occidentalis*. Conducted 10 survey hours. June 2023.

Plants-Pollinator Research – USDA-NRCS PLANTS Database
Conducted scientific literature review to develop a database of pollinator species and plant species visited to document pollinator plant associations and pollen or nectar usage. Pollinator information collected for bumble bees and other native bees, butterflies, moths, beetles, and flies. 2009-2013.

Citizen Science Bee Data – The Great Sunflower Project, San Francisco
Compiled garden descriptions and bee observations from volunteer participants into the online project database. Assisted participants with bee identification and program support. 2010-2011.

Bumble Bee Researcher – Master's Research, Nevada County
Conducted transect netting surveys for 12 bumble bee species within 9 subalpine meadows of the Sierra Nevada. Investigated *Bombus* species emergence patterns across elevations to determine the effect that timing and order of emergence have on species abundances and rarity. Training and managing research assistants in the collection of field data, and identification of species and caste. Identifications verified by Dr. Robbin Thorpe, U.C. Davis. Conducted 245 survey hours and captured and identified 304 individual bumble bees to species and caste for *B. occidentalis*, *B. bifarius*, *B. flavifrons*, *B. mixtus*, *B. vosnesenskii*, *B. vandykei, B. melanopygus, B. insularis*, *B. appositus*, *B. fervidus*, *B. sylvicola*, *B. griseocolis*, and *B. fernaldae*. 2008-2010.

TRAINING/COURSES

- 2024 California Bumble Bee Atlas Training Workshop, Xerces Society, March 2024
- Male Bumble Bee Identification along the Pacific Coast of North America, Xerces Society, December 2023
- Western Bumble Bee Identification for Bumble Bee Atlas Volunteers, Xerces Society, October 2023
- 2023 California Bumble Bee Atlas Training Workshop, Xerces Society, June 2023
- Bumble Bee Identification, In-Person Training, Dr. Robbin Thorpe, U.C. Davis, April 2009
- Entomology, Sonoma State University, Dr. Nathan Rank, December 2008
- Insect Collection, Curation and Identification, Dr. Nathan Rank, December 2007

BOMBUS SPECIES FIELD IDENTIFICATION EXPERIENCE

- Crotch's bumble bee (*B. crotchii*)
- Western bumble bee (*B. occidentalis*)
- Black-tailed bumble bee (*B. melanopygus*)
- Two form bumble bee (*B. bifarius*)
- Yellow headed bumble bee (*B. flavifrons*)
- Fuzzy-horned bumble bee (*B. mixtus*)
- Vosnesensky bumble bee (*B. vosnesenskii*)
- Van Dyke bumble bee (*B. vandykei*)
- Yellow bumble bee (*B. fervidus*)
- White-shouldered bumble bee (*B. appositus*)
- Brown-belted bumble bee (*B. griseocolis*)
- Forest bumble bee (*B. sylvicola*)
- Fernald cuckoo bumble bee (*B. fernaldae*)
- Indiscriminate cuckoo bumble bee (*B. insularis*)

RESEARCH PUBLICATION

Nordby, A. 2010. *Influence of Emergence Phenology and Elevation on Community Structure of Bumble Bees* (Master's Thesis). San Francisco State University, San Francisco, CA.

PROFESSIONAL HISTORY

Rincon Consultants. Senior Biologist/Project Manager. May 2020 – Present
Conducting habitat assessments, technical reporting, and special status species surveys, including surveys for *B. crotchii*, *B. occidentalis*, and monarch butterfly (*Danaus plexippus plexippus*). Training project personnel on special status species identification and habitat. Lead author on over 50 technical reports, including habitat assessments and incidental take permit applications.

AECOM. Biologist. September 2011 – January 2015
Performing habitat assessments and special status species surveys, including surveys for mission blue butterfly (*Icaricia icarioides missionensis*). Environmental compliance monitoring and species identification training to project crews.

The Great Sunflower Project. Citizen Science Program Assistant. July 2010 – March 2012
Compiled garden descriptions and bee observations from citizen science volunteer participants into the online project database, prepared sunflower seed packets, assisted participants with program questions.

USDA – NRCS PLANTS Database. Plants and Pollinator Reviewer. September 2009 – January 2013
Conducting literature review to develop pollination ecological information for vascular plants for use in land conservation, habitat restoration, and agricultural production. Focused on NRCS conservation plants and North American crops. Creation of pollinator database to input pollinator species, plant species, pollen collection, and literature references.

Sonoma State University. Biological Technician. August 2005 – August 2008
Facilitating research and coursework. Conducting species collections utilizing CDFW Scientific Collecting Permit.

PROFESSIONAL REFERENCES

Gretchen LeBuhn, San Francisco State University, Graduate Advisor
(415) 405-0729, lebuhn@sfsu.edu

Nathan Rank, Sonoma State University, Entomology Professor
(707) 664-3053, rank@sonoma.edu

KEVIN BOCK

ASSOCIATE BIOLOGIST II

SENTINEL SCIENCE

EDUCATION: B.S., Biology (Major), Chemistry (Minor), California State University of Channel Islands, 2019

EXPERIENCE: Five (5) years professional experience as a biologist conducting field surveys and research, habitat assessments, and construction monitoring

EXPERTISE: Nesting Bird Surveys, Bumble Bee Surveys and Habitat Assessments, Herpetofauna, Botany, Wildlife Habitat Assessments, Wetlands / Waters, and Construction Monitoring

INVERTEBRATES

Bumble Bee

Over the course of his career, Kevin has conducted approximately 50 hours of protocol type bumble bee surveys in Southern California. During these surveys, Kevin has observed five *Bombus crotchii* individuals. Kevin also has field identification experience with *Bombus vosnesenskii, Bombus melanopygus, Bombus impatiens, Bombus californicus, and Bombus vandykei.* Kevin also recently joined the CA Bumble Bee Atlas Project.

Field Experience

Southern California Gas Company, L406 Crotch's Bumble Bee Surveys, Ventura County, California (April 2024 – Present). Led Crotch's Bumble Bee habaitat assessment and surveys along a natural gas pipeline corridor prior to construction occurring. Positive identification of Crotch's Bumble Bee were made during the surveys during surveys.

Southern California Edison Pole Replacement, Los Angeles County, California (October 2023). Conducted a Crotch's Bumble Bee Habitat Assessment for an upcoming group of pole replacements near Santa Clarita, CA. Observations were made during the assessments to determine if over-wintering, nesting, or foraging habitats were present within the proposed work areas. A Habitat Assement document was also prepared to document results of the site visit.

Southern California Edison Routine Line Clearance Tree Trimming Project, Santa Barbara, Ventura and Los Angeles Counties, California (Jul 2023 - Present). Conducted several habitat assessments and live surveys for Crotch's Bumble Bee in support of vegetation management work along the SCE right-of-way.

SoCal Gas PSEP Line 406 Project, Ventura, California (Aug 2023). Conducted biological monitoring of a land survey crew for a future gas pipeline improvement project. Observed, documented, and monitored live Crotch's Bumble Bees while the crew moved through the area.

Cal State University Channel Islands, Educator (Spring 2022 and Spring 2023). Led a group of undergraduate students conducting native bee surveys in the Santa Monica Mountains and Oxnard Plain. During the surveys, two Crotch's Bumble Bees were observed and documented.

Cal State University Channel Islands, Student (Spring 2019). Conducted native bee surveys in the Santa Monica Mountains and Oxnard Plain. These surveys were led by Professor Ruben Alarcon.

NESTING BIRDS

Southern California Edison Routine Line Clearance Tree Trimming Project, Santa Barbara, Ventura and Los Angeles Counties, California (May 2021 - Present). Conducted nesting bird surveys and nest checks prior to tree trimming of trees adjacent to SCE power lines. Hundreds of hours of experience conducting nesting bird surveys, and nest checks. Discovered and monitored numerous active bird nests for two nesting seasons. Nests of the following species have been monitored or discovered during my time as a wildlife biologist: House Finch, Lesser Goldfinch, Anna's Hummingbird, Allen's Hummingbird, Bushtit, Common Raven, American Crow, Dark-eyed Junco, Hooded Oriole, Bullock's Oriole, Red-tailed Hawk, American Kestrel, Red-shouldered Hawk, Barn Owl, Band-tailed Pigeon, Mourning Dove, Cassin's Kingbird, Western Kingbord, Western Bluebird, California Scrub Jay, Acorn Woodpecker, Nuttall's Woodpecker, White-breasted Nuthatch, House Wren, Bewick's Wren, Wrentit, Orange-crowned warbler, Barn Swallow, California Towhee, Pacific-slope Flycatcher, Brewer's Blackbird, Black Phoebe, Oak Titmouse, and the following non-native species; Eurasian-collared Dove, European Starling, House Sparrow, Scaly-breasted Munia, and Rock Pigeon. Reported and updated nest sites in Survey123, ArcGIS Collector and Field Maps and maintained a log of observed birds and other pertinent wildlife.

Southern California Edison Transmissions Right of Way (TROW) Program, Ventura County, California (Jul 2021). Conducted monitoring for a House Finch nest during vegetation removal at a tower base near Lake Casitas Dam in oak woodland and chaparral habitat. During the course of work, a previously unobserved Lesser Goldfinch nest was subsequently reported and successfully protected throughout the day. Completed daily reports using Survey123, maintained a log of observed birds and other pertinent wildlife.

Southern California Edison ANF West Pardee-Pastoria, Los Angeles County, California (Feb 2022 - Present). While conducting monitoring for California Condors during helicopter operations, nesting bird surveys were also conducted on the tower spans present within the project. Nesting birds were reported when nests were found incidentally, or while conducting weekly sweeps. Several nests were found and reported during the project including one Red-tailed Hawk nest, four Common Raven nests, and one House Finch nest. Habitat consisted of mountain chaparral, annual grasslands, and oak woodlands.

SoCalGas Lions Gate Valve Project, Ventura County & Santa Barbara County, California (Apr 2022 - Present). While conducting monitoring of surveyors conducting topography, boundaries, and aerial laydown work on the L1005 pipeline, nesting birds were documented and reported to the project's environmental project manager. A Red-tailed Hawk nest and a Cliff Swallow colony were observed and documented during the project. Data including nest coordinates, nest status, behavior, and expected fledge date were submitted for review for the hawk nest and Swallow colony.

Rincon-SoCalGas Linsley & Atlantic Project, Compton, Los Angeles County, California (Jun 2022 - Present). Conducted construction monitoring of the pipeline work being completed on pipeline L765 within the city of Compton. Responsibilities included checking for new and previously observed nests that may be within the vicinity of the construction area. During monitoring, a previously undiscovered House Sparrow nest was observed in a cavity atop a telephone pole on the southwest end of the site. The nest was documented in the daily report and submitted to the environmental project manager.

Special-Status Birds

Southern California Edison Routine Line Clearance Tree Trimming Project, Santa Barbara, Ventura and Los Angeles Counties, California (May 2021 - Present). While conducting nesting bird surveys and habitat assessments, several special status birds were observed and reported including Western Snowy Plover, California Gnatchatcher, Golden Eagle, Cooper's Hawk, and Northern Harrier. Positive suitable habitat determinations have been made at several locations for Least Bell's Vireo, California Gnatcatcher, Southwestern Willow Flycatcher, Tricolored Blackbird, Western Yellow-billed Cuckoo, Belding's Savannah Sparrow. Completed construction monitoring while observing for California Condors during helicopter operations. Listed bird species found were reported in Survey123, ArcGIS Collector and Field Maps.

Southern California Edison ANF West Pardee-Pastoria, Los Angeles County, California (Feb 2022 - Present). While monitoring for California Condors during helicopter operations, special status bird species were also reported when found within the area of the project. Several listed bird species were observed during the course of the project, including Bald Eagle, Vaux's Swift, Swainson's Hawk, California Condor, Rufous-crowned Sparrow, Loggerhead Shrike, and Yellow-headed Blackbird. All special status birds observed were reported in the daily FRED Reports.

Southern California Edison Environmental Clearance Program, Santa Paula, Ventura County, California (Jun 2022). Monitored crews conducting grading around SCE towers in Santa Paula in avocado orchards and chaparral habitat. Monitored a previously observed Cassin's Kingbird nest located 50 feet up in a tower at the site where grading was being conducted. While conducting monitoring, a Peregrine Falcon was observed in the vicinity and monitored over the course of the day. The observation was reported in the project's Survey123 form and the biological species point submitted in Field Maps.

Rincon-SoCalGas Lions Gate Valve Project, Ventura and Santa Barbara Counties, California (Apr 2022 - Present). While conducting monitoring of surveyors conducting topography, boundaries, and aerial laydown work on the L1005 pipeline, all special status bird species observed on the project were reported to the environmental project manager. During the course of the project's work, a pair of Rufous-crowned Sparrows were observed along Red Mountain Fire Road south of Lake Casitas. The pair's coordinates and behavior were submitted immediately by phone to the environmental PM and subsequently reported in the end of day PSEP report.

HERPETOFAUNA

California Red-legged Frog

Southern California Edison Routine Line Clearance Tree Trimming Project, Santa Barbara, Ventura and Los Angeles Counties, California (May 2021 - Present). Conducted California red-legged frog focused habitat assessments during preconstruction surveys wherein on-site habitat conditions were compared to suitable California red-legged frog habitat characteristics. Several positive habitat determinations were made where work would soon be occuring proximal to water features suitable for breeding or dispersal. Conducted habitat assessments on over 40 locations and construction monitoring on five separate occasions in Goleta, Santa Barabara, and San Marcos Pass wherein on-site habitat conditions were compared to suitable California red-legged frog habitat characteristics.

Elizabeth Shoemaker

Biologist

Ms. Shoemaker works as a Biologist with Rincon's biological resources group. She has experience conducting monarch butterfly surveys and counts, special status species surveys, fish seine and dip net surveys, and environmental compliance monitoring. Additionally, Ms. Shoemaker has prepared biological resources assessments, nesting bird management monitoring and reporting plans, monarch survey reports, and monthly compliance reports. Ms. Shoemaker is participating in the 2024 CA Bumble Bee Atlas Project.

EDUCATION

BS, Environmental Management and Protection, Minor in Political Science, California Polytechnic State University, San Luis Obispo

YEARS OF EXPERIENCE

1

EXPERIENCE

Rincon Consultants, Inc. (2023 to present)

SELECT PROJECT EXPERIENCE

Bumble Bee Surveys – Xerces California Bumble Bee Atlas Project
Mobilizing to conduct point and roadside surveys for bumble bees under the Atlas Project CDFW Scientific Collecting Permit and Memorandum of Understanding. Conducted incidental observations of bumble bees. April 2024.

Biologist, City of Goleta – Goleta City of Public Works Ellwood MBHMP, Goleta
Ms. Shoemaker surveyed the Ellwood area for the Monarch Butterfly Habitat Management Program (MBHMP). These surveys consisted of collecting data on the environmental conditions, tree/cluster location, and the number of butterflies observed in the Ellwood survey areas. In addition, Ms. Shoemaker drafted the annual monarch survey report for the 2023-24 overwintering season. This report summarized the data collected on the Ellwood monarch butterflies in the 2023-24 overwintering season and reflected on trends in monarch counts in past seasons.

SELECT TRAINING/COURSES

- Upcoming training on bumble bee identification and photo-only survey methods with Lead Surveyor, Amber Nichols. Training scheduled for May 2, 2024.
- California Bumble Bee Atlas Training Workshop, Xerces Society, March 2024
- Male Bumblebee Identification along the Pacific Coast of North America, Xerces Society, April 2024
- Western Bumble Bee Identification for Bumble Bee Atlas Volunteers, Xerces Society, April 2024

ADDITIONAL PROJECT EXPERIENCE

Biologist, Ventura County– Santa Paula Emergency Storm Protection, Santa Paula
Ms. Shoemaker surveyed for fish in the Santa Paula Creek during a diversion for the emergency storm protection project. She deployed block nets, seined the area and dip netted for fish, and relocated fish during dewatering.

Biologist, Metrolink – Lancaster Metrolink Station NBMP, Lancaster
Ms. Shoemaker drafted a Nesting Bird Management, Monitoring, and Reporting Plan for the Lancaster Metrolink Station. Within this plan she outlined avoidance and minimization measures needed for the project to minimize potential project-related impacts to nesting birds.

Biologist, NextEra – Roadhouse BESS, Ontario
Ms. Shoemaker conducted a field reconnaissance survey of the project site for a battery energy storage system (BESS) project. She surveyed for special status species, suitable habitats for special status species, and protected vegetative communities. In addition, she drafted components of a Biological Resource Assessment of the project area and determined the potential to occur of special status species within the study area.

Biologist, Santa Barbara Public Works – East Beach Restoration Project, Santa Barbara
Ms. Shoemaker monitored the restoration efforts for the East Beach Restoration Project. These efforts included flagging in the restoration areas, seed sorting, and plant identification. Additionally, Ms. Shoemaker drafted a monthly monitoring report that outlined restoration efforts conducted.

Biological Monitor, Santa Barbara Flood Control – Santa Barbara County Beach Operations, Goleta
Ms. Shoemaker monitored beach operations for Goleta Beach. These beach operations consisted of Santa Barbara County bringing sediment loads from the Goleta Slough and depositing it on Goleta Beach for beach enhancement and flood control. Monitoring activities included taking VOC readings from sediment loads deposited on the beach, visually inspecting sediment loads for beach compatible material, compiling a list of species observed each day, and drafting an end of day summary of beach activities.

Stella Moore

Biologist

Ms. Moore works as a Biologist with Rincon's biological resources group. She has experience conducting bumble bee incidental surveys, monarch butterfly surveys and counts, special status species surveys, reconnaissance surveys, construction monitoring, and reporting for environmental compliance. She is participating in the 2024 CA Bumble Bee Atlas Project. She has prepared technical biological reports including monitoring reports and biological resource assessments. During her education in environmental biology, she developed skills in ecological data analysis and species identification. Furthermore, through research and internships, she has proven her ability and eagerness to learn, collaborate, and expand her skill set to fit the needs of the job at hand.

EDUCATION

BS, Molecular Environmental Biology, Minor in Science and Math Education, University of California, Berkeley

YEARS OF EXPERIENCE

1

EXPERIENCE

Rincon Consultants, Inc. (2023 to present)

Beissinger Lab at UC Berkeley (2022 to 2023)

Sespe Consulting, Inc. (2022)

SELECT PROJECT EXPERIENCE

Bumble Bee Surveys – Xerces California Bumble Bee Atlas Project
Conducted incidental surveys for and identified *Bombus* vosnesenskii and *B. melanopygus*. Mobilizing to conduct point and roadside surveys for bumble bees under the Atlas Project CDFW Scientific Collecting Permit and Memorandum of Understanding. April 2024.

Goleta City of Public Works – Ellwood MBHMP, Goleta
Conducted western monarch butterfly surveys with a team of Rincon Biologists in the Ellwood Mesa Open Space & Sperling Preserve during the overwintering season. Collectively, the team counted over 15,000 monarchs within the preserve.

SELECT TRAINING/COURSES

- Upcoming training on bumble bee identification and photo-only survey methods with Lead Surveyor, Amber Nichols. Training scheduled for May 2, 2024.
- California Bumble Bee Atlas Training Workshop (2024), Xerces Society, March 2024
- California Bumble Bee Atlas Training Workshop (2023), Xerces Society, March 2024
- Western Bumble Bee Identification for Bumble Bee Atlas Volunteers (2023), Xerces Society, March 2024

BOMBUS SPECIES FIELD IDENTIFICATION EXPERIENCE

- Vosnesensky bumble bee (*B. vosnesenskii*)
- Black-tailed bumble bee (*B. melanopygus*)

ADDITIONAL EXPERIENCE

Biologist, San Luis Obispo County – Camp SLO Emergency Sediment Debris Removal
Assisted with aquatic species relocation surveys in a tributary of Chorro Creek. Used dipnets, seine nets and aquarium nets to relocate aquatic species outside of the project area. Observed and handled 112 steelhead trout and 5 California red-legged frogs.

Biologist, Ventura County – Lower Santa Paula Creek Emergency Storm Protection, Santa Paula
Assisted with capturing and relocating fish during two fish diversions in Santa Paula Creek. She also performed monitoring with a Rincon Watershed Scientist during the installation of two different culverts. The species identified during the diversions included arroyo chub, Santa Ana sucker, three-spined stickleback, and fathead minnow.

Biologist, Kimley Horn – Bolthouse Wilsona, Los Angeles County
Ms. Moore assisted with many aspects of this project, starting with conducting a desktop review of online databases and literature. She assisted with a reconnaissance survey and a due diligence report. Then she coordinated a Swainson's Hawk Foraging Habitat Assessment with the Rincon team using GIS tools to map the suitable versus unsuitable foraging habitat within the project site and a 5-mile radius. She also helped perform a Burrowing Owl Habitat Assessment Survey and a Jurisdictional Delineation on-site. Lastly, she was the lead author for the Biological Resources Assessment.

Southern California Gas Company – eTS 49259.01 SL 36-9-09N Tree Trimming, San Luis Obispo
Ms. Moore wrote the Project Completion Report for the project discussing the scope of the emergency tree trimming and all the permits involved.

Southern California Gas Company – Aliso Canyon Emergency Repair, Los Angeles
Ms. Moore prepared a Lake and Streambed Alteration Agreement for the Aliso Canyon Emergency Repair Project. She provided support to get the agreement out the door quickly and correctly.

Biologist, Blythe Mesa Solar, LLC. – Athos III Solar O&M, Blythe
Ms. Moore helped prepare a Worker Environmental Awareness Presentation for the Athos III Solar project. She also assisted in developing an Environmental Compliance Reporting and Notifications checklist that tracks the tasks for the Operations and Management phase of the project and the compliance verification form required for each task. She also assisted in the development and finalization of all of the regulatory plans for this project.

Biologist, Kimley Horn – Foxtail Hybrid Solar Project, Tulare County
Ms. Moore was the lead author of a Due Diligence Memorandum for the Foxtail Hybrid Solar project. She performed the desktop review of online databases and literature related to the project site. She also helped in passing off project information about the solar project and the existing conditions of the site to other biologists to conduct the reconnaissance survey.

Southern California Gas Company – SCG, RGP-63, SL 41, 53, Desert Hot Springs
Ms. Moore drafted the Notice of Completion for the Regional General Permit (RGP) 63 for repair and protection activities in emergency situations. She also wrote the Project Completion Report for the project discussing the scope of the emergency pipeline repairs and all the permits involved.

Biologist, Santa Clarita Valley Water Agency – Abdale Water Line Improvements, Santa Clarita
Ms. Moore was the lead author of a Biological Resources Memorandum for the Santa Clarita Valley Water Agency's project, Abdale Water Line Improvements. She performed the desktop review of online databases and literature related to the project site. The report covered CEQA requirements and Federal crosscutters, making it a more complicated report than an average Biological Resources Memorandum. She collaborated with Senior Biologists to make a thorough report that will be used as an example for similar projects in the future.

Biologist, Metropolitan Water District of Southern California – Casa Loma Siphon Biological Studies, Riverside County

Ms. Moore was the lead author of a Biological Resources Assessment for the Casa Loma Siphon project in the San Jacinto River, which was creating permanent solutions to pipeline exposure that had been fixed under emergency repairs. She conducted all the desktop review, then wrote the report based on the findings. She collaborated with a lot of colleagues to ensure that each section had input from experts in that area. The site was within survey areas for special status species under the Western Riverside Multiple Species Habitat Conservation Plan and within the Stephen's Kangaroo Habitat Conservation Plan.

ADDITIONAL EXPERIENCE

- Developing Phase I ESA Reports, Conditional Use Permits and Environmental Impact Reports for CEQA Permits

OLIVIA TAYLOR

ASSOCIATE BIOLOGIST I

SENTINEL SCIENCE

EDUCATION: B.S., Biology, Minor in Psychology, California State University, Channel Islands, 2020

EXPERIENCE: Over two (2) years of experience conducting Nesting Bird Surveys and Avian Fieldwork, Insect Pollinator Surveys, Restoration, and Beekeeping

EXPERTISE: Avian Species/Raptors, Beekeeping, and Insect Pollinator Surveys

INVERTEBRATES

Bumble Bee

Over the course of her career, Olivia has conducted approximately 15 hours of protocol type bumble bee surveys in Southern California. During these surveys, Olivia has observed two *Bombus crotchii and* five *Bombus occidentalis* individuals. Olivia also has field identification experience with *Bombus vosnesenskii,* and *Bombus californicus.*

Field Experience

Southern California Gas Company, L406 Crotch's Bumble Bee Surveys, Ventura County, California (April 2024 – Present). Conducted Crotch's Bumble Bee habitat assessment and surveys along a natural gas pipeline corridor prior to construction occurring. Positive identification of Crotch's Bumble Bee during surveys.

Beekeeper, Reiter Affiliated Companies, Oxnard, California (Apr 2022 - Mar 2023). Conducted daily colony checks in a full-time position working over 40 hours a week that included but not limited to, colony health index, population size, queen success, abnormal behaviors, and observing pesticide conflict with honeybee health. Over 2,000 driving hours of operating 4x4 vehicles in various weather conditions and International CV515 with extended headache rack for tall loads, such as relocating colonies and inventory pickup, with tiedown and towing experience. Spent over 30 hours preparing for community outreach events (visual displays and presentations), and representing the company in local, agricultural community outreach events of all ages.

Data Collector, California State University Channel Islands, Ventura County, California (Feb 2020 - Mar 2021). Observed and recorded brood behavior and larvae formation for serval bee hives. Conducted plant surveys and pollinator surveys to gain knowledge of pollinator physiology and morphology.

Biological Surveyor, Wind Wolves Preserve of the Wildlands Conservancy, Bakersfield, California (Jun 2020). Monitored pollinator activity within restoration transects. Performed insect light trapping activities and documented results using ArcGIS Collector. Performed insect light trapping after sunset to collect and pin for educational insect display. Species collected, using nets and kill jars, include unidentified moths, Giant Robber flies and Carpenterworm. Experienced in catching via net Tarantula hawks, Differential grasshopper, Flame Skinner and species of the Halictidae, Apidae, and Megachilidae family.

Researcher, Post Fire Research Project for UCLA, Agoura Hills, California (Jan - Jun 2019). Conducted biological surveys in a recently burned area to document plant species present and insect pollinator activity.

NESTING BIRDS AND RAPTORS

Southern California Edison Utility Pole Replacement/Vegetation Management Programs (March 2024 - Present). Conducted nesting bird surveys and nest checks prior to tree trimming of trees adjacent to SCE power lines. Reported and updated nest sites in Survey123, ArcGIS Collector and Field Maps and maintained a log of observed birds and other pertinent wildlife.

Southern California Gas Company, Well Abandonment Project, Marina Del Rey, California (Mar 2024). Biologist responsible for conducting nesting bird surveys and biological monitoring during well abandonment activities. Documenting one active house finch nest during the survey.

Technician, World Bird Sanctuary Raptor Rehabilitation Hospital, Valley Park, Missouri (Sep 2023 – February 2024). Over 500 hours catching and restraining raptors, combined hours of both rescues from the wild and during medical treatment in rehabilitation care. Species include bald eagle, red-tailed hawk, red shouldered hawk, Cooper's hawk, sharp-shinned hawk, great horned owl, barred owl, Eastern screech owl, long-eared owl, turkey vulture, and black vulture. Experienced in rescue events from the wild (roads, parks, trees, buildings, landfills, chimneys, etc.), conducted in confidence without staff supervision. Release coordinating experience including restraining for release banding, reading maps for scouting previous pre-capture territory of individuals and releasing the bird back into the wild, all while coordinating with schedules for public outreach involvement. Also conducted avian identification surveys and led a group of volunteers in handling, husbandry, and education activities. Species surveyed for include hairy woodpecker, red-headed woodpecker, red-breasted nuthatch, white-breasted nuthatch, Carolina chickadee, black-capped chickadee, Northern cardinal, Eastern bluebird, American robin, white-throated sparrow, merlin, American kestrel, Mississippi kite, bald eagle, Northern harrier, red-tailed hawk, red-shouldered hawk, barred owl, great horned owl, black vulture, and turkey vulture. Identified 5 vacant nests with nests belonging to cavity nesters, an oriole nest, a red-tailed hawk nest, and 1 active great horned owl nest.

Marine Biological Intern, California Wildlife Center, Calabasas, California (Mar - Jul 2021). Rescuing and identifying marine birds for treatment due to various injuries/illnesses. Also responsible for community outreach tasks and other educational services. Species surveyed for include brown pelican, long-billed curlew, red-tailed hawk, California gull, and double-crested cormorant. Identified 15 active nests belonging to herons, egrets, cormorants, hummingbirds, and mallards.

Biological Surveyor with The Wildlands Conservancy at the Wind Wolves Preserve in Bakersfield, California (June 2020). Conducted nesting surveys of local birds, including Western meadowlark, killdeer, cliff swallow, Northern harrier, red-tailed hawk, Bullock's oriole, and California horned lark. Identified active nests of killdeer and Bullock's oriole.

Student at CSU, Channel Islands Ornithology Elective, Camarillo, California (Jan - Apr 2020). Combined avian species identification experience of 50 hours of educational fieldwork and assignments conducted both in a class atmosphere and individually. Obtained over 150 hours recreationally. Identification tools included binoculars, mnemonics for bird song, utilizing spectrograms to visualize and study bird song and relatedness between regions using Macaulay Library, creating master lists and using textbook references to correctly identify and study native, invasive and migratory species. Identified active nests of the following species: hummingbirds, swallows, wrens, orioles, snowy plover, least tern, Western bluebird, great blue heron, black-crowned night heron, red-tailed hawk, and great horned owl.

BOTANY / RESTORATION

Biological Surveyor, Wind Wolves Preserve of the Wildlands Conservancy, Bakersfield, California (Jun 2020). Over 50 hours of monitoring pollinator activity across restoration transects and performing focused rare plant surveys to collect data on the health index of the endangered Bakersfield cactus.

Volunteer Researcher for the Post-Fire Research Project with UCLA in Agoura Hills, California (Jan - Jun 2019). Over 40 hours surveying 100-meter transect/plots to document percent coverage, plant species observed, and installing insect sticky traps and trap boards. Advanced plant identification skills and gained knowledge in fire ecology and secondary succession.

CONSTRUCTION MONITORING

Southern California Edison Utility Pole Replacement/Vegetation Management Program (March 2024 - Present). Biologist responsible for conducting pre work clearance sweeps and monitoring construction activities for pole replacement work and vegetation management activities. Documented results with Survey123, ArcGIS Collector, and Field Maps.

Southern California Gas Company, Well Abandonment Project, Marina Del Rey, California (Mar 2024). Biologist responsible for conducting nesting bird surveys and biological monitoring during well abandonment activities on a site adjacent to CDFW property. Monitored crews performing set up of construction equipment, well removal, and tear down. Crews remained compliant with all environmental mitigation measures.

JAMES BUTCHER

ASSOCIATE BIOLOGIST I

SENTINEL SCIENCE

EDUCATION: B.S., Biology, California State University Channel Islands, 2022

EXPERIENCE: Over two (2) years of experience conducting Nesting Bird Surveys, Botanical Surveys, Insect Pollinator Surveys, and Beekeeping

EXPERTISE: Bumble Bee Surveys, Beekeeping, avian species (including the Snowy Plover), and insect pollinator surveys

CERTIFICATIONS: Basic Wetland Delineation Certificate, Ventura County (Jan 2024)

INVERTEBRATES

Bumble Bee

Over the course of his career, James has conducted approximately 60 hours of protocol type bumble bee surveys in Southern California. During these surveys, James has observed six *Bombus crotchii* individuals. He has also observed *Bombus californicus. Bombus ferviduss,* and *Bombus vosnesenski.*

Field Experience

Southern California Gas Company, L406 Crotch's Bumble Bee Surveys, Ventura County, California (April 2024 – Present). Conducted Crotch's Bumble Bee habitat assessment and surveys along a natural gas pipeline corridor prior to construction occurring. Positive identification of Crotch's Bumble Bee during surveys.

Beekeeper and Assistant Educator, California State University Channel Islands, Ventura County, California (Jun 2022 - Present). Manages the on-campus apiary and conducts weekly visual inspections of the hives. Inspections consist of checking for varroa mites (parasites), and also determining the amount of pollen, nectar, and honey present. During spring semesters, James assists Dr. Ruben Alarcon with educating students and helps members of the Api-Vida Program conduct maintenance of their bee hives.

Insect Pollinator Surveys, California State University Channel Islands, Los Angeles and Ventura Counties, California (Apr - May 2022). Conducted native bee surveys in the Santa Monica Mountains and the Newbury Park area. During the surveys several bee species were observed including Western Honey Bee, Valley Carpenter Bee, California Bumblebee, and the Black-tailed Bumblebee.

NESTING BIRDS

Southern California Edison Vegetation Management Program, Santa Barbara, Ventura, and Los Angeles Counties, California (Jan 2024 - Present). Conduct biological surveys, habitat assessments, and construction monitoring in various locations throughout Southern California in support of largescale utility and development projects occurring within or near sensitive habitat areas and wildfire recovery areas within SCE's territory. Survey and monitor for a broad range of sensitive/special status species and nesting birds, including burrowing owl, acorn woodpecker, golden eagle, California gnatcatcher, various common raptors, and general passerine species. Monitor construction crews and conduct tailboards to explain maps, environmental constraints, and procedures for resource protection measures and staging vehicles around sensitive areas. Results submitted via ArcGIS Field Maps and Survey123.

Southern California Edison Deteriorated Pole Replacement Program, Santa Barbara, Ventura, and Los Angeles Counties, California (Jan 2024 - Present). Biologist responsible for conducting biological pre-construction surveys and monitoring for DET pole replacements throughout Southern California for burrowing owl, acorn woodpecker, golden eagle, California gnatcatcher, various common raptors, and general passerine species. Results submitted via ArcGIS Field Maps and Survey123.

Naturalist, Audubon Society, Ventura County, California (Aug - Sep 2019). Conducted nesting bird surveys in Ventura County and educated beachgoers on the history of and conservation of the Western Snowy Plover. The nests were documented and monitored throughout the stages of the nest cycle. If any nests were disturbed or impacted, the details were recorded for data collection and processing.

HERPETOFAUNA

Southern California Edison Vegetation Management Program, Santa Barbara, Ventura, and Los Angeles Counties, California (Jan 2024 - Present). Conduct herpetological pre-construction surveys and habitat assessments in support of SCE's vegetation management programs. Surveys focused on California red-legged frog and Western pond turtle. Monitor construction crews and conduct tailboards to explain maps, environmental constraints, and procedures for resource protection measures and staging vehicles around sensitive areas. Results submitted via ArcGIS Field Maps and Survey123.

BOTANY

Southern California Edison Vegetation Management Program, Santa Barbara, Ventura, and Los Angeles Counties, California (Jan 2024 - Present). Conduct botanical pre-construction surveys and habitat assessments in support of SCE's vegetation management programs. Surveys focused on slender mariposa lily (*Calochortus clavatus* var. *gracilis*), Mount Gleason paintbrush (*Castilleja gleasoni*), and San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). Monitor construction crews and conduct tailboards to explain maps, environmental constraints, and procedures for resource protection measures and staging vehicles around sensitive areas. Results submitted via ArcGIS Field Maps and Survey123.

Flowering Plant Surveys, California State University Channel Islands, Ventura County, California (Jan - May 2022). Conducted surveys to determine species of flowering plants that were located near bee hives. Flower abundance of each species was assessed, and nectar production was also measured. Plants identified included: Bush Sunflower (*Helianthus pumilus*), Coyote Bush (*Baccharis pilularis*), Wild Cucumber (*Echinocystis lobata*), Peruvian Pepper Tree (*Schinus mole*), Bladder Pod/Burro-fat (*Cleomella arborea*), Tree Tobacco (*Nicotiana glauca*), Morning Glory – Hedge bindweed (*Calystegia sepium*), Sun spurge (*Euphorbia helioscopia*), Sand-mat (*Chamaesyce* sp.), Stork's Bills (*Erodium* sp.*),* Willow Dock

(*Rumex salicifolius*), White Horehound (*Marrubium vulgare*), Blue Dicks (*Dipterostemon capitatus*), Soap Aloe (*Aloe maculata*), Elderberry (*Sambucus* sp.*),* Heliotrope (*Heliotropium* sp.), Eucalyptus (*Eucalyptus* sp.*),* and Oxalis (*Oxalis* sp.)

Botanical Surveys, California State University Channel Islands, Ventura County, California (November 2019). Conducted a botanical survey to document the presence of native versus non-native plant species. Several local species were observed and identified.

TRAININGS

- 40-Hour Basic Wetland Delineation Course, Wetland Training Institute, Ventura County (Jan 2024)

Attachment 5

Crotch's Bumble Bee Identification Qualifications

Amber Nichols

From: Portugal, Julisa@Wildlife <Julisa.Portugal@Wildlife.ca.gov>
Sent: Wednesday, April 24, 2024 2:56 PM
To: Brenna Vredeveld
Cc: Amber Nichols; Turner, Jennifer@Wildlife; Kwan-Davis, Ruby@Wildlife
Subject: [EXT] Palmdale Ditch Conversion Project

CAUTION: This email originated from outside of Rincon Consultants. Be cautious before clicking on any links, or opening any attachments, until you are confident that the content is safe .

Hi Brenna,

Thank you for organizing the call. As discussed in the meeting, the Palmdale Ditch Conversion Project may proceed with photo-only surveys to determine presence of Crotch's bumble bee within the Project site. Please note that the appropriateness of photo-only survey methodology is determined in Region on a Project-by-Project basis; CDFW has determined that it is appropriate only for this specific Project. Additionally, Amber Nichols is currently the only biologist approved to conduct photo only surveys and ID the photo vouchers for bumble bee identification. Prior to any surveys being conducted, CDFW would like to review and approve a Survey Plan. Below outlines components of a Survey Area Plan that we would like to see described in detail. Please also use CDFW's Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species for guidance when drafting the plan. Given the tight time crunch, you may start sending resumes of other Rincon staff that would like to assist in surveying efforts for this Project. I have also included measures that CDFW recommends in a CEQA document regarding Crotch's bumble bee. In addition to measures, survey findings should be discussed in the Environmental Impact Report. If you have questions, feel free to reach out. Thanks.

Survey Plan should include the following:

- Survey Methodology
  - Location (i.e., latitude and longitude), acreage of the site, and extent of surveyed area (maps recommended);
  - Number and timing of surveys (recommended 3 surveys spaced 2-4 weeks apart);
  - Duration of survey (minimum of 1 person-hour searching per 3 acres);
  - Weather conditions (i.e., temperature, wind speed, and cloud cover);
  - Photo Equipment (e.g., DSLR camera);
  - Foraging habitat - vegetation composition and host plants data;
  - Nesting habitat – nest substrate and nest locations, if observed;
  - Overwintering habitat – burrow materials and burrow locations, if observed; and,
  - Set of photos of bee species observed with multiple angles to capture key identification features.
- Define roles and responsibilities of each person present during the surveys. Include contact information and any relevant information (e.g., qualifications)
- Describe any training additional surveyors will be provided by the principal biologist leading the surveys.
- Actions in the event that photos are not definitive (e.g., assume presence, additional surveys)
- Actions taken if bumble bees are injured during survey (e.g., stop work and notify)

Crotch's Bumble Bee Measures:

Avoidance Plan - If Crotch's bumble bee is detected, the Project proponent in consultation with a qualified entomologist shall develop a plan to fully avoid impacts to Crotch's bumble bee. The plan shall include effective, specific, enforceable, and feasible measures. An avoidance plan shall be submitted to the City and CDFW prior to implementing Project-related ground-disturbing activities and/or vegetation removal where there may be impacts to Crotch's bumble bee.

Incidental Take Permit - If impacts to Crotch's bumble bee cannot be feasibly avoided, the Project applicant shall consult with CDFW and obtain appropriate take authorization from CDFW (pursuant to Fish & Game Code, § 2080 et seq). The Project applicant shall comply with the mitigation measures detailed in the take authorization issued by CDFW. The Project applicant shall provide a copy of a fully executed take authorization prior to the issuance of a grading permit and before any ground disturbance and vegetation removal.

Best,

Julisa Portugal
Environmental Scientist
South Coast Region-5
3030 Old Ranch Pkwy Suite 400
Seal Beach, CA 90740
Cell: (562) 330-7563
Email: Julisa.Portugal@wildlife.ca.gov

APPENDIX C-7: WESTERN JOSHUA TREET STUDY

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012
213-788-4842

September 20, 2024
Rincon Project No: 23-14737

Scott L. Rogers, P.E., Acting Assistant General Manager and Engineering Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, California 93550

Subject: Western Joshua Tree Census Survey Report for the Palmdale Ditch Conversion Project, Los Angeles County, California

Dear Mr. Rogers:

Rincon Consultants, Inc. (Rincon) conducted a Western Joshua Tree (WJT; *Yucca brevifolia*) census survey for Palmdale Water District's Palmdale Ditch Conversion Project (Project) located in Palmdale, California (Figure 1 and Figure 2). This species was recently protected by the State under the Western Joshua Tree Conservation Act and is considered a candidate species for listing as threatened by California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act. The WJT census survey was conducted in accordance with CDFW's Western Joshua Tree Census Instructions (CDFW 2024) and in compliance with California Fish and Game Code Section 1927.3, to document WJT presence on the Project site. The report herein describes the results of the WJT survey.

Project Location and Description

The Project site consists of an approximately 7.2-mile-long corridor that overlaps 88 parcels in the city of Palmdale and unincorporated Los Angeles County (Figure 1 and Figure 2). The Project site extends generally southeast to northwest from Littlerock Reservoir in Angeles National Forest (managed by the United States Forest Service) to Lake Palmdale in unincorporated Los Angeles County. The Project site includes the existing Palmdale Ditch (Ditch) and a buffer of varying width surrounding the Ditch alignment (from 300 to 750 feet wide, depending on the segment). In total, the Project site encompasses approximately 309 acres. The Project site has variable topography, ranging from approximately 3,200 feet above mean sea level in Angeles National Forest to approximately 2,815 feet above mean sea level at Lake Palmdale.

The southeastern end of the Project site begins at the terminus of an existing pipeline that currently feeds into the Palmdale Ditch approximately 0.3 mile downstream of Littlerock Reservoir within the San Gabriel Mountains National Monument in the Angeles National Forest. From Littlerock Reservoir, the Project site extends northwest, parallel to Cheseboro Road and within Angeles National Forest, for approximately 4,000 linear feet. After exiting the Angeles National Forest, the Project site continues to proceed north for approximately one mile, then curves to the northwest and proceeds in a northwesterly direction for approximately 6.2 miles, generally parallel to Barrel Springs Road, until the intersection of Sierra Hills Lane and Sierra Highway. Along this 7.1-mile stretch, the Project site crosses the Governor Edmund F. Brown California Aqueduct (California Aqueduct), Pearblossom Highway, and the Los Angeles County Metropolitan Transportation Authority rail tracks. This portion of the Project site terminates at an existing pipeline that proceeds generally northwest for approximately 0.6 mile. This pipeline discharges into the remaining 0.1-mile stretch of the Ditch that proceeds from a point east of existing residences on Rozalee Drive to the northwest where it ends at Lake Palmdale.

Figure 1 Regional Location

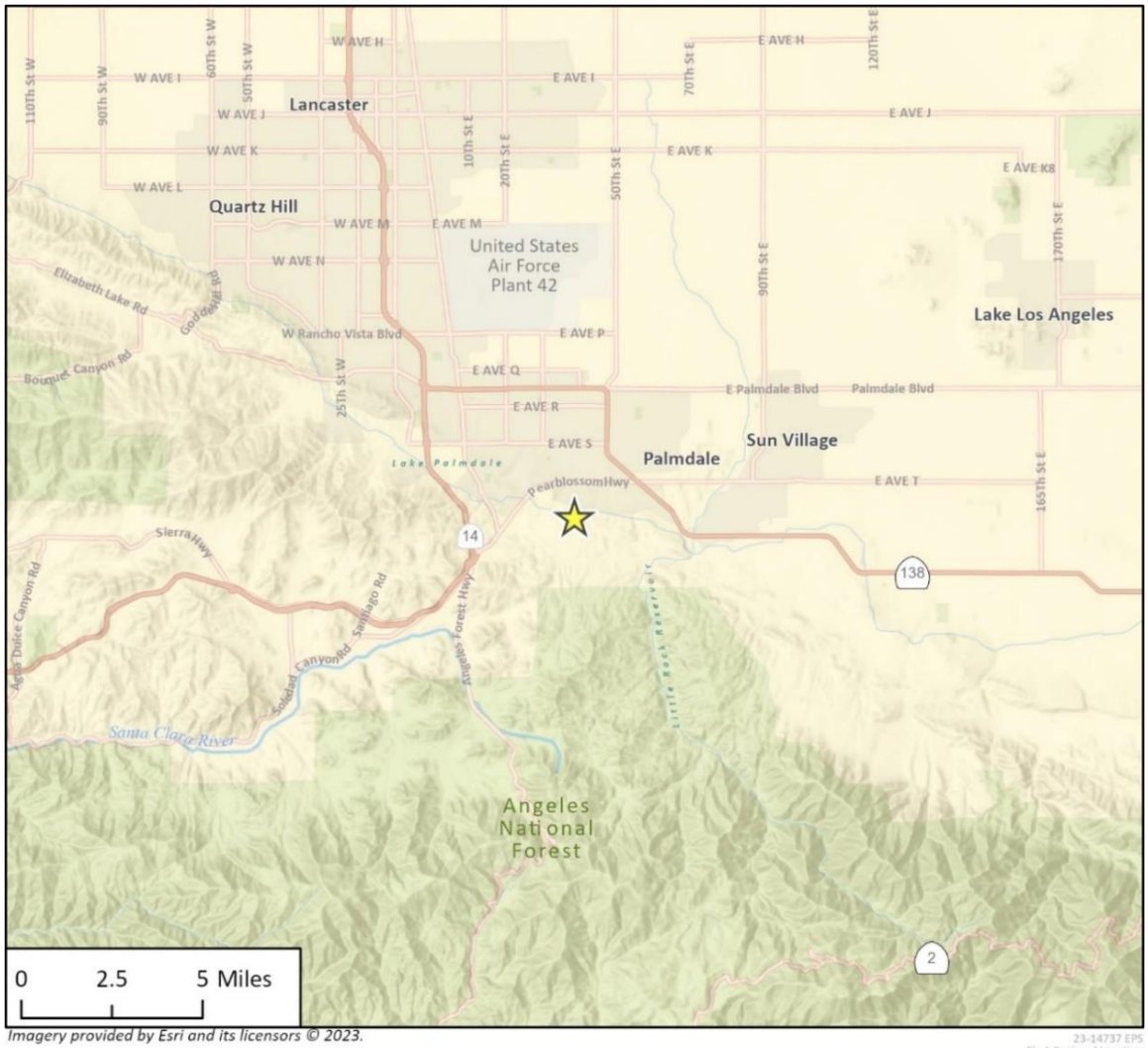
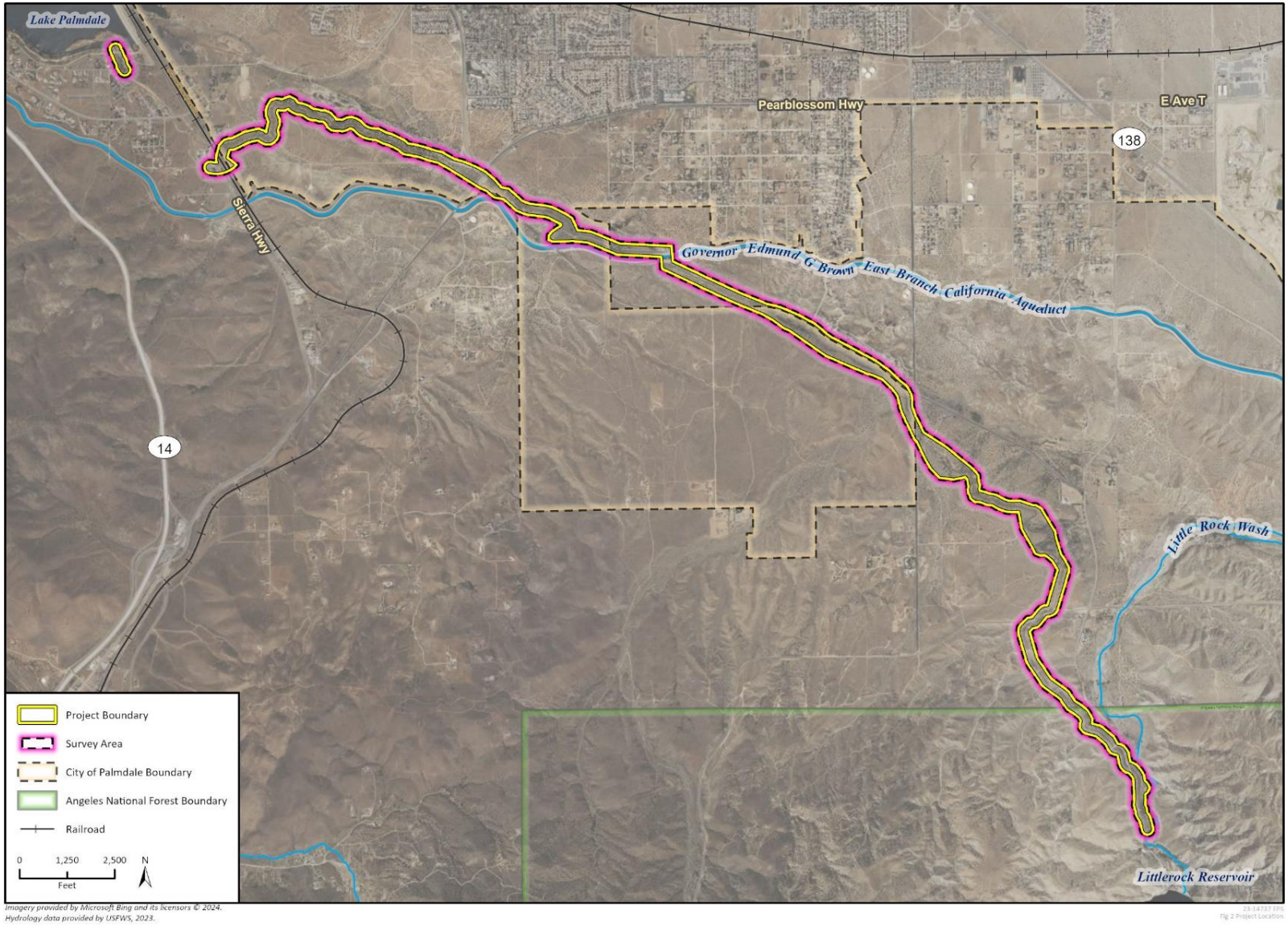


Figure 2 Project Location



Overall, the Project site consists of two discontinuous areas. The largest area covers approximately 7.1 miles of continuous Ditch from Littlerock Reservoir to the Los Angeles County Metropolitan Transportation Authority rail tracks, while the second area covers approximately 0.1 mile of existing Ditch where it outfalls into Lake Palmdale. These two sections of the Ditch are connected by an existing underground pipeline. The Survey Area encompassed the entire Project site and a 50-foot buffer (Figure 2). The Survey Area is located in the CDFW WJT standard mitigation fee area (outside of the reduced mitigation fee area), as shown in Figure 3.

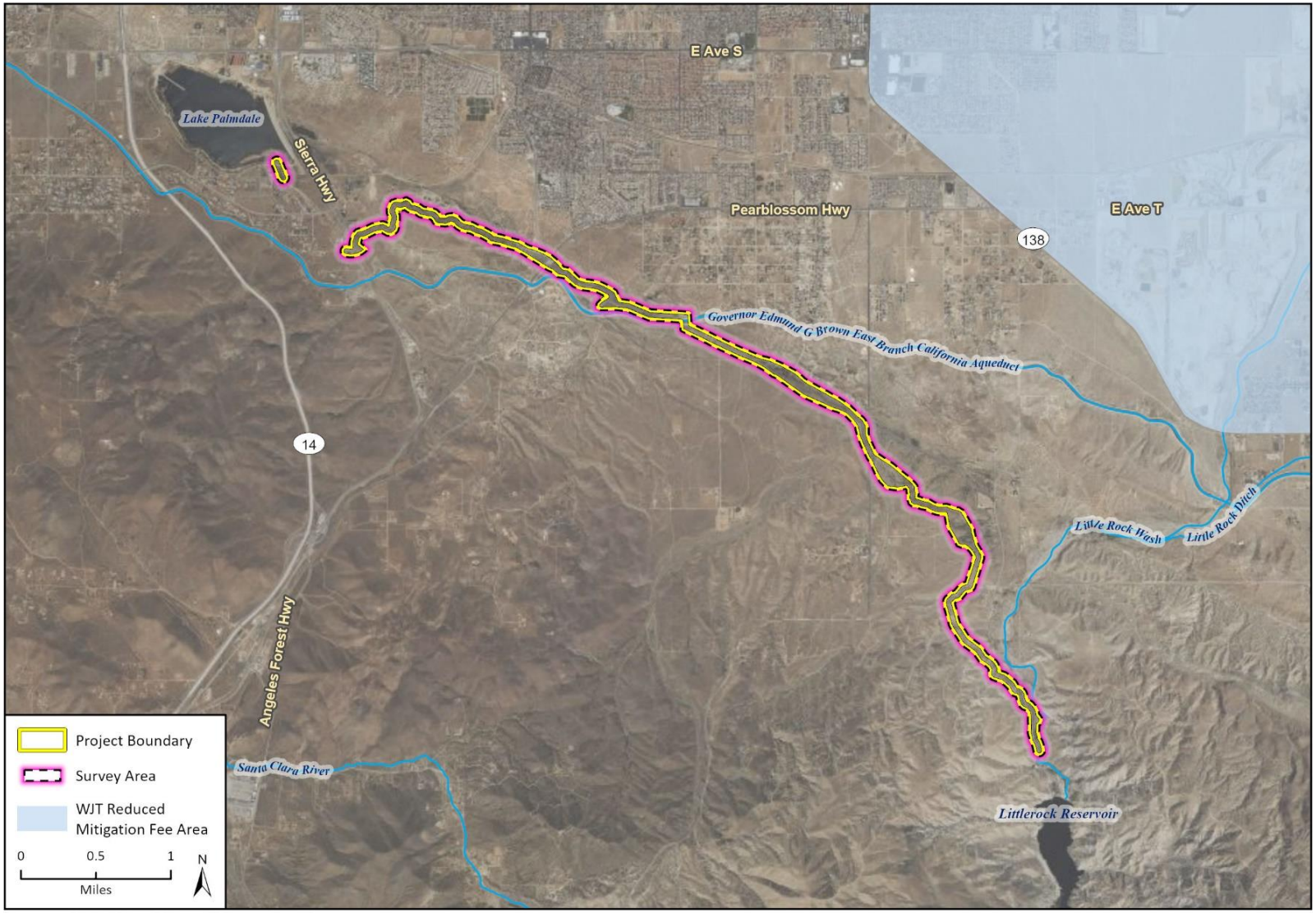
The proposed Project would involve the conversion of approximately 7.2 miles of the Ditch with a buried 48-inch diameter pipeline made from reinforced concrete or high-density polyethylene. Of the 7.2-mile length, approximately 6.4 miles is currently open-channel with a mixture of concrete-lined and earthen-bottomed segments, which would be converted to pipeline. Additional Project components involve installation of a future turnout to the California Aqueduct, inspection and rehabilitation of culvert crossings, use of access roads and staging areas, and installation of minor aboveground facilities such as blow-off and air release assemblies and a one-story controls/electrical building.

Methodology

The WJT census survey was conducted by International Society of Arboriculture (ISA) Certified Arborist Kaitlyn Weaver (#WE-14623A) and Rincon biologists Bryant Reynolds, Jacob Hargis, and Justin Purnell, between November 13-17, 2023, and December 11-19, 2023. Details of the WJT census surveys are provided in Table 1. The census survey was conducted in accordance with CDFW's Western Joshua Tree Census Instructions (CDFW 2024a) and in compliance with California Fish and Game Code Section 1927.3, which requires a census of all WJTs within the Survey Area. Accordingly, all WJTs within the Survey Area were recorded using a Geode global positioning system (GPS) device capable of sub-meter accuracy. The WJTs were recorded by uniformly walking the Survey Area and routinely checking underneath shrubs and/or at the base of any burned trees, where present, to identify small WJTs and seedlings. Data collected for each individual WJT included height class, health status (live or dead), maturity, phenophase (flowers/fruits), and a photograph (Attachment 1 and Attachment 2). Representative site photographs are included in Attachment 3, and a WJT location map is provided in Attachment 4.[1]

[1] Attachment 4 only depicts relevant portions of the Survey Area where WJTs were present. If a portion of the Survey Area did not contain WJTs, a WJT location map is not provided for that portion.

Figure 3 CDFW Western Joshua Tree Mitigation Fee Area Map



Imagery provided by Microsoft Bing and its licensors © 2024.
Hydrology data provided by USFWS, 2023.

23-14737 BIO
Fig X WJT Reduced Mitigation Fee Area

Table 1 WJT Census Survey Details

Date	Personnel	Time	Temperature	Weather Conditions	Survey Type
11/13/23	Bryant Reynolds	0900 - 1630	43-73°F	Winds 0-6 mph, clear skies, no precipitation	WJT Census
11/14/23	Bryant Reynolds	0800 - 1600	45-73°F	Winds 0-7 mph, clear skies, no precipitation	WJT Census
11/15/23	Bryant Reynolds	0830 - 1530	52-60°F	Winds 0-8 mph, clear skies, no precipitation	WJT Census
11/16/23	Bryant Reynolds	0800 - 1600	49-65°F	Winds 0-7 mph, cloudy, no precipitation	WJT Census
11/17/23	Bryant Reynolds	0800 - 1200	49-62°F	Winds 0-3 mph, partly cloudy, no precipitation	WJT Census
12/11/23	Bryant Reynolds Kaitlyn Weaver	0830 - 1600	43-64°F	Winds 0-3 mph, clear skies, no precipitation	WJT Census
12/12/23	Bryant Reynolds Kaitlyn Weaver	0800 - 1600	37-65°F	Winds 0-3 mph, clear skies, no precipitation	WJT Census
12/13/23	Bryant Reynolds Kaitlyn Weaver	0800 - 1600	36-61°F	Winds 0-12 mph, clear skies, no precipitation	WJT Census
12/14/23	Bryant Reynolds Kaitlyn Weaver	0730 - 1630	27-60°F	Winds 0-8 mph, clear skies, no precipitation	WJT Census
12/15/23	Bryant Reynolds Kaitlyn Weaver Jacob Hargis Justin Purnell	0800 – 1630	32-61°F	Winds 0-12 mph, clear skies, no precipitation	WJT Census
12/19/23	Bryant Reynolds Jacob Hargis Justin Purnell	0800 - 1615	55-67°F	Winds 0-8 mph, overcast, trace of precipitation	WJT Census

°F = degrees Fahrenheit; mph = miles per hour

Results

A total of 3,463 WJTs were identified and mapped within the Survey Area, plus an additional six WJTs that were identified and mapped outside the Survey Area during the census, located in the Angeles National Forest, for a total of 3,469 WJTs. Of those, 3,043 WJTs are living; the remaining 426 WJTs were classified as dead based on criteria described in the CDFW census protocol (CDFW 2024a). Of the live WJTs surveyed, 1,838 are Size Class A (less than one meter in height), 1,080 are Size Class B (greater than one meter, but less than five meters in height), and 125 are Size Class C (greater than five meters in height). In addition, 626 of the live WJTs are mature, and the remaining 2,417 live WJTs are immature. Only one WJT was observed in its fruiting phase, and no WJTs were observed in a flowering phase. The entire Project site is located within the CDFW WJT standard mitigation fee area (CDFW 2024b), and the Project would be subject to the associated mitigation fees for potential impacts to WJTs.

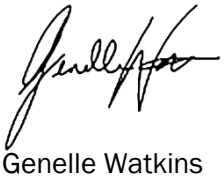
Conclusion

Under the new California Endangered Species Act Incidental Take Permit Guidelines related to the Western Joshua Tree Conservation Act, CDFW has not officially indicated the period of time for which a WJT census survey is considered valid. Generally, a WJT census survey is considered valid for approximately one year due to the potential for new WJT individuals to sprout after the census

survey is completed. To apply for an Incidental Take Permit, WJTs impacted by proposed Project activities should be identified and the level of impact (removal, trim, relocation, other, or none) determined. If the Project requires an Incidental Take Permit for potential impacts to WJTs within the Survey Area, a WJT Incidental Take Permit application should be prepared for the Project and submitted to CDFW. The Incidental Take Permit application should include a determination of impact for each WJT surveyed within the Survey Area (Project site plus 50 feet [15 meters]). Additionally, details regarding mitigation for impacted WJTs should be included in the application and proposed WJT relocation, if deemed feasible, should be described in accordance with CDFW's recent guidelines.

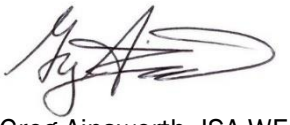
Thank you for this opportunity to support your project. If you have any questions regarding this report or any of the information provided herein, please contact Brenna Vredeveld at bvredeveld@rinconconsultants.com.

Sincerely,
Rincon Consultants, Inc.



Genelle Watkins
ISA Certified Arborist (WE-12998 A)

Brenna Vredeveld
Supervising Biologist/Project Manager



Greg Ainsworth, ISA WE-7473A
Director of Natural Resources & Urban Forestry

Attachments

Attachment 1 Western Joshua Tree Photographs
Attachment 2 Western Joshua Tree Census Table
Attachment 3 Representative Site Photographs
Attachment 4 Western Joshua Tree Location Map

References

California Department of Fish and Wildlife. 2024a. Western Joshua Tree Census Instructions. https://wildlife.ca.gov/Conservation/Environmental-Review/WJT/Permitting/Census-Instructions (accessed November 2023).

_____. 2024b. Western Joshua Tree Conservation Act Mitigation Fee Map. https://experience.arcgis.com/experience/40690ac231124bccb07cbce42fc95ebd/ (accessed November 2023).

Attachment 1

Western Joshua Tree Photographs[1]

[1] Due to a labeling error, two tree IDs (6 and 2097) are not included in the photograph series. Although the tree IDs range from 1 to 3471, the total number of tree photographs is 3,469.

Photograph 1. Tree #1 Western Joshua tree (*Yucca brevifolia*)

Photograph 2. Tree #2 Western Joshua tree *(Yucca brevifolia)*

Photograph 3. Tree #3 Western Joshua tree *(Yucca brevifolia)*

Photograph 4. Tree #4 Western Joshua tree *(Yucca brevifolia)*

Photograph 5. Tree #5 Western Joshua tree *(Yucca brevifolia)*

Photograph 7. Tree #7 Western Joshua tree *(Yucca brevifolia)*

Photograph 8. Tree #8 Western Joshua tree *(Yucca brevifolia)*

Photograph 9. Tree #9 Western Joshua tree *(Yucca brevifolia)*

Photograph 10. Tree #10 Western Joshua tree *(Yucca brevifolia)*

Photograph 11. Tree #11 Western Joshua tree *(Yucca brevifolia)*

Photograph 12. Tree #12 Western Joshua tree *(Yucca brevifolia)*

Photograph 13. Tree #13 Western Joshua tree *(Yucca brevifolia)*

Photograph 14. Tree #14 Western Joshua tree *(Yucca brevifolia)*

Photograph 15. Tree #15 Western Joshua tree *(Yucca brevifolia)*

Photograph 16. Tree #16 Western Joshua tree *(Yucca brevifolia)*

Photograph 17. Tree #17 Western Joshua tree *(Yucca brevifolia)*

Photograph 18. Tree #18 Western Joshua tree *(Yucca brevifolia)*

Photograph 19. Tree #19 Western Joshua tree *(Yucca brevifolia)*

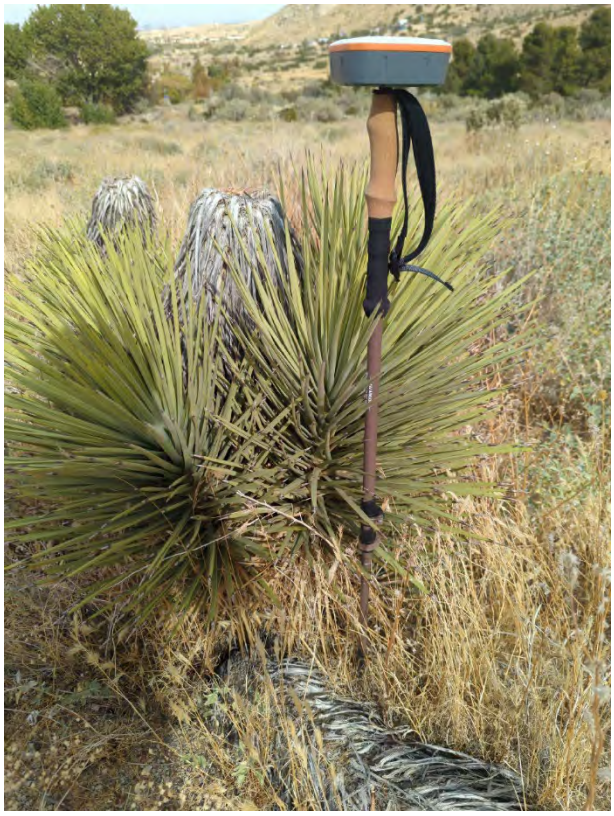
Photograph 20. Tree #20 Western Joshua tree *(Yucca brevifolia)*

Photograph 21. Tree #21 Western Joshua tree *(Yucca brevifolia)*

Photograph 22. Tree #22 Western Joshua tree *(Yucca brevifolia)*

Photograph 23. Tree #23 Western Joshua tree *(Yucca brevifolia)*

Photograph 24. Tree #24 Western Joshua tree *(Yucca brevifolia)*



Photograph 25. Tree #25 Western Joshua tree *(Yucca brevifolia)*

Photograph 26. Tree #26 Western Joshua tree *(Yucca brevifolia)*

Photograph 27. Tree #27 Western Joshua tree *(Yucca brevifolia)*

Photograph 28. Tree #28 Western Joshua tree *(Yucca brevifolia)*

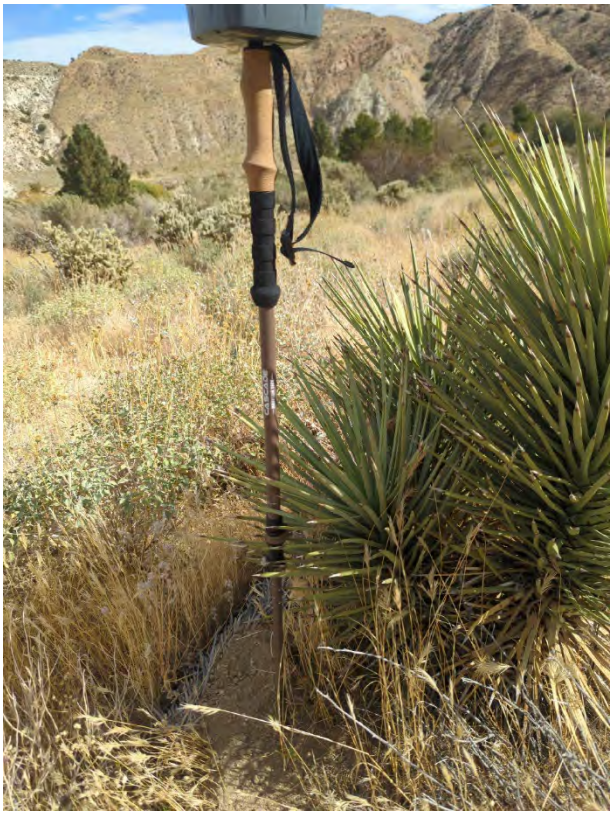
Photograph 29. Tree #29 Western Joshua tree *(Yucca brevifolia)*

Photograph 30. Tree #30 Western Joshua tree *(Yucca brevifolia)*

Photograph 31. Tree #31 Western Joshua tree *(Yucca brevifolia)*

Photograph 32. Tree #32 Western Joshua tree *(Yucca brevifolia)*

Photograph 33. Tree #33 Western Joshua tree *(Yucca brevifolia)*



Photograph 34. Tree #34 Western Joshua tree *(Yucca brevifolia)*

Photograph 35. Tree #35 Western Joshua tree *(Yucca brevifolia)*

Photograph 36. Tree #36 Western Joshua tree *(Yucca brevifolia)*

Photograph 37. Tree #37 Western Joshua tree *(Yucca brevifolia)*

Photograph 38. Tree #38 Western Joshua tree *(Yucca brevifolia)*

Photograph 39. Tree #39 Western Joshua tree *(Yucca brevifolia)*

Photograph 40. Tree #40 Western Joshua tree *(Yucca brevifolia)*

Photograph 41. Tree #41 Western Joshua tree *(Yucca brevifolia)*

Photograph 42. Tree #42 Western Joshua tree *(Yucca brevifolia)*

Photograph 43. Tree #43 Western Joshua tree *(Yucca brevifolia)*

Photograph 44. Tree #44 Western Joshua tree *(Yucca brevifolia)*

Photograph 45. Tree #45 Western Joshua tree *(Yucca brevifolia)*

Photograph 46. Tree #46 Western Joshua tree *(Yucca brevifolia)*

Photograph 47. Tree #47 Western Joshua tree *(Yucca brevifolia)*

Photograph 48. Tree #48 Western Joshua tree *(Yucca brevifolia)*

Photograph 49. Tree #49 Western Joshua tree *(Yucca brevifolia)*

Photograph 50. Tree #50 Western Joshua tree *(Yucca brevifolia)*

Photograph 51. Tree #51 Western Joshua tree *(Yucca brevifolia)*

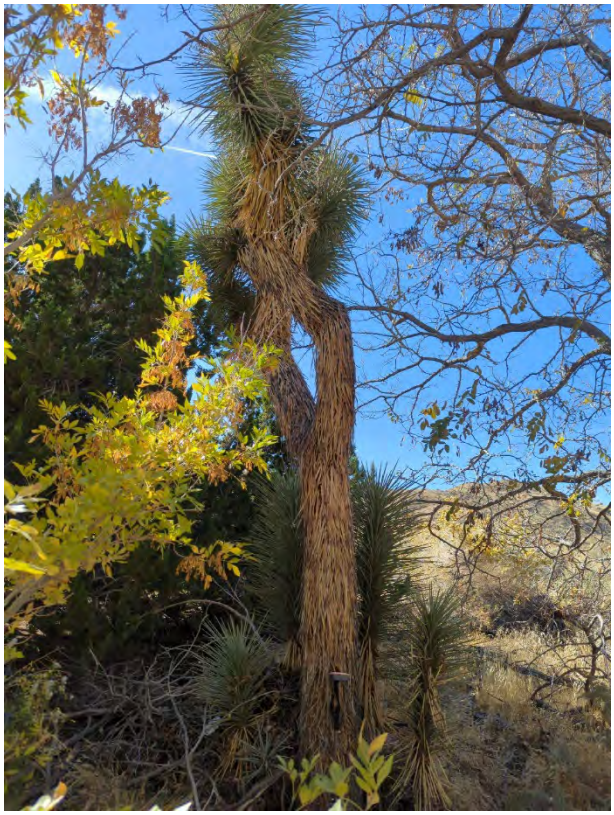
Photograph 52. Tree #52 Western Joshua tree *(Yucca brevifolia)*

Photograph 53. Tree #53 Western Joshua tree *(Yucca brevifolia)*

Photograph 54. Tree #54 Western Joshua tree *(Yucca brevifolia)*

Photograph 55. Tree #55 Western Joshua tree *(Yucca brevifolia)*

Photograph 56. Tree #56 Western Joshua tree *(Yucca brevifolia)*



Photograph 57. Tree #57 Western Joshua tree *(Yucca brevifolia)*

Photograph 58. Tree #58 Western Joshua tree *(Yucca brevifolia)*

Photograph 59. Tree #59 Western Joshua tree *(Yucca brevifolia)*

Photograph 60. Tree #60 Western Joshua tree *(Yucca brevifolia)*

Photograph 61. Tree #61 Western Joshua tree *(Yucca brevifolia)*

Photograph 62. Tree #62 Western Joshua tree *(Yucca brevifolia)*

Photograph 63. Tree #63 Western Joshua tree *(Yucca brevifolia)*

Photograph 64. Tree #64 Western Joshua tree *(Yucca brevifolia)*

Photograph 65. Tree #65 Western Joshua tree *(Yucca brevifolia)*

Photograph 66. Tree #66 Western Joshua tree *(Yucca brevifolia)*

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Photograph 69. Tree #69 Western Joshua tree *(Yucca brevifolia)*

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Photograph 79. Tree #79 Western Joshua tree *(Yucca brevifolia)*

Photograph 80. Tree #80 Western Joshua tree *(Yucca brevifolia)*

Photograph 81. Tree #81 Western Joshua tree *(Yucca brevifolia)*

Photograph 82. Tree #82 Western Joshua tree *(Yucca brevifolia)*

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Photograph 100. Tree #100 Western Joshua tree *(Yucca brevifolia)*

Photograph 101. Tree #101 Western Joshua tree *(Yucca brevifolia)*

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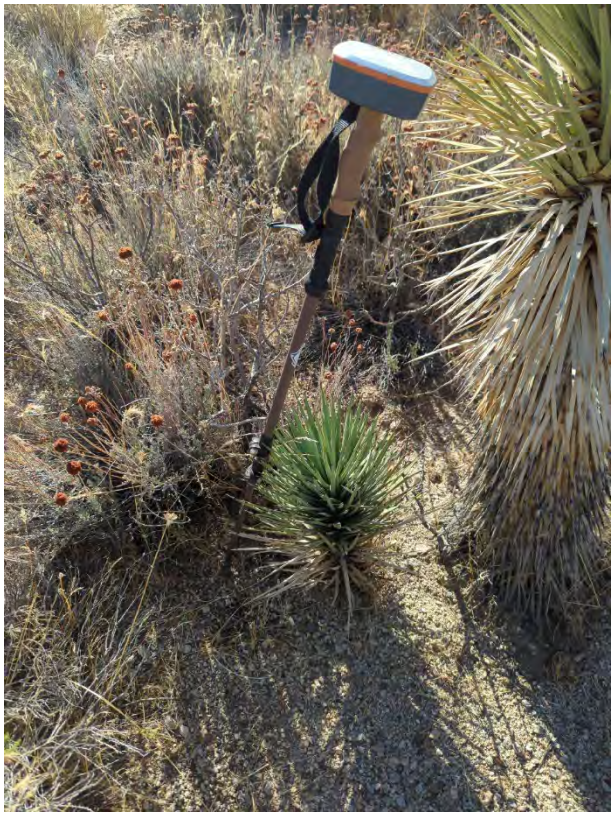
Photograph 111. Tree #111 Western Joshua tree *(Yucca brevifolia)*

Photograph 112. Tree #112 Western Joshua tree *(Yucca brevifolia)*

Photograph 113. Tree #113 Western Joshua tree *(Yucca brevifolia)*

Photograph 114. Tree #114 Western Joshua tree *(Yucca brevifolia)*



Photograph 115. Tree #115 Western Joshua tree *(Yucca brevifolia)*

Photograph 116. Tree #116 Western Joshua tree *(Yucca brevifolia)*

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Photograph 118. Tree #118 Western Joshua tree *(Yucca brevifolia)*

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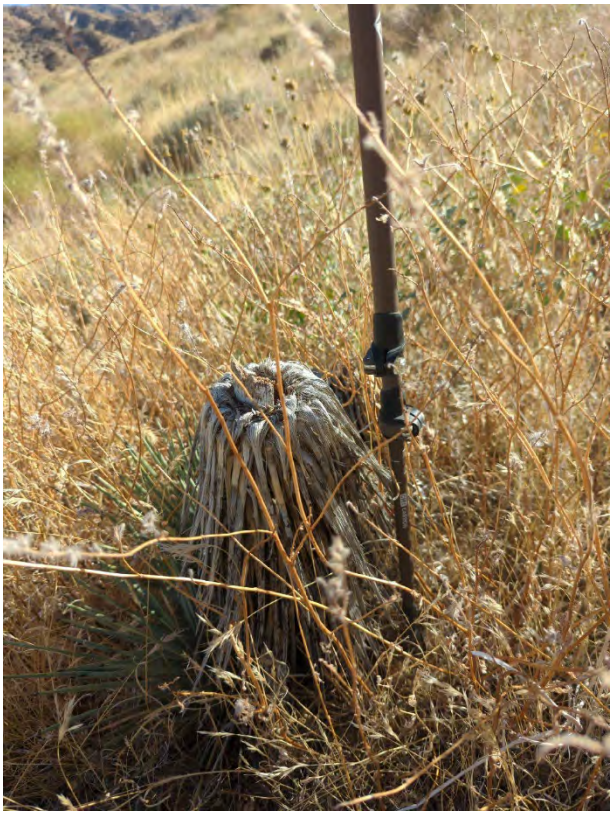
Photograph 138. Tree #138 Western Joshua tree *(Yucca brevifolia)*

Photograph 139. Tree #139 Western Joshua tree *(Yucca brevifolia)*

Photograph 140. Tree #140 Western Joshua tree *(Yucca brevifolia)*

Photograph 141. Tree #141 Western Joshua tree *(Yucca brevifolia)*



Photograph 142. Tree #142 Western Joshua tree *(Yucca brevifolia)*

Photograph 143. Tree #143 Western Joshua tree *(Yucca brevifolia)*

Photograph 144. Tree #144 Western Joshua tree *(Yucca brevifolia)*

Photograph 145. Tree #145 Western Joshua tree *(Yucca brevifolia)*

Photograph 146. Tree #146 Western Joshua tree *(Yucca brevifolia)*

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Photograph 148. Tree #148 Western Joshua tree *(Yucca brevifolia)*

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Photograph 154. Tree #154 Western Joshua tree *(Yucca brevifolia)*

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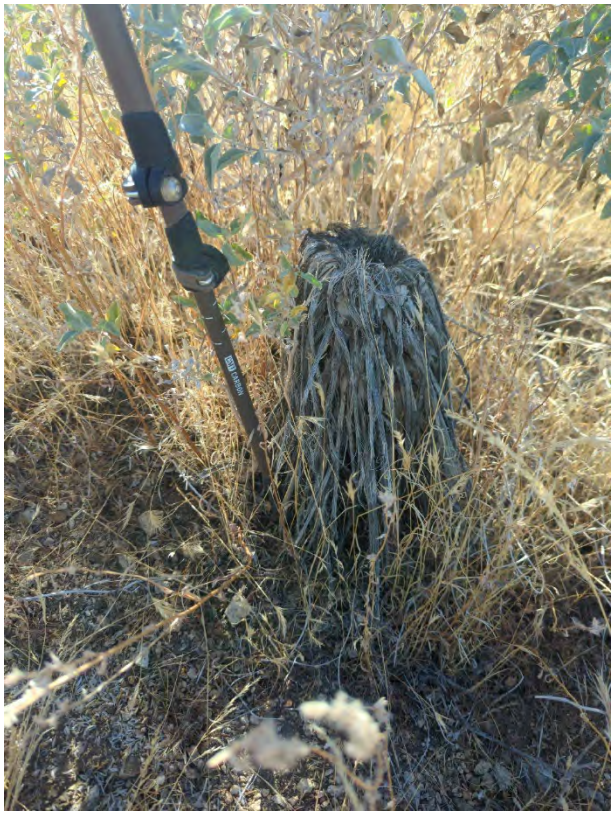
Photograph 156. Tree #156 Western Joshua tree *(Yucca brevifolia)*



Photograph 157. Tree #157 Western Joshua tree *(Yucca brevifolia)*

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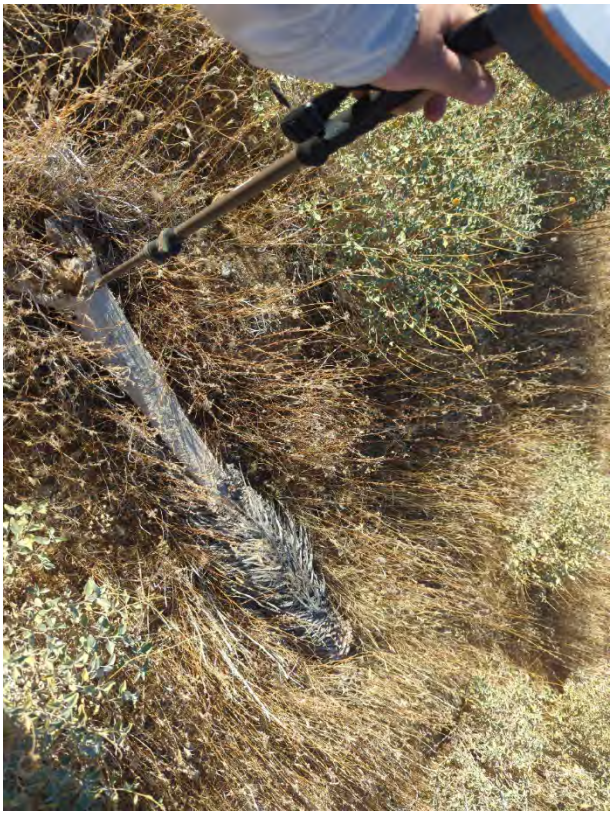
Photograph 159. Tree #159 Western Joshua tree *(Yucca brevifolia)*

Photograph 160. Tree #160 Western Joshua tree *(Yucca brevifolia)*

Photograph 161. Tree #161 Western Joshua tree *(Yucca brevifolia)*



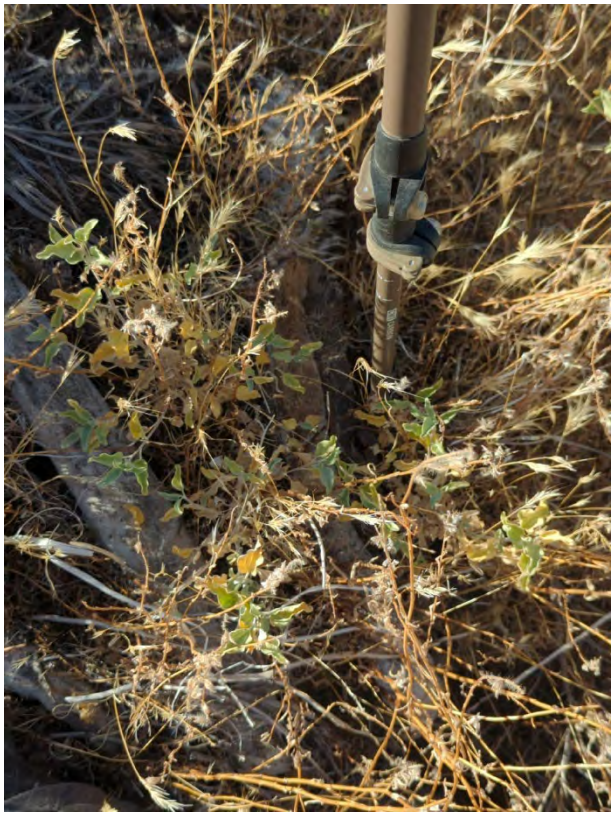
Photograph 162. Tree #162 Western Joshua tree *(Yucca brevifolia)*

Photograph 163. Tree #163 Western Joshua tree *(Yucca brevifolia)*

Photograph 164. Tree #164 Western Joshua tree *(Yucca brevifolia)*

Photograph 165. Tree #165 Western Joshua tree *(Yucca brevifolia)*

Photograph 166. Tree #166 Western Joshua tree *(Yucca brevifolia)*



Photograph 167. Tree #167 Western Joshua tree *(Yucca brevifolia)*

Photograph 168. Tree #168 Western Joshua tree *(Yucca brevifolia)*

Photograph 169. Tree #169 Western Joshua tree *(Yucca brevifolia)*

Photograph 170. Tree #170 Western Joshua tree *(Yucca brevifolia)*

Photograph 171. Tree #171 Western Joshua tree *(Yucca brevifolia)*

Photograph 172. Tree #172 Western Joshua tree *(Yucca brevifolia)*

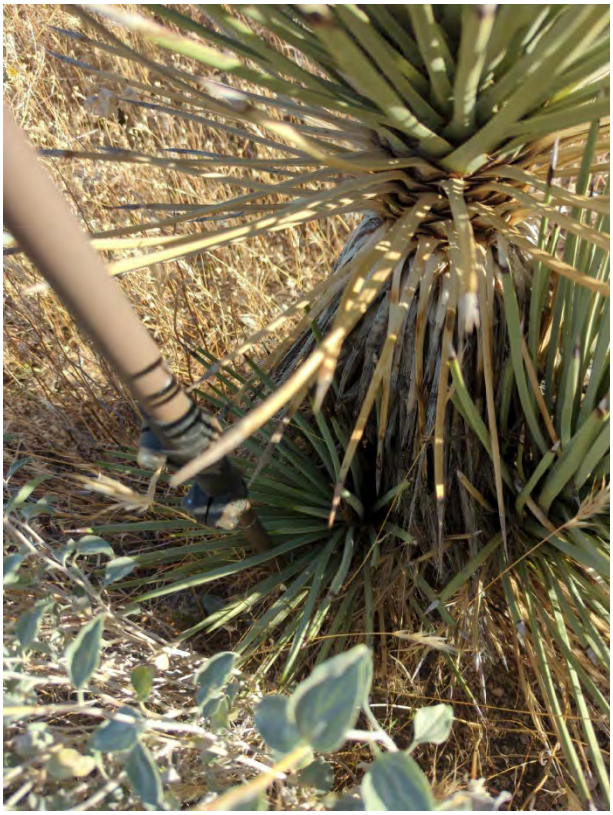
Photograph 173. Tree #173 Western Joshua tree *(Yucca brevifolia)*

Photograph 174. Tree #174 Western Joshua tree *(Yucca brevifolia)*

Photograph 175. Tree #175 Western Joshua tree *(Yucca brevifolia)*

Photograph 176. Tree #176 Western Joshua tree *(Yucca brevifolia)*

Photograph 177. Tree #177 Western Joshua tree *(Yucca brevifolia)*



Photograph 178. Tree #178 Western Joshua tree *(Yucca brevifolia)*

Photograph 179. Tree #179 Western Joshua tree *(Yucca brevifolia)*

Photograph 180. Tree #180 Western Joshua tree *(Yucca brevifolia)*

Photograph 181. Tree #181 Western Joshua tree *(Yucca brevifolia)*

Photograph 182. Tree #182 Western Joshua tree *(Yucca brevifolia)*

Photograph 183. Tree #183 Western Joshua tree *(Yucca brevifolia)*

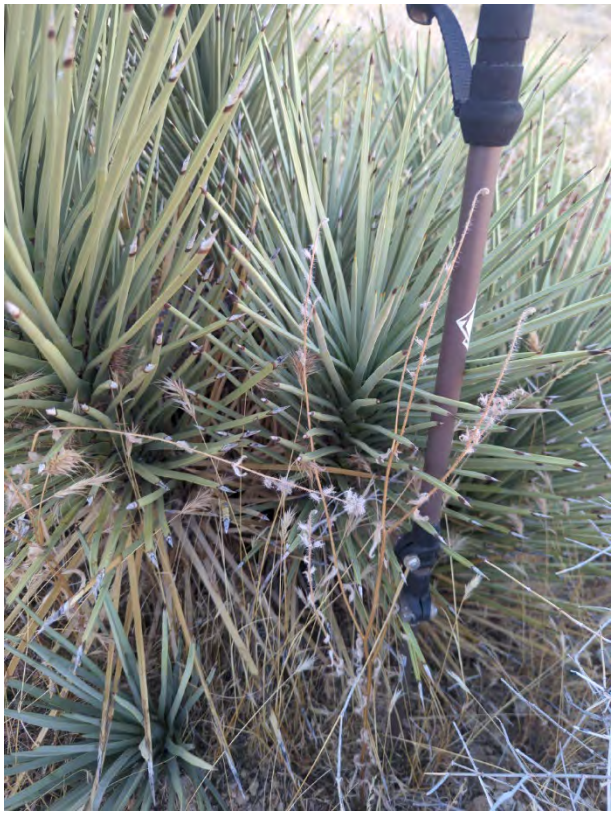
Photograph 184. Tree #184 Western Joshua tree *(Yucca brevifolia)*

Photograph 185. Tree #185 Western Joshua tree *(Yucca brevifolia)*

Photograph 186. Tree #186 Western Joshua tree *(Yucca brevifolia)*

Photograph 187. Tree #187 Western Joshua tree *(Yucca brevifolia)*

Photograph 188. Tree #188 Western Joshua tree *(Yucca brevifolia)*

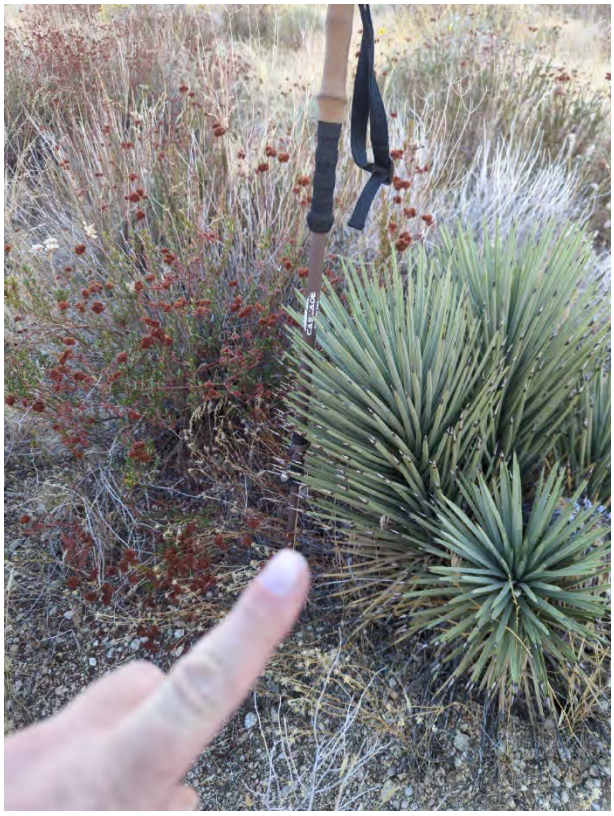


Photograph 189. Tree #189 Western Joshua tree *(Yucca brevifolia)*

Photograph 190. Tree #190 Western Joshua tree *(Yucca brevifolia)*

Photograph 191. Tree #191 Western Joshua tree *(Yucca brevifolia)*

Photograph 192. Tree #192 Western Joshua tree *(Yucca brevifolia)*



Photograph 193. Tree #193 Western Joshua tree *(Yucca brevifolia)*

Photograph 194. Tree #194 Western Joshua tree *(Yucca brevifolia)*

Photograph 195. Tree #195 Western Joshua tree *(Yucca brevifolia)*

Photograph 196. Tree #196 Western Joshua tree *(Yucca brevifolia)*

Photograph 197. Tree #197 Western Joshua tree *(Yucca brevifolia)*

Photograph 198. Tree #198 Western Joshua tree *(Yucca brevifolia)*

Photograph 199. Tree #199 Western Joshua tree *(Yucca brevifolia)*

Photograph 200. Tree #200 Western Joshua tree *(Yucca brevifolia)*

Photograph 201. Tree #201 Western Joshua tree *(Yucca brevifolia)*

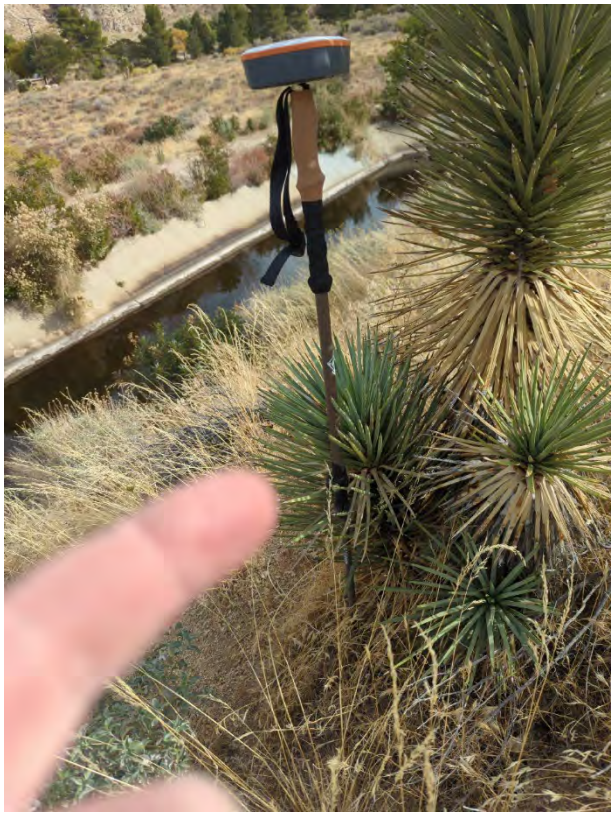
Photograph 202. Tree #202 Western Joshua tree *(Yucca brevifolia)*

Photograph 203. Tree #203 Western Joshua tree *(Yucca brevifolia)*

Photograph 204. Tree #204 Western Joshua tree *(Yucca brevifolia)*

Photograph 205. Tree #205 Western Joshua tree *(Yucca brevifolia)*

Photograph 206. Tree #206 Western Joshua tree *(Yucca brevifolia)*



Photograph 207. Tree #207 Western Joshua tree *(Yucca brevifolia)*

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Photograph 211. Tree #211 Western Joshua tree *(Yucca brevifolia)*

Photograph 212. Tree #212 Western Joshua tree *(Yucca brevifolia)*

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Photograph 220. Tree #220 Western Joshua tree *(Yucca brevifolia)*

Photograph 221. Tree #221 Western Joshua tree *(Yucca brevifolia)*

Photograph 222. Tree #222 Western Joshua tree *(Yucca brevifolia)*

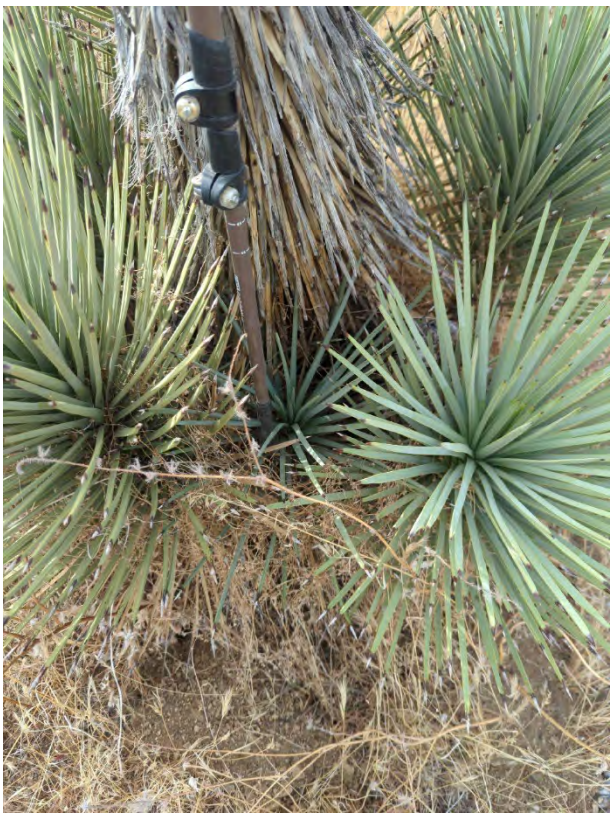
Photograph 223. Tree #223 Western Joshua tree *(Yucca brevifolia)*

Photograph 224. Tree #224 Western Joshua tree *(Yucca brevifolia)*

Photograph 225. Tree #225 Western Joshua tree *(Yucca brevifolia)*

Photograph 226. Tree #226 Western Joshua tree *(Yucca brevifolia)*

Photograph 227. Tree #227 Western Joshua tree *(Yucca brevifolia)*



Photograph 228. Tree #228 Western Joshua tree *(Yucca brevifolia)*

Photograph 229. Tree #229 Western Joshua tree *(Yucca brevifolia)*

Photograph 230. Tree #230 Western Joshua tree *(Yucca brevifolia)*

Photograph 231. Tree #231 Western Joshua tree *(Yucca brevifolia)*

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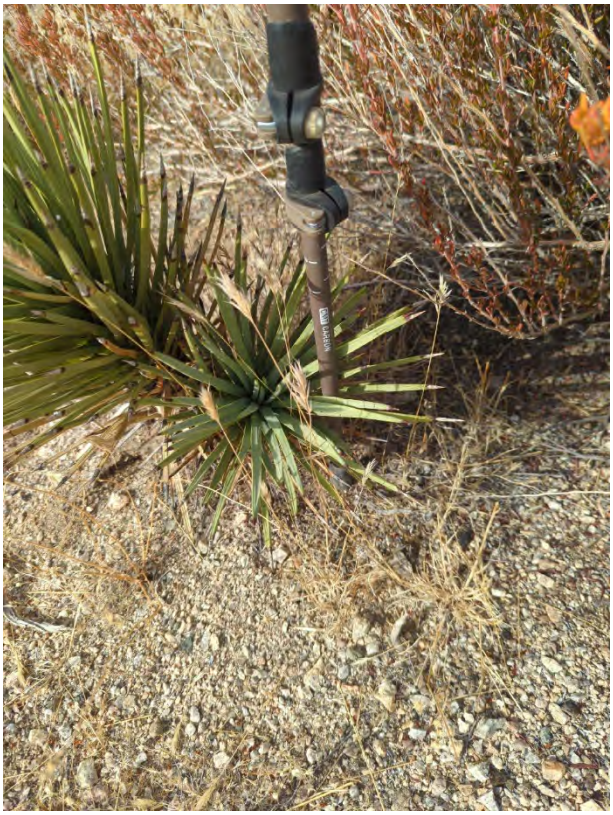
Photograph 245. Tree #245 Western Joshua tree *(Yucca brevifolia)*



Photograph 246. Tree #246 Western Joshua tree *(Yucca brevifolia)*

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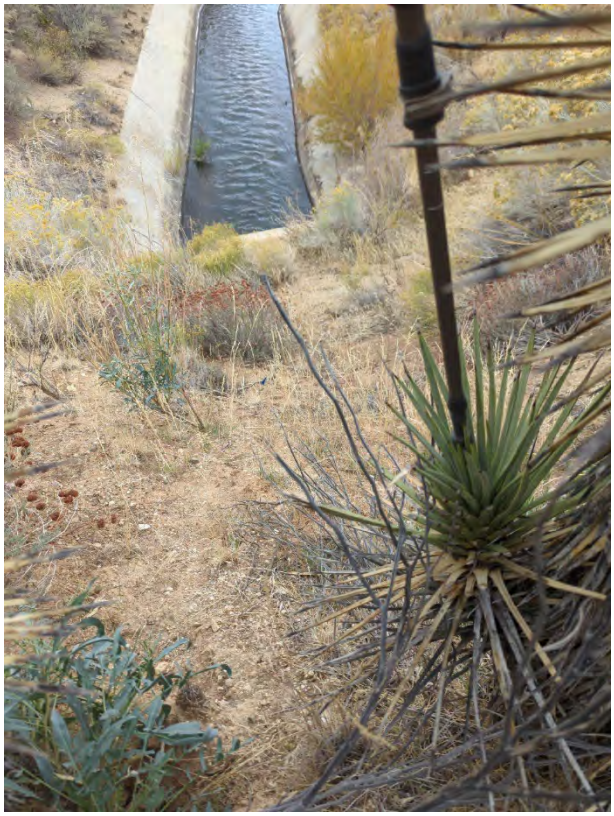
Photograph 426. Tree #426 Western Joshua tree *(Yucca brevifolia)*



Photograph 427. Tree #427 Western Joshua tree *(Yucca brevifolia)*

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Photograph 517. Tree #517 Western Joshua tree *(Yucca brevifolia)*

Photograph 518. Tree #518 Western Joshua tree *(Yucca brevifolia)*

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Photograph 531. Tree #531 Western Joshua tree *(Yucca brevifolia)*

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Photograph 541. Tree #541 Western Joshua tree *(Yucca brevifolia)*

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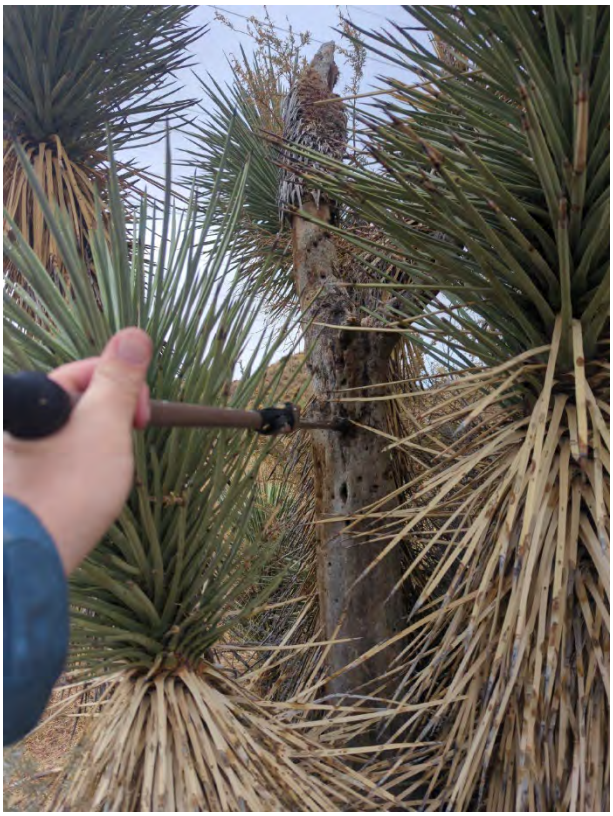
Photograph 558. Tree #558 Western Joshua tree *(Yucca brevifolia)*

Photograph 559. Tree #559 Western Joshua tree *(Yucca brevifolia)*



Photograph 560. Tree #560 Western Joshua tree *(Yucca brevifolia)*

Photograph 561. Tree #561 Western Joshua tree *(Yucca brevifolia)*

Photograph 562. Tree #562 Western Joshua tree *(Yucca brevifolia)*

Photograph 563. Tree #563 Western Joshua tree *(Yucca brevifolia)*

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Photograph 566. Tree #566 Western Joshua tree *(Yucca brevifolia)*

Photograph 567. Tree #567 Western Joshua tree *(Yucca brevifolia)*

Photograph 568. Tree #568 Western Joshua tree *(Yucca brevifolia)*

Photograph 569. Tree #569 Western Joshua tree *(Yucca brevifolia)*

Photograph 570. Tree #570 Western Joshua tree *(Yucca brevifolia)*

Photograph 571. Tree #571 Western Joshua tree *(Yucca brevifolia)*

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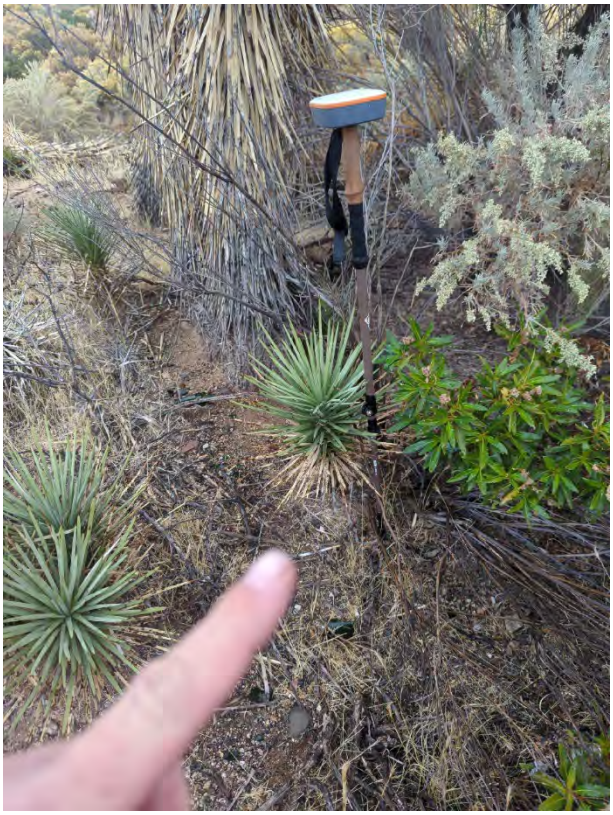
Photograph 574. Tree #574 Western Joshua tree *(Yucca brevifolia)*

Photograph 575. Tree #575 Western Joshua tree *(Yucca brevifolia)*



Photograph 576. Tree #576 Western Joshua tree *(Yucca brevifolia)*

Photograph 577. Tree #577 Western Joshua tree *(Yucca brevifolia)*

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Photograph 579. Tree #579 Western Joshua tree *(Yucca brevifolia)*

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Photograph 585. Tree #585 Western Joshua tree *(Yucca brevifolia)*

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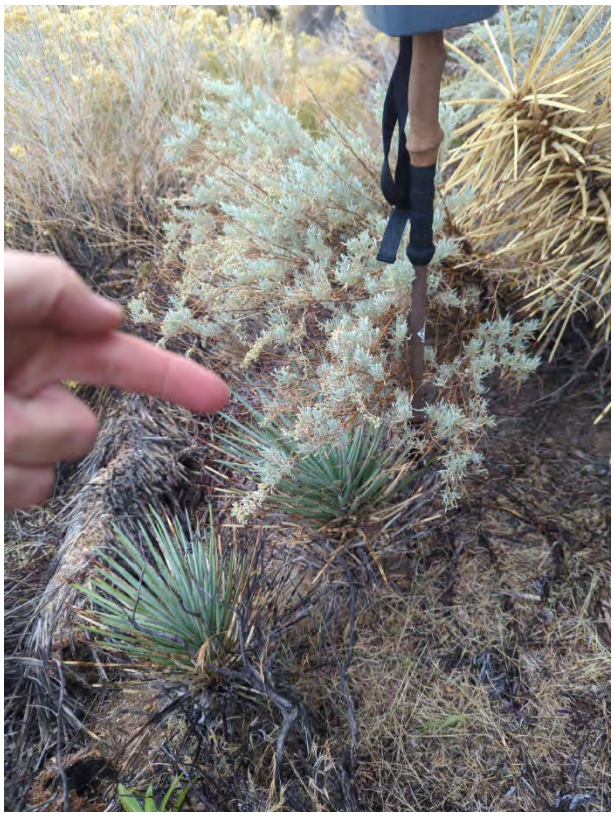
Photograph 587. Tree #587 Western Joshua tree *(Yucca brevifolia)*

Photograph 588. Tree #588 Western Joshua tree *(Yucca brevifolia)*



Photograph 589. Tree #589 Western Joshua tree *(Yucca brevifolia)*

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Photograph 592. Tree #592 Western Joshua tree *(Yucca brevifolia)*

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Photograph 617. Tree #617 Western Joshua tree *(Yucca brevifolia)*

Photograph 618. Tree #618 Western Joshua tree *(Yucca brevifolia)*

Photograph 619. Tree #619 Western Joshua tree *(Yucca brevifolia)*

Photograph 620. Tree #620 Western Joshua tree *(Yucca brevifolia)*

Photograph 621. Tree #621 Western Joshua tree *(Yucca brevifolia)*

Photograph 622. Tree #622 Western Joshua tree *(Yucca brevifolia)*

Photograph 623. Tree #623 Western Joshua tree *(Yucca brevifolia)*

Photograph 624. Tree #624 Western Joshua tree *(Yucca brevifolia)*

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Photograph 630. Tree #630 Western Joshua tree *(Yucca brevifolia)*

Photograph 631. Tree #631 Western Joshua tree *(Yucca brevifolia)*

Photograph 632. Tree #632 Western Joshua tree *(Yucca brevifolia)*

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Photograph 681. Tree #681 Western Joshua tree *(Yucca brevifolia)*

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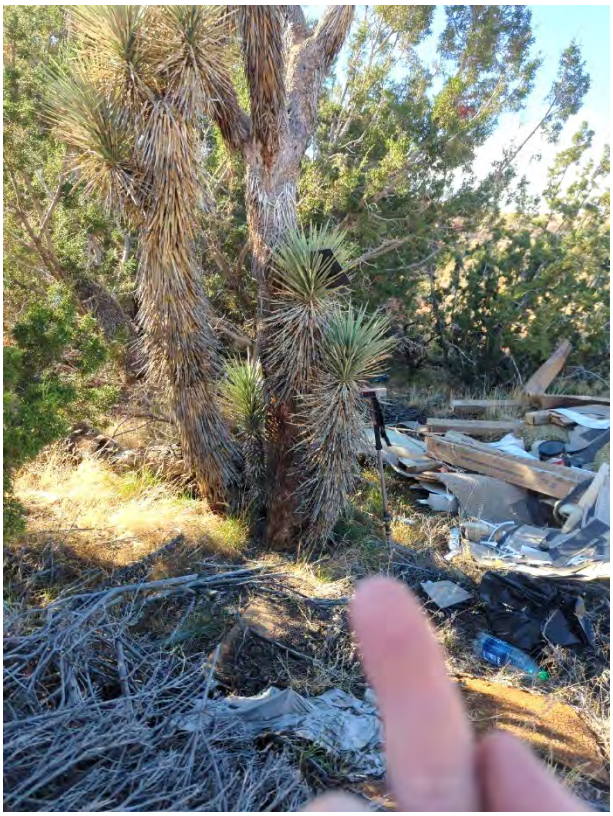
Photograph 689. Tree #689 Western Joshua tree *(Yucca brevifolia)*



Photograph 690. Tree #690 Western Joshua tree *(Yucca brevifolia)*

Photograph 691. Tree #691 Western Joshua tree *(Yucca brevifolia)*

Photograph 692. Tree #692 Western Joshua tree *(Yucca brevifolia)*

Photograph 693. Tree #693 Western Joshua tree *(Yucca brevifolia)*

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Photograph 702. Tree #702 Western Joshua tree *(Yucca brevifolia)*

Photograph 703. Tree #703 Western Joshua tree *(Yucca brevifolia)*

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Photograph 708. Tree #708 Western Joshua tree *(Yucca brevifolia)*

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Photograph 719. Tree #719 Western Joshua tree *(Yucca brevifolia)*

Photograph 720. Tree #720 Western Joshua tree *(Yucca brevifolia)*

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Photograph 722. Tree #722 Western Joshua tree *(Yucca brevifolia)*

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Photograph 750. Tree #750 Western Joshua tree *(Yucca brevifolia)*

Photograph 751. Tree #751 Western Joshua tree *(Yucca brevifolia)*

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Photograph 789. Tree #789 Western Joshua tree *(Yucca brevifolia)*

Photograph 790. Tree #790 Western Joshua tree *(Yucca brevifolia)*

Photograph 791. Tree #791 Western Joshua tree *(Yucca brevifolia)*

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Photograph 800. Tree #800 Western Joshua tree *(Yucca brevifolia)*

Photograph 801. Tree #801 Western Joshua tree *(Yucca brevifolia)*

Photograph 802. Tree #802 Western Joshua tree *(Yucca brevifolia)*

Photograph 803. Tree #803 Western Joshua tree *(Yucca brevifolia)*

Photograph 804. Tree #804 Western Joshua tree *(Yucca brevifolia)*

Photograph 805. Tree #805 Western Joshua tree *(Yucca brevifolia)*

Photograph 806. Tree #806 Western Joshua tree *(Yucca brevifolia)*

Photograph 807. Tree #807 Western Joshua tree *(Yucca brevifolia)*

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Photograph 810. Tree #810 Western Joshua tree *(Yucca brevifolia)*

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Photograph 815. Tree #815 Western Joshua tree *(Yucca brevifolia)*

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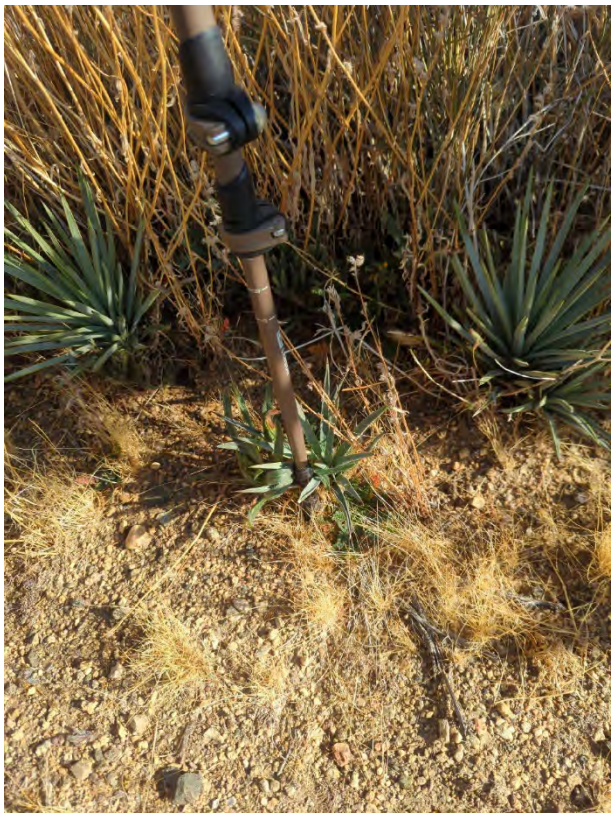
Photograph 818. Tree #818 Western Joshua tree *(Yucca brevifolia)*



Photograph 819. Tree #819 Western Joshua tree *(Yucca brevifolia)*

Photograph 820. Tree #820 Western Joshua tree *(Yucca brevifolia)*

Photograph 821. Tree #821 Western Joshua tree *(Yucca brevifolia)*

Photograph 822. Tree #822 Western Joshua tree *(Yucca brevifolia)*

Photograph 823. Tree #823 Western Joshua tree *(Yucca brevifolia)*

Photograph 824. Tree #824 Western Joshua tree *(Yucca brevifolia)*

Photograph 825. Tree #825 Western Joshua tree *(Yucca brevifolia)*

Photograph 826. Tree #826 Western Joshua tree *(Yucca brevifolia)*

Photograph 827. Tree #827 Western Joshua tree *(Yucca brevifolia)*

Photograph 828. Tree #828 Western Joshua tree *(Yucca brevifolia)*

Photograph 829. Tree #829 Western Joshua tree *(Yucca brevifolia)*

Photograph 830. Tree #830 Western Joshua tree *(Yucca brevifolia)*

Photograph 831. Tree #831 Western Joshua tree *(Yucca brevifolia)*

Photograph 832. Tree #832 Western Joshua tree *(Yucca brevifolia)*

Photograph 833. Tree #833 Western Joshua tree *(Yucca brevifolia)*

Photograph 834. Tree #834 Western Joshua tree *(Yucca brevifolia)*

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Photograph 837. Tree #837 Western Joshua tree *(Yucca brevifolia)*

Photograph 838. Tree #838 Western Joshua tree *(Yucca brevifolia)*

Photograph 839. Tree #839 Western Joshua tree *(Yucca brevifolia)*

Photograph 840. Tree #840 Western Joshua tree *(Yucca brevifolia)*

Photograph 841. Tree #841 Western Joshua tree *(Yucca brevifolia)*

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Photograph 843. Tree #843 Western Joshua tree *(Yucca brevifolia)*

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Photograph 847. Tree #847 Western Joshua tree *(Yucca brevifolia)*

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Photograph 850. Tree #850 Western Joshua tree *(Yucca brevifolia)*

Photograph 851. Tree #851 Western Joshua tree *(Yucca brevifolia)*

Photograph 852. Tree #852 Western Joshua tree *(Yucca brevifolia)*

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Photograph 866. Tree #866 Western Joshua tree *(Yucca brevifolia)*

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Photograph 870. Tree #870 Western Joshua tree *(Yucca brevifolia)*

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Photograph 872. Tree #872 Western Joshua tree *(Yucca brevifolia)*

Photograph 873. Tree #873 Western Joshua tree *(Yucca brevifolia)*

Photograph 874. Tree #874 Western Joshua tree *(Yucca brevifolia)*

Photograph 875. Tree #875 Western Joshua tree *(Yucca brevifolia)*

Photograph 876. Tree #876 Western Joshua tree *(Yucca brevifolia)*

Photograph 877. Tree #877 Western Joshua tree *(Yucca brevifolia)*

Photograph 878. Tree #878 Western Joshua tree *(Yucca brevifolia)*

Photograph 879. Tree #879 Western Joshua tree *(Yucca brevifolia)*

Photograph 880. Tree #880 Western Joshua tree *(Yucca brevifolia)*

Photograph 881. Tree #881 Western Joshua tree *(Yucca brevifolia)*

Photograph 882. Tree #882 Western Joshua tree *(Yucca brevifolia)*

Photograph 883. Tree #883 Western Joshua tree *(Yucca brevifolia)*

Photograph 884. Tree #884 Western Joshua tree *(Yucca brevifolia)*

Photograph 885. Tree #885 Western Joshua tree *(Yucca brevifolia)*

Photograph 886. Tree #886 Western Joshua tree *(Yucca brevifolia)*

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Photograph 888. Tree #888 Western Joshua tree *(Yucca brevifolia)*

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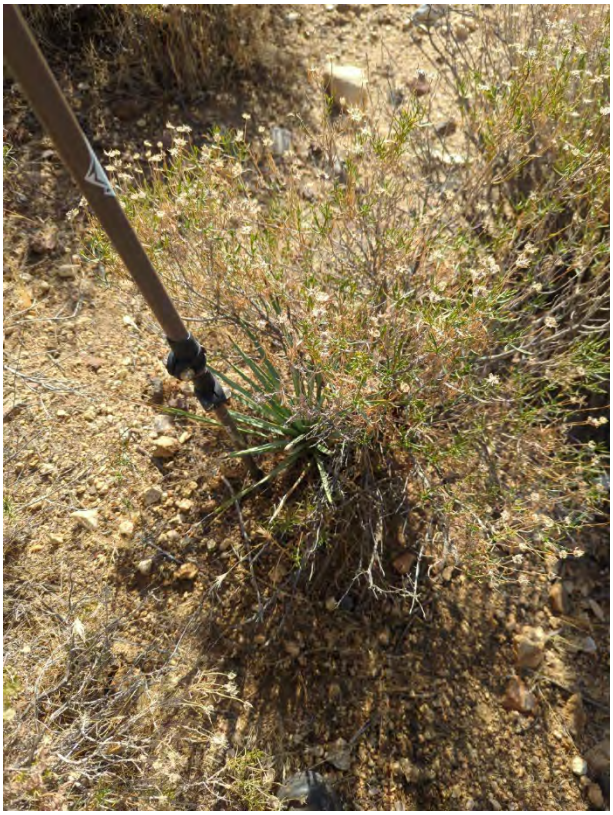
Photograph 898. Tree #898 Western Joshua tree *(Yucca brevifolia)*

Photograph 899. Tree #899 Western Joshua tree *(Yucca brevifolia)*



Photograph 900. Tree #900 Western Joshua tree *(Yucca brevifolia)*

Photograph 901. Tree #901 Western Joshua tree *(Yucca brevifolia)*

Photograph 902. Tree #902 Western Joshua tree *(Yucca brevifolia)*

Photograph 903. Tree #903 Western Joshua tree *(Yucca brevifolia)*

Photograph 904. Tree #904 Western Joshua tree *(Yucca brevifolia)*

Photograph 905. Tree #905 Western Joshua tree *(Yucca brevifolia)*

Photograph 906. Tree #906 Western Joshua tree *(Yucca brevifolia)*

Photograph 907. Tree #907 Western Joshua tree *(Yucca brevifolia)*

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Photograph 910. Tree #910 Western Joshua tree *(Yucca brevifolia)*

Photograph 911. Tree #911 Western Joshua tree *(Yucca brevifolia)*

Photograph 912. Tree #912 Western Joshua tree *(Yucca brevifolia)*

Photograph 913. Tree #913 Western Joshua tree *(Yucca brevifolia)*

Photograph 914. Tree #914 Western Joshua tree *(Yucca brevifolia)*

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Photograph 921. Tree #921 Western Joshua tree *(Yucca brevifolia)*

Photograph 922. Tree #922 Western Joshua tree *(Yucca brevifolia)*

Photograph 923. Tree #923 Western Joshua tree *(Yucca brevifolia)*

Photograph 924. Tree #924 Western Joshua tree *(Yucca brevifolia)*

Photograph 925. Tree #925 Western Joshua tree *(Yucca brevifolia)*

Photograph 926. Tree #926 Western Joshua tree *(Yucca brevifolia)*

Photograph 927. Tree #927 Western Joshua tree *(Yucca brevifolia)*

Photograph 928. Tree #928 Western Joshua tree *(Yucca brevifolia)*

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Photograph 930. Tree #930 Western Joshua tree *(Yucca brevifolia)*

Photograph 931. Tree #931 Western Joshua tree *(Yucca brevifolia)*

Photograph 932. Tree #932 Western Joshua tree *(Yucca brevifolia)*

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Photograph 937. Tree #937 Western Joshua tree *(Yucca brevifolia)*

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Photograph 939. Tree #939 Western Joshua tree *(Yucca brevifolia)*

Photograph 940. Tree #940 Western Joshua tree *(Yucca brevifolia)*

Photograph 941. Tree #941 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1000. Tree #1000 Western Joshua tree *(Yucca brevifolia)*

Photograph 1001. Tree #1001 Western Joshua tree *(Yucca brevifolia)*

Photograph 1002. Tree #1002 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1020. Tree #1020 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1024. Tree #1024 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1100. Tree #1100 Western Joshua tree *(Yucca brevifolia)*

Photograph 1101. Tree #1101 Western Joshua tree *(Yucca brevifolia)*

Photograph 1102. Tree #1102 Western Joshua tree *(Yucca brevifolia)*

Photograph 1103. Tree #1103 Western Joshua tree *(Yucca brevifolia)*

Photograph 1104. Tree #1104 Western Joshua tree *(Yucca brevifolia)*

Photograph 1105. Tree #1105 Western Joshua tree *(Yucca brevifolia)*

Photograph 1106. Tree #1106 Western Joshua tree *(Yucca brevifolia)*

Photograph 1107. Tree #1107 Western Joshua tree *(Yucca brevifolia)*

Photograph 1108. Tree #1108 Western Joshua tree *(Yucca brevifolia)*

Photograph 1109. Tree #1109 Western Joshua tree *(Yucca brevifolia)*

Photograph 1110. Tree #1110 Western Joshua tree *(Yucca brevifolia)*

Photograph 1111. Tree #1111 Western Joshua tree *(Yucca brevifolia)*

Photograph 1112. Tree #1112 Western Joshua tree *(Yucca brevifolia)*

Photograph 1113. Tree #1113 Western Joshua tree *(Yucca brevifolia)*

Photograph 1114. Tree #1114 Western Joshua tree *(Yucca brevifolia)*

Photograph 1115. Tree #1115 Western Joshua tree *(Yucca brevifolia)*

Photograph 1116. Tree #1116 Western Joshua tree *(Yucca brevifolia)*

Photograph 1117. Tree #1117 Western Joshua tree *(Yucca brevifolia)*

Photograph 1118. Tree #1118 Western Joshua tree *(Yucca brevifolia)*

Photograph 1119. Tree #1119 Western Joshua tree *(Yucca brevifolia)*

Photograph 1120. Tree #1120 Western Joshua tree *(Yucca brevifolia)*

Photograph 1121. Tree #1121 Western Joshua tree *(Yucca brevifolia)*

Photograph 1122. Tree #1122 Western Joshua tree *(Yucca brevifolia)*

Photograph 1123. Tree #1123 Western Joshua tree *(Yucca brevifolia)*

Photograph 1124. Tree #1124 Western Joshua tree *(Yucca brevifolia)*

Photograph 1125. Tree #1125 Western Joshua tree *(Yucca brevifolia)*

Photograph 1126. Tree #1126 Western Joshua tree *(Yucca brevifolia)*

Photograph 1127. Tree #1127 Western Joshua tree *(Yucca brevifolia)*

Photograph 1128. Tree #1128 Western Joshua tree *(Yucca brevifolia)*

Photograph 1129. Tree #1129 Western Joshua tree *(Yucca brevifolia)*

Photograph 1130. Tree #1130 Western Joshua tree *(Yucca brevifolia)*

Photograph 1131. Tree #1131 Western Joshua tree *(Yucca brevifolia)*

Photograph 1132. Tree #1132 Western Joshua tree *(Yucca brevifolia)*

Photograph 1133. Tree #1133 Western Joshua tree *(Yucca brevifolia)*

Photograph 1134. Tree #1134 Western Joshua tree *(Yucca brevifolia)*

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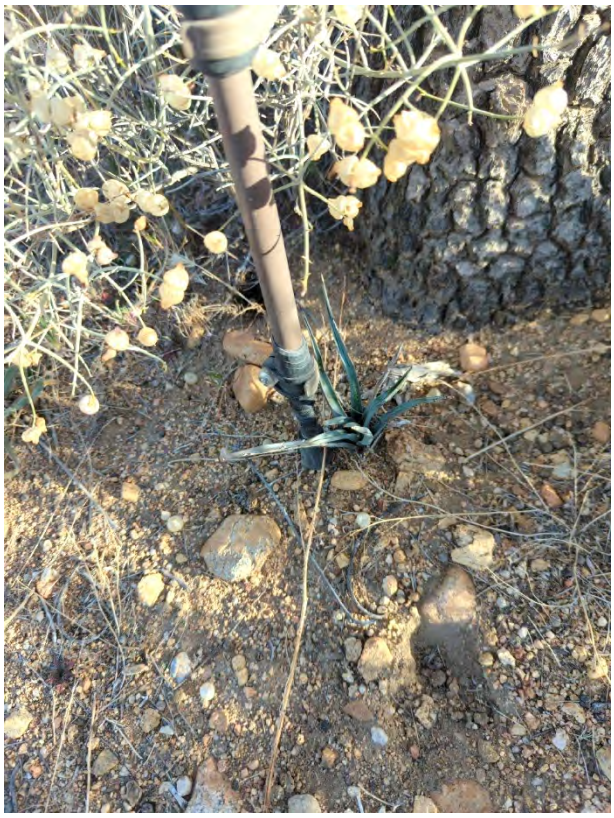
Photograph 1136. Tree #1136 Western Joshua tree *(Yucca brevifolia)*

Photograph 1137. Tree #1137 Western Joshua tree *(Yucca brevifolia)*

Photograph 1138. Tree #1138 Western Joshua tree *(Yucca brevifolia)*



Photograph 1139. Tree #1139 Western Joshua tree *(Yucca brevifolia)*

Photograph 1140. Tree #1140 Western Joshua tree *(Yucca brevifolia)*

Photograph 1141. Tree #1141 Western Joshua tree *(Yucca brevifolia)*

Photograph 1142. Tree #1142 Western Joshua tree *(Yucca brevifolia)*

Photograph 1143. Tree #1143 Western Joshua tree *(Yucca brevifolia)*

Photograph 1144. Tree #1144 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1148. Tree #1148 Western Joshua tree *(Yucca brevifolia)*

Photograph 1149. Tree #1149 Western Joshua tree *(Yucca brevifolia)*

Photograph 1150. Tree #1150 Western Joshua tree *(Yucca brevifolia)*

Photograph 1151. Tree #1151 Western Joshua tree *(Yucca brevifolia)*

Photograph 1152. Tree #1152 Western Joshua tree *(Yucca brevifolia)*

Photograph 1153. Tree #1153 Western Joshua tree *(Yucca brevifolia)*

Photograph 1154. Tree #1154 Western Joshua tree *(Yucca brevifolia)*

Photograph 1155. Tree #1155 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1157. Tree #1157 Western Joshua tree *(Yucca brevifolia)*

Photograph 1158. Tree #1158 Western Joshua tree *(Yucca brevifolia)*

Photograph 1159. Tree #1159 Western Joshua tree *(Yucca brevifolia)*

Photograph 1160. Tree #1160 Western Joshua tree *(Yucca brevifolia)*

Photograph 1161. Tree #1161 Western Joshua tree *(Yucca brevifolia)*

Photograph 1162. Tree #1162 Western Joshua tree *(Yucca brevifolia)*

Photograph 1163. Tree #1163 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1165. Tree #1165 Western Joshua tree *(Yucca brevifolia)*

Photograph 1166. Tree #1166 Western Joshua tree *(Yucca brevifolia)*

Photograph 1167. Tree #1167 Western Joshua tree *(Yucca brevifolia)*

Photograph 1168. Tree #1168 Western Joshua tree *(Yucca brevifolia)*

Photograph 1169. Tree #1169 Western Joshua tree *(Yucca brevifolia)*

Photograph 1170. Tree #1170 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1174. Tree #1174 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1176. Tree #1176 Western Joshua tree *(Yucca brevifolia)*

Photograph 1177. Tree #1177 Western Joshua tree *(Yucca brevifolia)*

Photograph 1178. Tree #1178 Western Joshua tree *(Yucca brevifolia)*

Photograph 1179. Tree #1179 Western Joshua tree *(Yucca brevifolia)*

Photograph 1180. Tree #1180 Western Joshua tree *(Yucca brevifolia)*

Photograph 1181. Tree #1181 Western Joshua tree *(Yucca brevifolia)*

Photograph 1182. Tree #1182 Western Joshua tree *(Yucca brevifolia)*

Photograph 1183. Tree #1183 Western Joshua tree *(Yucca brevifolia)*

Photograph 1184. Tree #1184 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1186. Tree #1186 Western Joshua tree *(Yucca brevifolia)*

Photograph 1187. Tree #1187 Western Joshua tree *(Yucca brevifolia)*

Photograph 1188. Tree #1188 Western Joshua tree *(Yucca brevifolia)*

Photograph 1189. Tree #1189 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1199. Tree #1199 Western Joshua tree *(Yucca brevifolia)*

Photograph 1200. Tree #1200 Western Joshua tree *(Yucca brevifolia)*

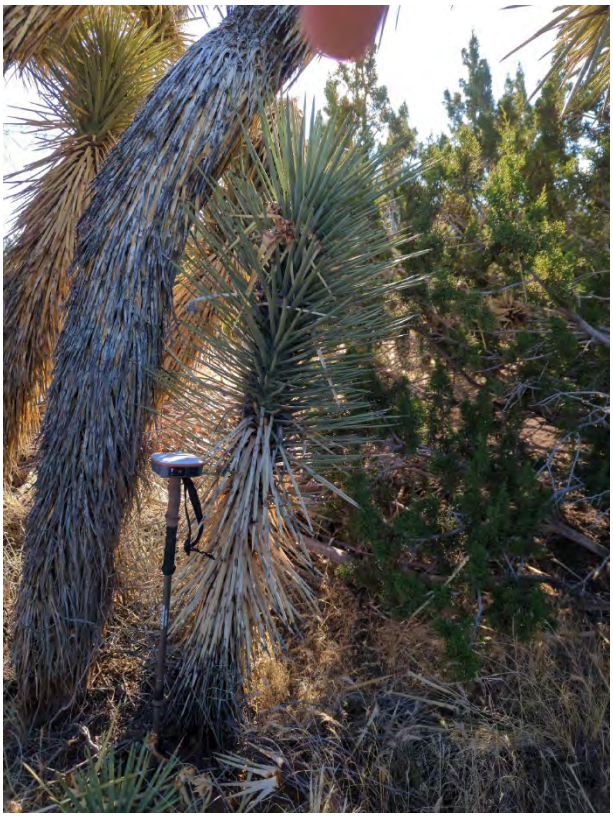
Photograph 1201. Tree #1201 Western Joshua tree *(Yucca brevifolia)*

Photograph 1202. Tree #1202 Western Joshua tree *(Yucca brevifolia)*

Photograph 1203. Tree #1203 Western Joshua tree *(Yucca brevifolia)*

Photograph 1204. Tree #1204 Western Joshua tree *(Yucca brevifolia)*

Photograph 1205. Tree #1205 Western Joshua tree *(Yucca brevifolia)*



Photograph 1206. Tree #1206 Western Joshua tree *(Yucca brevifolia)*

Photograph 1207. Tree #1207 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1209. Tree #1209 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1226. Tree #1226 Western Joshua tree *(Yucca brevifolia)*

Photograph 1227. Tree #1227 Western Joshua tree *(Yucca brevifolia)*

Photograph 1228. Tree #1228 Western Joshua tree *(Yucca brevifolia)*

Photograph 1229. Tree #1229 Western Joshua tree *(Yucca brevifolia)*

Photograph 1230. Tree #1230 Western Joshua tree *(Yucca brevifolia)*

Photograph 1231. Tree #1231 Western Joshua tree *(Yucca brevifolia)*

Photograph 1232. Tree #1232 Western Joshua tree *(Yucca brevifolia)*

Photograph 1233. Tree #1233 Western Joshua tree *(Yucca brevifolia)*

Photograph 1234. Tree #1234 Western Joshua tree *(Yucca brevifolia)*

Photograph 1235. Tree #1235 Western Joshua tree *(Yucca brevifolia)*

Photograph 1236. Tree #1236 Western Joshua tree *(Yucca brevifolia)*

Photograph 1237. Tree #1237 Western Joshua tree *(Yucca brevifolia)*

Photograph 1238. Tree #1238 Western Joshua tree *(Yucca brevifolia)*

Photograph 1239. Tree #1239 Western Joshua tree *(Yucca brevifolia)*

Photograph 1240. Tree #1240 Western Joshua tree *(Yucca brevifolia)*

Photograph 1241. Tree #1241 Western Joshua tree *(Yucca brevifolia)*

Photograph 1242. Tree #1242 Western Joshua tree *(Yucca brevifolia)*

Photograph 1243. Tree #1243 Western Joshua tree *(Yucca brevifolia)*

Photograph 1244. Tree #1244 Western Joshua tree *(Yucca brevifolia)*

Photograph 1245. Tree #1245 Western Joshua tree *(Yucca brevifolia)*

Photograph 1246. Tree #1246 Western Joshua tree *(Yucca brevifolia)*

Photograph 1247. Tree #1247 Western Joshua tree *(Yucca brevifolia)*

Photograph 1248. Tree #1248 Western Joshua tree *(Yucca brevifolia)*

Photograph 1249. Tree #1249 Western Joshua tree *(Yucca brevifolia)*

Photograph 1250. Tree #1250 Western Joshua tree *(Yucca brevifolia)*

Photograph 1251. Tree #1251 Western Joshua tree *(Yucca brevifolia)*

Photograph 1252. Tree #1252 Western Joshua tree *(Yucca brevifolia)*

Photograph 1253. Tree #1253 Western Joshua tree *(Yucca brevifolia)*

Photograph 1254. Tree #1254 Western Joshua tree *(Yucca brevifolia)*

Photograph 1255. Tree #1255 Western Joshua tree *(Yucca brevifolia)*

Photograph 1256. Tree #1256 Western Joshua tree *(Yucca brevifolia)*

Photograph 1257. Tree #1257 Western Joshua tree *(Yucca brevifolia)*

Photograph 1258. Tree #1258 Western Joshua tree *(Yucca brevifolia)*

Photograph 1259. Tree #1259 Western Joshua tree *(Yucca brevifolia)*

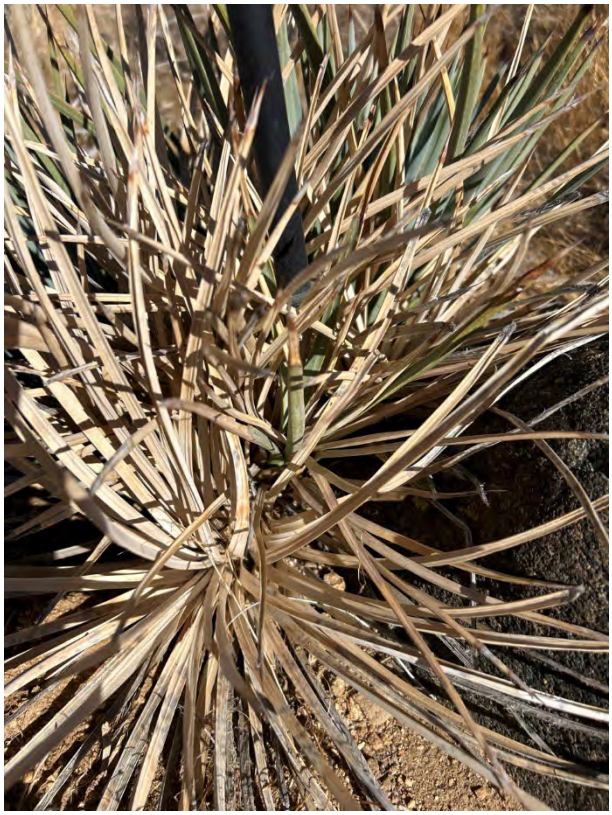
Photograph 1260. Tree #1260 Western Joshua tree *(Yucca brevifolia)*

Photograph 1261. Tree #1261 Western Joshua tree *(Yucca brevifolia)*

Photograph 1262. Tree #1262 Western Joshua tree *(Yucca brevifolia)*

Photograph 1263. Tree #1263 Western Joshua tree *(Yucca brevifolia)*

Photograph 1264. Tree #1264 Western Joshua tree *(Yucca brevifolia)*



Photograph 1265. Tree #1265 Western Joshua tree *(Yucca brevifolia)*

Photograph 1266. Tree #1266 Western Joshua tree *(Yucca brevifolia)*

Photograph 1267. Tree #1267 Western Joshua tree *(Yucca brevifolia)*

Photograph 1268. Tree #1268 Western Joshua tree *(Yucca brevifolia)*

Photograph 1269. Tree #1269 Western Joshua tree *(Yucca brevifolia)*

Photograph 1270. Tree #1270 Western Joshua tree *(Yucca brevifolia)*

Photograph 1271. Tree #1271 Western Joshua tree *(Yucca brevifolia)*

Photograph 1272. Tree #1272 Western Joshua tree *(Yucca brevifolia)*

Photograph 1273. Tree #1273 Western Joshua tree *(Yucca brevifolia)*

Photograph 1274. Tree #1274 Western Joshua tree *(Yucca brevifolia)*

Photograph 1275. Tree #1275 Western Joshua tree *(Yucca brevifolia)*

Photograph 1276. Tree #1276 Western Joshua tree *(Yucca brevifolia)*

Photograph 1277. Tree #1277 Western Joshua tree *(Yucca brevifolia)*

Photograph 1278. Tree #1278 Western Joshua tree *(Yucca brevifolia)*

Photograph 1279. Tree #1279 Western Joshua tree *(Yucca brevifolia)*

Photograph 1280. Tree #1280 Western Joshua tree *(Yucca brevifolia)*

Photograph 1281. Tree #1281 Western Joshua tree *(Yucca brevifolia)*

Photograph 1282. Tree #1282 Western Joshua tree *(Yucca brevifolia)*

Photograph 1283. Tree #1283 Western Joshua tree *(Yucca brevifolia)*

Photograph 1284. Tree #1284 Western Joshua tree *(Yucca brevifolia)*

Photograph 1285. Tree #1285 Western Joshua tree *(Yucca brevifolia)*

Photograph 1286. Tree #1286 Western Joshua tree *(Yucca brevifolia)*

Photograph 1287. Tree #1287 Western Joshua tree *(Yucca brevifolia)*

Photograph 1288. Tree #1288 Western Joshua tree *(Yucca brevifolia)*

Photograph 1289. Tree #1289 Western Joshua tree *(Yucca brevifolia)*

Photograph 1290. Tree #1290 Western Joshua tree *(Yucca brevifolia)*

Photograph 1291. Tree #1291 Western Joshua tree *(Yucca brevifolia)*

Photograph 1292. Tree #1292 Western Joshua tree *(Yucca brevifolia)*

Photograph 1293. Tree #1293 Western Joshua tree *(Yucca brevifolia)*

Photograph 1294. Tree #1294 Western Joshua tree *(Yucca brevifolia)*

Photograph 1295. Tree #1295 Western Joshua tree *(Yucca brevifolia)*

Photograph 1296. Tree #1296 Western Joshua tree *(Yucca brevifolia)*

Photograph 1297. Tree #1297 Western Joshua tree *(Yucca brevifolia)*

Photograph 1298. Tree #1298 Western Joshua tree *(Yucca brevifolia)*

Photograph 1299. Tree #1299 Western Joshua tree *(Yucca brevifolia)*

Photograph 1300. Tree #1300 Western Joshua tree *(Yucca brevifolia)*

Photograph 1301. Tree #1301 Western Joshua tree *(Yucca brevifolia)*

Photograph 1302. Tree #1302 Western Joshua tree *(Yucca brevifolia)*

Photograph 1303. Tree #1303 Western Joshua tree *(Yucca brevifolia)*

Photograph 1304. Tree #1304 Western Joshua tree *(Yucca brevifolia)*

Photograph 1305. Tree #1305 Western Joshua tree *(Yucca brevifolia)*

Photograph 1306. Tree #1306 Western Joshua tree *(Yucca brevifolia)*

Photograph 1307. Tree #1307 Western Joshua tree *(Yucca brevifolia)*

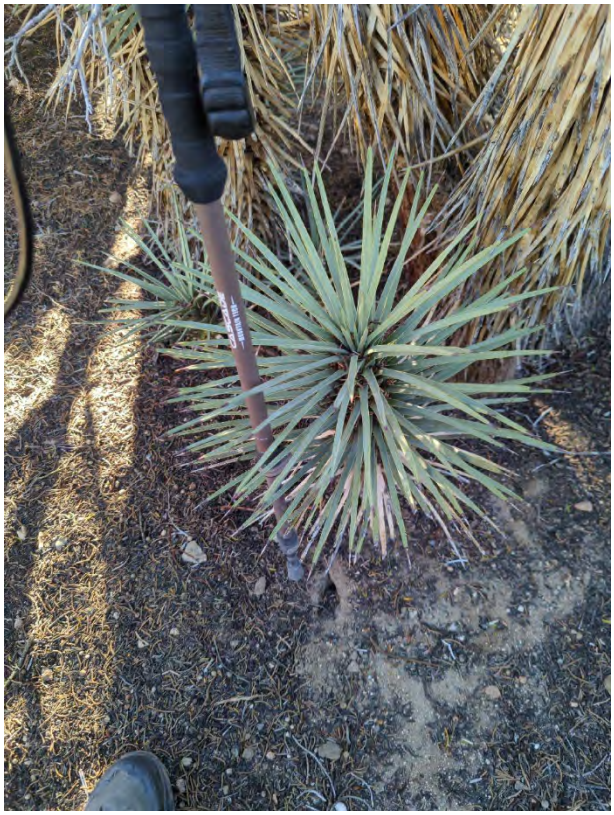
Photograph 1308. Tree #1308 Western Joshua tree *(Yucca brevifolia)*

Photograph 1309. Tree #1309 Western Joshua tree *(Yucca brevifolia)*

Photograph 1310. Tree #1310 Western Joshua tree *(Yucca brevifolia)*

Photograph 1311. Tree #1311 Western Joshua tree *(Yucca brevifolia)*

Photograph 1312. Tree #1312 Western Joshua tree *(Yucca brevifolia)*



Photograph 1313. Tree #1313 Western Joshua tree *(Yucca brevifolia)*

Photograph 1314. Tree #1314 Western Joshua tree *(Yucca brevifolia)*

Photograph 1315. Tree #1315 Western Joshua tree *(Yucca brevifolia)*

Photograph 1316. Tree #1316 Western Joshua tree *(Yucca brevifolia)*

Photograph 1317. Tree #1317 Western Joshua tree *(Yucca brevifolia)*

Photograph 1318. Tree #1318 Western Joshua tree *(Yucca brevifolia)*

Photograph 1319. Tree #1319 Western Joshua tree *(Yucca brevifolia)*

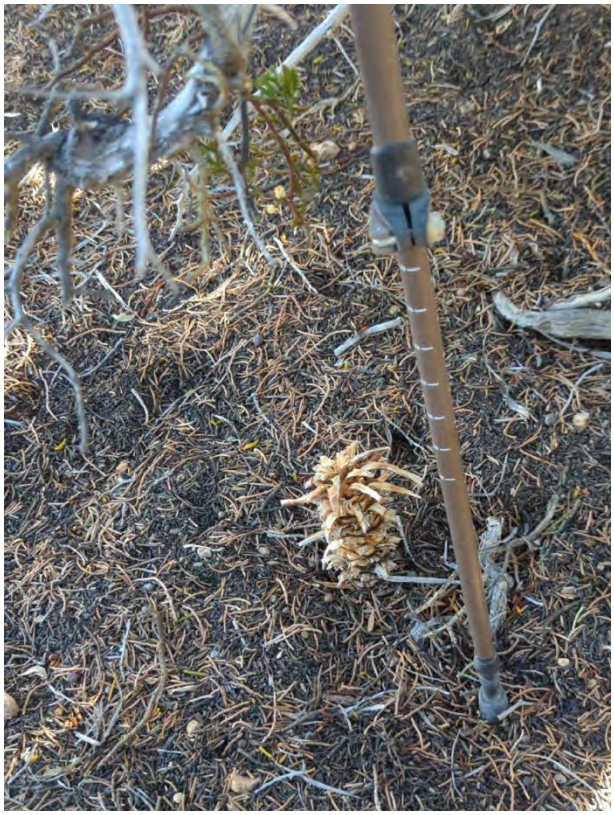
Photograph 1320. Tree #1320 Western Joshua tree *(Yucca brevifolia)*

Photograph 1321. Tree #1321 Western Joshua tree *(Yucca brevifolia)*

Photograph 1322. Tree #1322 Western Joshua tree *(Yucca brevifolia)*

Photograph 1323. Tree #1323 Western Joshua tree *(Yucca brevifolia)*

Photograph 1324. Tree #1324 Western Joshua tree *(Yucca brevifolia)*



Photograph 1325. Tree #1325 Western Joshua tree *(Yucca brevifolia)*

Photograph 1326. Tree #1326 Western Joshua tree *(Yucca brevifolia)*

Photograph 1327. Tree #1327 Western Joshua tree *(Yucca brevifolia)*

Photograph 1328. Tree #1328 Western Joshua tree *(Yucca brevifolia)*

Photograph 1329. Tree #1329 Western Joshua tree *(Yucca brevifolia)*

Photograph 1330. Tree #1330 Western Joshua tree *(Yucca brevifolia)*

Photograph 1331. Tree #1331 Western Joshua tree *(Yucca brevifolia)*

Photograph 1332. Tree #1332 Western Joshua tree *(Yucca brevifolia)*

Photograph 1333. Tree #1333 Western Joshua tree *(Yucca brevifolia)*

Photograph 1334. Tree #1334 Western Joshua tree *(Yucca brevifolia)*

Photograph 1335. Tree #1335 Western Joshua tree *(Yucca brevifolia)*

Photograph 1336. Tree #1336 Western Joshua tree *(Yucca brevifolia)*

Photograph 1337. Tree #1337 Western Joshua tree *(Yucca brevifolia)*

Photograph 1338. Tree #1338 Western Joshua tree *(Yucca brevifolia)*

Photograph 1339. Tree #1339 Western Joshua tree *(Yucca brevifolia)*

Photograph 1340. Tree #1340 Western Joshua tree *(Yucca brevifolia)*

Photograph 1341. Tree #1341 Western Joshua tree *(Yucca brevifolia)*

Photograph 1342. Tree #1342 Western Joshua tree *(Yucca brevifolia)*

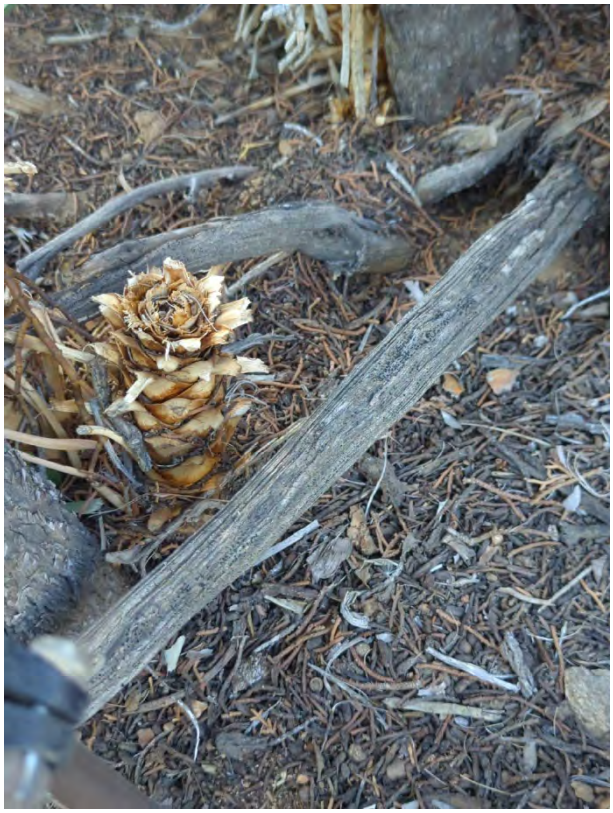
Photograph 1343. Tree #1343 Western Joshua tree *(Yucca brevifolia)*

Photograph 1344. Tree #1344 Western Joshua tree *(Yucca brevifolia)*

Photograph 1345. Tree #1345 Western Joshua tree *(Yucca brevifolia)*

Photograph 1346. Tree #1346 Western Joshua tree *(Yucca brevifolia)*

Photograph 1347. Tree #1347 Western Joshua tree *(Yucca brevifolia)*



Photograph 1348. Tree #1348 Western Joshua tree *(Yucca brevifolia)*

Photograph 1349. Tree #1349 Western Joshua tree *(Yucca brevifolia)*

Photograph 1350. Tree #1350 Western Joshua tree *(Yucca brevifolia)*

Photograph 1351. Tree #1351 Western Joshua tree *(Yucca brevifolia)*

Photograph 1352. Tree #1352 Western Joshua tree *(Yucca brevifolia)*

Photograph 1353. Tree #1353 Western Joshua tree *(Yucca brevifolia)*

Photograph 1354. Tree #1354 Western Joshua tree *(Yucca brevifolia)*

Photograph 1355. Tree #1355 Western Joshua tree *(Yucca brevifolia)*

Photograph 1356. Tree #1356 Western Joshua tree *(Yucca brevifolia)*

Photograph 1357. Tree #1357 Western Joshua tree *(Yucca brevifolia)*

Photograph 1358. Tree #1358 Western Joshua tree *(Yucca brevifolia)*

Photograph 1359. Tree #1359 Western Joshua tree *(Yucca brevifolia)*

Photograph 1360. Tree #1360 Western Joshua tree *(Yucca brevifolia)*

Photograph 1361. Tree #1361 Western Joshua tree *(Yucca brevifolia)*

Photograph 1362. Tree #1362 Western Joshua tree *(Yucca brevifolia)*

Photograph 1363. Tree #1363 Western Joshua tree *(Yucca brevifolia)*

Photograph 1364. Tree #1364 Western Joshua tree *(Yucca brevifolia)*

Photograph 1365. Tree #1365 Western Joshua tree *(Yucca brevifolia)*

Photograph 1366. Tree #1366 Western Joshua tree *(Yucca brevifolia)*

Photograph 1367. Tree #1367 Western Joshua tree *(Yucca brevifolia)*

Photograph 1368. Tree #1368 Western Joshua tree *(Yucca brevifolia)*

Photograph 1369. Tree #1369 Western Joshua tree *(Yucca brevifolia)*

Photograph 1370. Tree #1370 Western Joshua tree *(Yucca brevifolia)*

Photograph 1371. Tree #1371 Western Joshua tree *(Yucca brevifolia)*

Photograph 1372. Tree #1372 Western Joshua tree *(Yucca brevifolia)*

Photograph 1373. Tree #1373 Western Joshua tree *(Yucca brevifolia)*

Photograph 1374. Tree #1374 Western Joshua tree *(Yucca brevifolia)*

Photograph 1375. Tree #1375 Western Joshua tree *(Yucca brevifolia)*

Photograph 1376. Tree #1376 Western Joshua tree *(Yucca brevifolia)*

Photograph 1377. Tree #1377 Western Joshua tree *(Yucca brevifolia)*

Photograph 1378. Tree #1378 Western Joshua tree *(Yucca brevifolia)*

Photograph 1379. Tree #1379 Western Joshua tree *(Yucca brevifolia)*

Photograph 1380. Tree #1380 Western Joshua tree *(Yucca brevifolia)*

Photograph 1381. Tree #1381 Western Joshua tree *(Yucca brevifolia)*

Photograph 1382. Tree #1382 Western Joshua tree *(Yucca brevifolia)*

Photograph 1383. Tree #1383 Western Joshua tree *(Yucca brevifolia)*

Photograph 1384. Tree #1384 Western Joshua tree *(Yucca brevifolia)*

Photograph 1385. Tree #1385 Western Joshua tree *(Yucca brevifolia)*

Photograph 1386. Tree #1386 Western Joshua tree *(Yucca brevifolia)*

Photograph 1387. Tree #1387 Western Joshua tree *(Yucca brevifolia)*

Photograph 1388. Tree #1388 Western Joshua tree *(Yucca brevifolia)*

Photograph 1389. Tree #1389 Western Joshua tree *(Yucca brevifolia)*

Photograph 1390. Tree #1390 Western Joshua tree *(Yucca brevifolia)*

Photograph 1391. Tree #1391 Western Joshua tree *(Yucca brevifolia)*

Photograph 1392. Tree #1392 Western Joshua tree *(Yucca brevifolia)*

Photograph 1393. Tree #1393 Western Joshua tree *(Yucca brevifolia)*

Photograph 1394. Tree #1394 Western Joshua tree *(Yucca brevifolia)*

Photograph 1395. Tree #1395 Western Joshua tree *(Yucca brevifolia)*

Photograph 1396. Tree #1396 Western Joshua tree *(Yucca brevifolia)*

Photograph 1397. Tree #1397 Western Joshua tree *(Yucca brevifolia)*

Photograph 1398. Tree #1398 Western Joshua tree *(Yucca brevifolia)*

Photograph 1399. Tree #1399 Western Joshua tree *(Yucca brevifolia)*

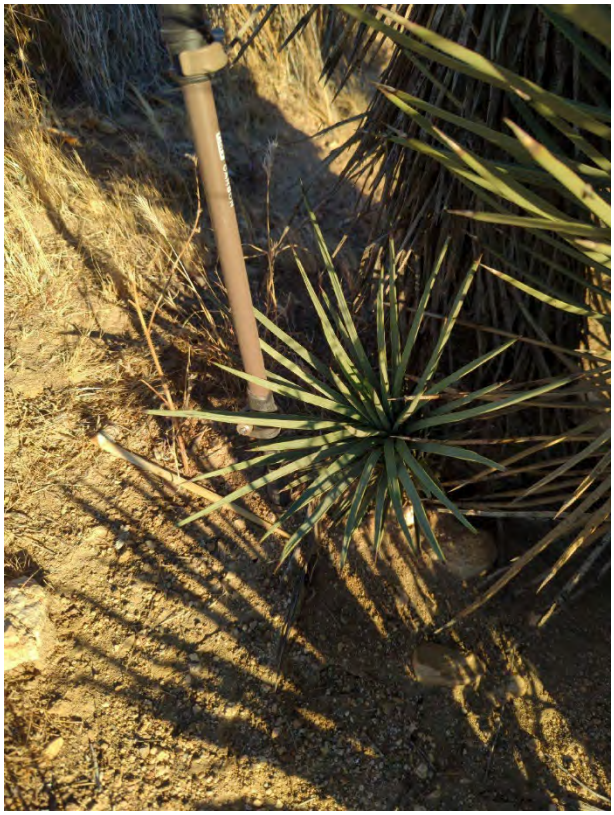
Photograph 1400. Tree #1400 Western Joshua tree *(Yucca brevifolia)*

Photograph 1401. Tree #1401 Western Joshua tree *(Yucca brevifolia)*

Photograph 1402. Tree #1402 Western Joshua tree *(Yucca brevifolia)*

Photograph 1403. Tree #1403 Western Joshua tree *(Yucca brevifolia)*

Photograph 1404. Tree #1404 Western Joshua tree *(Yucca brevifolia)*



Photograph 1405. Tree #1405 Western Joshua tree *(Yucca brevifolia)*

Photograph 1406. Tree #1406 Western Joshua tree *(Yucca brevifolia)*

Photograph 1407. Tree #1407 Western Joshua tree *(Yucca brevifolia)*

Photograph 1408. Tree #1408 Western Joshua tree *(Yucca brevifolia)*

Photograph 1409. Tree #1409 Western Joshua tree *(Yucca brevifolia)*

Photograph 1410. Tree #1410 Western Joshua tree *(Yucca brevifolia)*

Photograph 1411. Tree #1411 Western Joshua tree *(Yucca brevifolia)*

Photograph 1412. Tree #1412 Western Joshua tree *(Yucca brevifolia)*

Photograph 1413. Tree #1413 Western Joshua tree *(Yucca brevifolia)*

Photograph 1414. Tree #1414 Western Joshua tree *(Yucca brevifolia)*

Photograph 1415. Tree #1415 Western Joshua tree *(Yucca brevifolia)*

Photograph 1416. Tree #1416 Western Joshua tree *(Yucca brevifolia)*

Photograph 1417. Tree #1417 Western Joshua tree *(Yucca brevifolia)*

Photograph 1418. Tree #1418 Western Joshua tree *(Yucca brevifolia)*

Photograph 1419. Tree #1419 Western Joshua tree *(Yucca brevifolia)*

Photograph 1420. Tree #1420 Western Joshua tree *(Yucca brevifolia)*

Photograph 1421. Tree #1421 Western Joshua tree *(Yucca brevifolia)*

Photograph 1422. Tree #1422 Western Joshua tree *(Yucca brevifolia)*

Photograph 1423. Tree #1423 Western Joshua tree *(Yucca brevifolia)*

Photograph 1424. Tree #1424 Western Joshua tree *(Yucca brevifolia)*

Photograph 1425. Tree #1425 Western Joshua tree *(Yucca brevifolia)*

Photograph 1426. Tree #1426 Western Joshua tree *(Yucca brevifolia)*

Photograph 1427. Tree #1427 Western Joshua tree *(Yucca brevifolia)*

Photograph 1428. Tree #1428 Western Joshua tree *(Yucca brevifolia)*

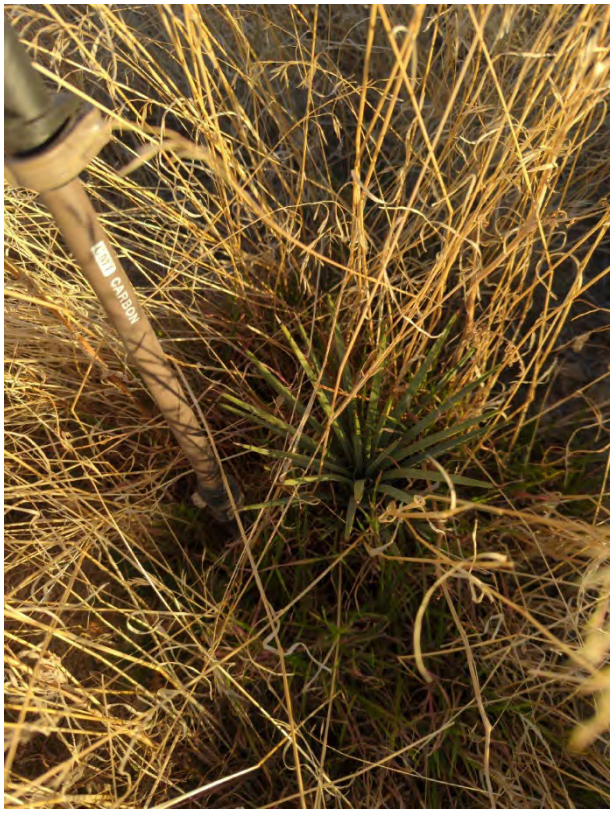
Photograph 1429. Tree #1429 Western Joshua tree *(Yucca brevifolia)*

Photograph 1430. Tree #1430 Western Joshua tree *(Yucca brevifolia)*

Photograph 1431. Tree #1431 Western Joshua tree *(Yucca brevifolia)*

Photograph 1432. Tree #1432 Western Joshua tree *(Yucca brevifolia)*

Photograph 1433. Tree #1433 Western Joshua tree *(Yucca brevifolia)*



Photograph 1434. Tree #1434 Western Joshua tree *(Yucca brevifolia)*

Photograph 1435. Tree #1435 Western Joshua tree *(Yucca brevifolia)*

Photograph 1436. Tree #1436 Western Joshua tree *(Yucca brevifolia)*

Photograph 1437. Tree #1437 Western Joshua tree *(Yucca brevifolia)*

Photograph 1438. Tree #1438 Western Joshua tree *(Yucca brevifolia)*

Photograph 1439. Tree #1439 Western Joshua tree *(Yucca brevifolia)*

Photograph 1440. Tree #1440 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1445. Tree #1445 Western Joshua tree *(Yucca brevifolia)*

Photograph 1446. Tree #1446 Western Joshua tree *(Yucca brevifolia)*

Photograph 1447. Tree #1447 Western Joshua tree *(Yucca brevifolia)*

Photograph 1448. Tree #1448 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1450. Tree #1450 Western Joshua tree *(Yucca brevifolia)*

Photograph 1451. Tree #1451 Western Joshua tree *(Yucca brevifolia)*

Photograph 1452. Tree #1452 Western Joshua tree *(Yucca brevifolia)*

Photograph 1453. Tree #1453 Western Joshua tree *(Yucca brevifolia)*

Photograph 1454. Tree #1454 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1456. Tree #1456 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1465. Tree #1465 Western Joshua tree *(Yucca brevifolia)*

Photograph 1466. Tree #1466 Western Joshua tree *(Yucca brevifolia)*

Photograph 1467. Tree #1467 Western Joshua tree *(Yucca brevifolia)*

Photograph 1468. Tree #1468 Western Joshua tree *(Yucca brevifolia)*

Photograph 1469. Tree #1469 Western Joshua tree *(Yucca brevifolia)*

Photograph 1470. Tree #1470 Western Joshua tree *(Yucca brevifolia)*

Photograph 1471. Tree #1471 Western Joshua tree *(Yucca brevifolia)*

Photograph 1472. Tree #1472 Western Joshua tree *(Yucca brevifolia)*

Photograph 1473. Tree #1473 Western Joshua tree *(Yucca brevifolia)*

Photograph 1474. Tree #1474 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1493. Tree #1493 Western Joshua tree *(Yucca brevifolia)*

Photograph 1494. Tree #1494 Western Joshua tree *(Yucca brevifolia)*

Photograph 1495. Tree #1495 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1497. Tree #1497 Western Joshua tree *(Yucca brevifolia)*

Photograph 1498. Tree #1498 Western Joshua tree *(Yucca brevifolia)*

Photograph 1499. Tree #1499 Western Joshua tree *(Yucca brevifolia)*

Photograph 1500. Tree #1500 Western Joshua tree *(Yucca brevifolia)*

Photograph 1501. Tree #1501 Western Joshua tree *(Yucca brevifolia)*

Photograph 1502. Tree #1502 Western Joshua tree *(Yucca brevifolia)*

Photograph 1503. Tree #1503 Western Joshua tree *(Yucca brevifolia)*

Photograph 1504. Tree #1504 Western Joshua tree *(Yucca brevifolia)*

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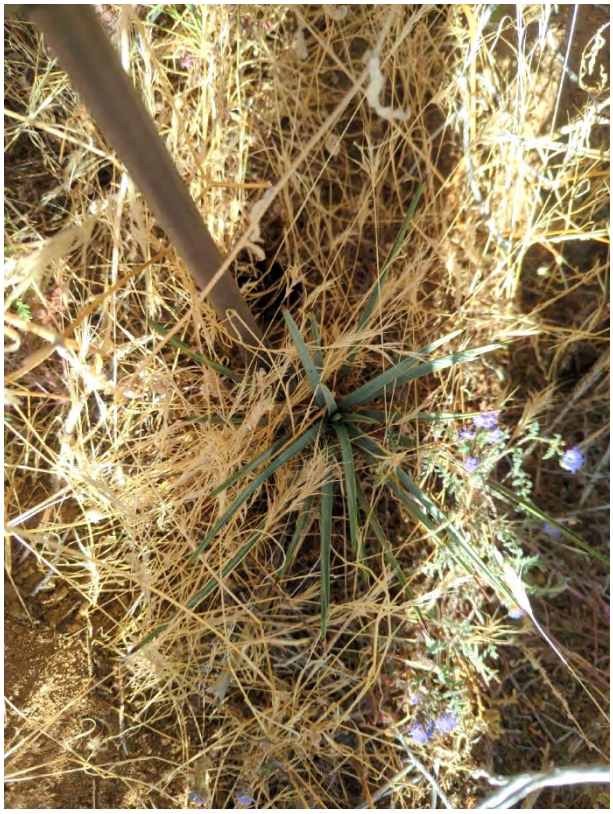
Photograph 1507. Tree #1507 Western Joshua tree *(Yucca brevifolia)*

Photograph 1508. Tree #1508 Western Joshua tree *(Yucca brevifolia)*

Photograph 1509. Tree #1509 Western Joshua tree *(Yucca brevifolia)*



Photograph 1510. Tree #1510 Western Joshua tree *(Yucca brevifolia)*

Photograph 1511. Tree #1511 Western Joshua tree *(Yucca brevifolia)*

Photograph 1512. Tree #1512 Western Joshua tree *(Yucca brevifolia)*

Photograph 1513. Tree #1513 Western Joshua tree *(Yucca brevifolia)*

Photograph 1514. Tree #1514 Western Joshua tree *(Yucca brevifolia)*

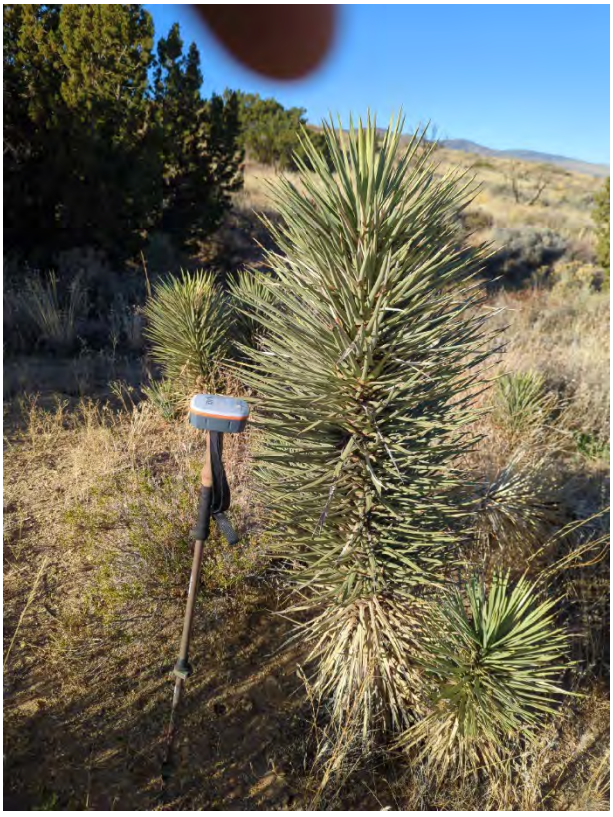
Photograph 1515. Tree #1515 Western Joshua tree *(Yucca brevifolia)*

Photograph 1516. Tree #1516 Western Joshua tree *(Yucca brevifolia)*

Photograph 1517. Tree #1517 Western Joshua tree *(Yucca brevifolia)*

Photograph 1518. Tree #1518 Western Joshua tree *(Yucca brevifolia)*

Photograph 1519. Tree #1519 Western Joshua tree *(Yucca brevifolia)*



Photograph 1520. Tree #1520 Western Joshua tree *(Yucca brevifolia)*

Photograph 1521. Tree #1521 Western Joshua tree *(Yucca brevifolia)*

Photograph 1522. Tree #1522 Western Joshua tree *(Yucca brevifolia)*

Photograph 1523. Tree #1523 Western Joshua tree *(Yucca brevifolia)*

Photograph 1524. Tree #1524 Western Joshua tree *(Yucca brevifolia)*

Photograph 1525. Tree #1525 Western Joshua tree *(Yucca brevifolia)*

Photograph 1526. Tree #1526 Western Joshua tree *(Yucca brevifolia)*

Photograph 1527. Tree #1527 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1536. Tree #1536 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1600. Tree #1600 Western Joshua tree *(Yucca brevifolia)*

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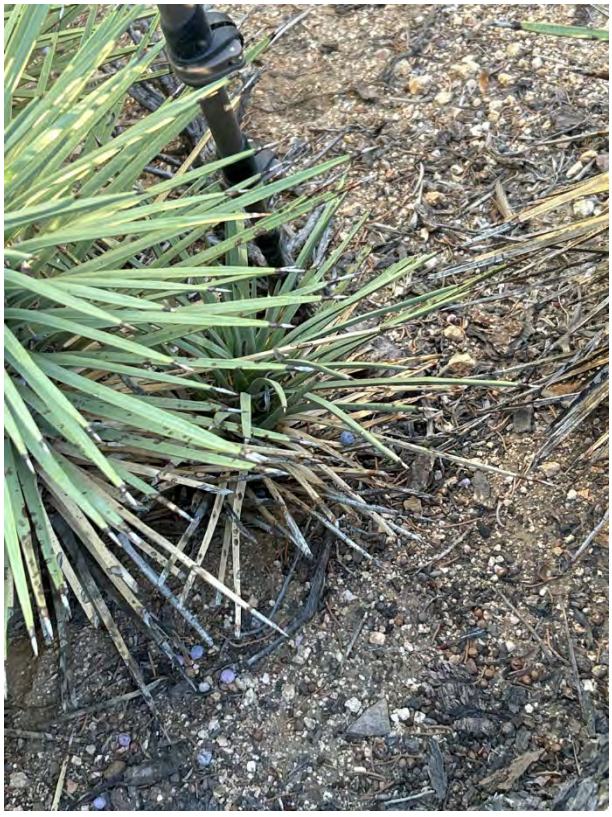

Photograph 1796. Tree #1796 Western Joshua tree *(Yucca brevifolia)*

Photograph 1797. Tree #1797 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1799. Tree #1799 Western Joshua tree *(Yucca brevifolia)*

Photograph 1800. Tree #1800 Western Joshua tree *(Yucca brevifolia)*

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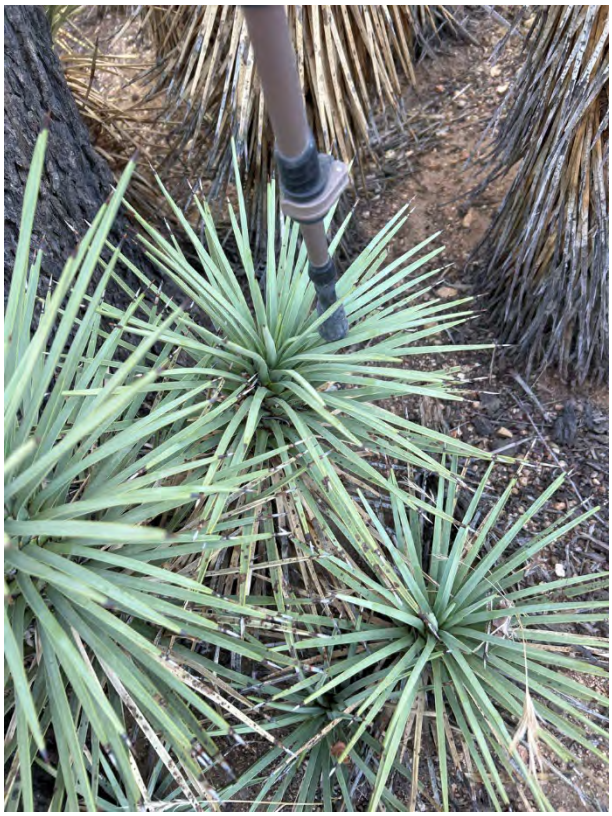

Photograph 1805. Tree #1805 Western Joshua tree *(Yucca brevifolia)*

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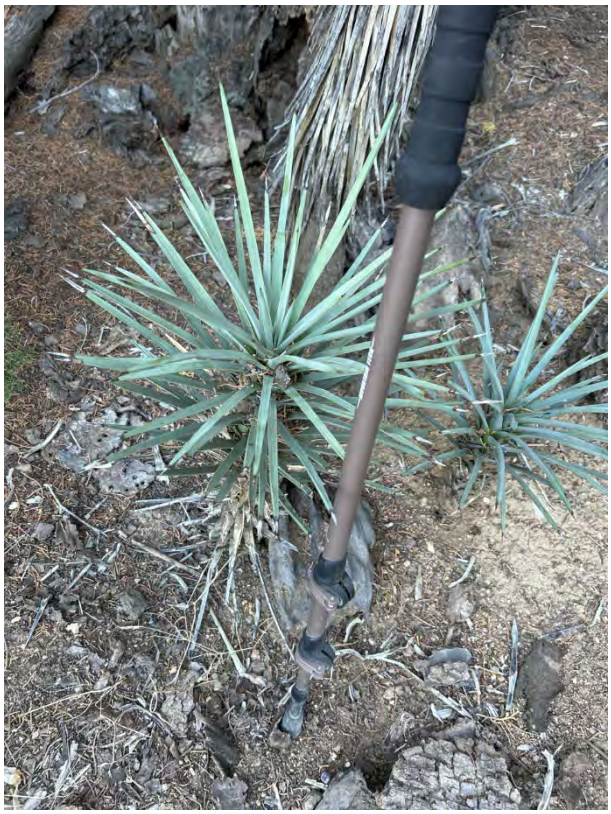

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Photograph 1861. Tree #1861 Western Joshua tree *(Yucca brevifolia)*

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Photograph 1898. Tree #1898 Western Joshua tree *(Yucca brevifolia)*

Photograph 1899. Tree #1899 Western Joshua tree *(Yucca brevifolia)*

Photograph 1900. Tree #1900 Western Joshua tree *(Yucca brevifolia)*

Photograph 1901. Tree #1901 Western Joshua tree *(Yucca brevifolia)*

Photograph 1902. Tree #1902 Western Joshua tree *(Yucca brevifolia)*

Photograph 1903. Tree #1903 Western Joshua tree *(Yucca brevifolia)*

Photograph 1904. Tree #1904 Western Joshua tree *(Yucca brevifolia)*

Photograph 1905. Tree #1905 Western Joshua tree *(Yucca brevifolia)*

Photograph 1906. Tree #1906 Western Joshua tree *(Yucca brevifolia)*

Photograph 1907. Tree #1907 Western Joshua tree *(Yucca brevifolia)*

Photograph 1908. Tree #1908 Western Joshua tree *(Yucca brevifolia)*

Photograph 1909. Tree #1909 Western Joshua tree *(Yucca brevifolia)*

Photograph 1910. Tree #1910 Western Joshua tree *(Yucca brevifolia)*

Photograph 1911. Tree #1911 Western Joshua tree *(Yucca brevifolia)*

Photograph 1912. Tree #1912 Western Joshua tree *(Yucca brevifolia)*

Photograph 1913. Tree #1913 Western Joshua tree *(Yucca brevifolia)*

Photograph 1914. Tree #1914 Western Joshua tree *(Yucca brevifolia)*

Photograph 1915. Tree #1915 Western Joshua tree *(Yucca brevifolia)*

Photograph 1916. Tree #1916 Western Joshua tree *(Yucca brevifolia)*

Photograph 1917. Tree #1917 Western Joshua tree *(Yucca brevifolia)*

Photograph 1918. Tree #1918 Western Joshua tree *(Yucca brevifolia)*

Photograph 1919. Tree #1919 Western Joshua tree *(Yucca brevifolia)*

Photograph 1920. Tree #1920 Western Joshua tree *(Yucca brevifolia)*

Photograph 1921. Tree #1921 Western Joshua tree *(Yucca brevifolia)*

Photograph 1922. Tree #1922 Western Joshua tree *(Yucca brevifolia)*

Photograph 1923. Tree #1923 Western Joshua tree *(Yucca brevifolia)*

Photograph 1924. Tree #1924 Western Joshua tree *(Yucca brevifolia)*

Photograph 1925. Tree #1925 Western Joshua tree *(Yucca brevifolia)*

Photograph 1926. Tree #1926 Western Joshua tree *(Yucca brevifolia)*

Photograph 1927. Tree #1927 Western Joshua tree *(Yucca brevifolia)*

Photograph 1928. Tree #1928 Western Joshua tree *(Yucca brevifolia)*

Photograph 1929. Tree #1929 Western Joshua tree *(Yucca brevifolia)*

Photograph 1930. Tree #1930 Western Joshua tree *(Yucca brevifolia)*

Photograph 1931. Tree #1931 Western Joshua tree *(Yucca brevifolia)*

Photograph 1932. Tree #1932 Western Joshua tree *(Yucca brevifolia)*

Photograph 1933. Tree #1933 Western Joshua tree *(Yucca brevifolia)*

Photograph 1934. Tree #1934 Western Joshua tree *(Yucca brevifolia)*

Photograph 1935. Tree #1935 Western Joshua tree *(Yucca brevifolia)*

Photograph 1936. Tree #1936 Western Joshua tree *(Yucca brevifolia)*

Photograph 1937. Tree #1937 Western Joshua tree *(Yucca brevifolia)*

Photograph 1938. Tree #1938 Western Joshua tree *(Yucca brevifolia)*

Photograph 1939. Tree #1939 Western Joshua tree *(Yucca brevifolia)*

Photograph 1940. Tree #1940 Western Joshua tree *(Yucca brevifolia)*

Photograph 1941. Tree #1941 Western Joshua tree *(Yucca brevifolia)*

Photograph 1942. Tree #1942 Western Joshua tree *(Yucca brevifolia)*

Photograph 1943. Tree #1943 Western Joshua tree *(Yucca brevifolia)*

Photograph 1944. Tree #1944 Western Joshua tree *(Yucca brevifolia)*

Photograph 1945. Tree #1945 Western Joshua tree *(Yucca brevifolia)*

Photograph 1946. Tree #1946 Western Joshua tree *(Yucca brevifolia)*

Photograph 1947. Tree #1947 Western Joshua tree *(Yucca brevifolia)*

Photograph 1948. Tree #1948 Western Joshua tree *(Yucca brevifolia)*

Photograph 1949. Tree #1949 Western Joshua tree *(Yucca brevifolia)*

Photograph 1950. Tree #1950 Western Joshua tree *(Yucca brevifolia)*

Photograph 1951. Tree #1951 Western Joshua tree *(Yucca brevifolia)*

Photograph 1952. Tree #1952 Western Joshua tree *(Yucca brevifolia)*

Photograph 1953. Tree #1953 Western Joshua tree *(Yucca brevifolia)*

Photograph 1954. Tree #1954 Western Joshua tree *(Yucca brevifolia)*

Photograph 1955. Tree #1955 Western Joshua tree *(Yucca brevifolia)*

Photograph 1956. Tree #1956 Western Joshua tree *(Yucca brevifolia)*

Photograph 1957. Tree #1957 Western Joshua tree *(Yucca brevifolia)*

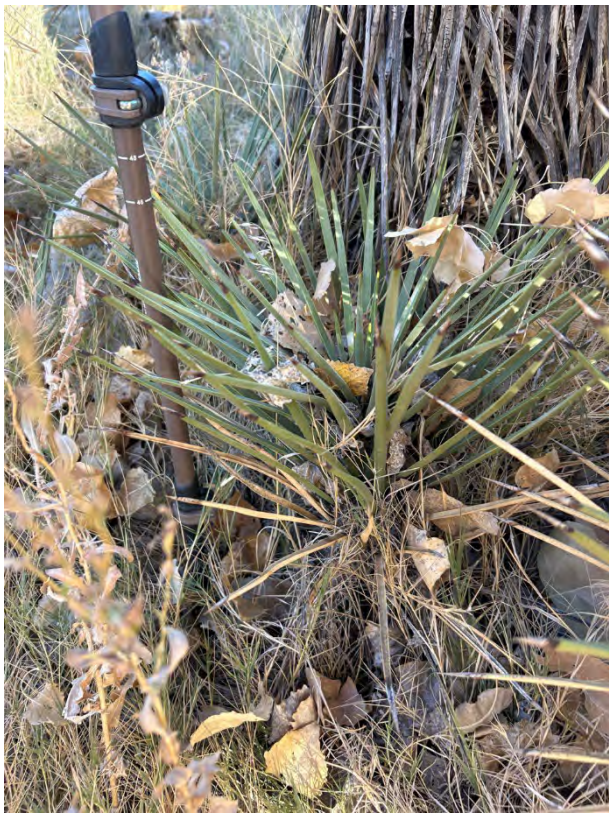
Photograph 1958. Tree #1958 Western Joshua tree *(Yucca brevifolia)*

Photograph 1959. Tree #1959 Western Joshua tree *(Yucca brevifolia)*

Photograph 1960. Tree #1960 Western Joshua tree *(Yucca brevifolia)*

Photograph 1961. Tree #1961 Western Joshua tree *(Yucca brevifolia)*

Photograph 1962. Tree #1962 Western Joshua tree *(Yucca brevifolia)*



Photograph 1963. Tree #1963 Western Joshua tree *(Yucca brevifolia)*

Photograph 1964. Tree #1964 Western Joshua tree *(Yucca brevifolia)*

Photograph 1965. Tree #1965 Western Joshua tree *(Yucca brevifolia)*

Photograph 1966. Tree #1966 Western Joshua tree *(Yucca brevifolia)*

Photograph 1967. Tree #1967 Western Joshua tree *(Yucca brevifolia)*

Photograph 1968. Tree #1968 Western Joshua tree *(Yucca brevifolia)*

Photograph 1969. Tree #1969 Western Joshua tree *(Yucca brevifolia)*

Photograph 1970. Tree #1970 Western Joshua tree *(Yucca brevifolia)*

Photograph 1971. Tree #1971 Western Joshua tree *(Yucca brevifolia)*

Photograph 1972. Tree #1972 Western Joshua tree *(Yucca brevifolia)*

Photograph 1973. Tree #1973 Western Joshua tree *(Yucca brevifolia)*

Photograph 1974. Tree #1974 Western Joshua tree *(Yucca brevifolia)*

Photograph 1975. Tree #1975 Western Joshua tree *(Yucca brevifolia)*

Photograph 1976. Tree #1976 Western Joshua tree *(Yucca brevifolia)*

Photograph 1977. Tree #1977 Western Joshua tree *(Yucca brevifolia)*

Photograph 1978. Tree #1978 Western Joshua tree *(Yucca brevifolia)*

Photograph 1979. Tree #1979 Western Joshua tree *(Yucca brevifolia)*

Photograph 1980. Tree #1980 Western Joshua tree *(Yucca brevifolia)*

Photograph 1981. Tree #1981 Western Joshua tree *(Yucca brevifolia)*

Photograph 1982. Tree #1982 Western Joshua tree *(Yucca brevifolia)*

Photograph 1983. Tree #1983 Western Joshua tree *(Yucca brevifolia)*

Photograph 1984. Tree #1984 Western Joshua tree *(Yucca brevifolia)*

Photograph 1985. Tree #1985 Western Joshua tree *(Yucca brevifolia)*

Photograph 1986. Tree #1986 Western Joshua tree *(Yucca brevifolia)*

Photograph 1987. Tree #1987 Western Joshua tree *(Yucca brevifolia)*

Photograph 1988. Tree #1988 Western Joshua tree *(Yucca brevifolia)*

Photograph 1989. Tree #1989 Western Joshua tree *(Yucca brevifolia)*

Photograph 1990. Tree #1990 Western Joshua tree *(Yucca brevifolia)*

Photograph 1991. Tree #1991 Western Joshua tree *(Yucca brevifolia)*

Photograph 1992. Tree #1992 Western Joshua tree *(Yucca brevifolia)*

Photograph 1993. Tree #1993 Western Joshua tree *(Yucca brevifolia)*

Photograph 1994. Tree #1994 Western Joshua tree *(Yucca brevifolia)*

Photograph 1995. Tree #1995 Western Joshua tree *(Yucca brevifolia)*

Photograph 1996. Tree #1996 Western Joshua tree *(Yucca brevifolia)*

Photograph 1997. Tree #1997 Western Joshua tree *(Yucca brevifolia)*

Photograph 1998. Tree #1998 Western Joshua tree *(Yucca brevifolia)*

Photograph 1999. Tree #1999 Western Joshua tree *(Yucca brevifolia)*

Photograph 2000. Tree #2000 Western Joshua tree *(Yucca brevifolia)*

Photograph 2001. Tree #2001 Western Joshua tree *(Yucca brevifolia)*

Photograph 2002. Tree #2002 Western Joshua tree *(Yucca brevifolia)*

Photograph 2003. Tree #2003 Western Joshua tree *(Yucca brevifolia)*

Photograph 2004. Tree #2004 Western Joshua tree *(Yucca brevifolia)*

Photograph 2005. Tree #2005 Western Joshua tree *(Yucca brevifolia)*

Photograph 2006. Tree #2006 Western Joshua tree *(Yucca brevifolia)*

Photograph 2007. Tree #2007 Western Joshua tree *(Yucca brevifolia)*

Photograph 2008. Tree #2008 Western Joshua tree *(Yucca brevifolia)*

Photograph 2009. Tree #2009 Western Joshua tree *(Yucca brevifolia)*

Photograph 2010. Tree #2010 Western Joshua tree *(Yucca brevifolia)*

Photograph 2011. Tree #2011 Western Joshua tree *(Yucca brevifolia)*

Photograph 2012. Tree #2012 Western Joshua tree *(Yucca brevifolia)*

Photograph 2013. Tree #2013 Western Joshua tree *(Yucca brevifolia)*

Photograph 2014. Tree #2014 Western Joshua tree *(Yucca brevifolia)*

Photograph 2015. Tree #2015 Western Joshua tree *(Yucca brevifolia)*

Photograph 2016. Tree #2016 Western Joshua tree *(Yucca brevifolia)*

Photograph 2017. Tree #2017 Western Joshua tree *(Yucca brevifolia)*

Photograph 2018. Tree #2018 Western Joshua tree *(Yucca brevifolia)*

Photograph 2019. Tree #2019 Western Joshua tree *(Yucca brevifolia)*

Photograph 2020. Tree #2020 Western Joshua tree *(Yucca brevifolia)*

Photograph 2021. Tree #2021 Western Joshua tree *(Yucca brevifolia)*

Photograph 2022. Tree #2022 Western Joshua tree *(Yucca brevifolia)*

Photograph 2023. Tree #2023 Western Joshua tree *(Yucca brevifolia)*

Photograph 2024. Tree #2024 Western Joshua tree *(Yucca brevifolia)*

Photograph 2025. Tree #2025 Western Joshua tree *(Yucca brevifolia)*

Photograph 2026. Tree #2026 Western Joshua tree *(Yucca brevifolia)*

Photograph 2027. Tree #2027 Western Joshua tree *(Yucca brevifolia)*

Photograph 2028. Tree #2028 Western Joshua tree *(Yucca brevifolia)*

Photograph 2029. Tree #2029 Western Joshua tree *(Yucca brevifolia)*

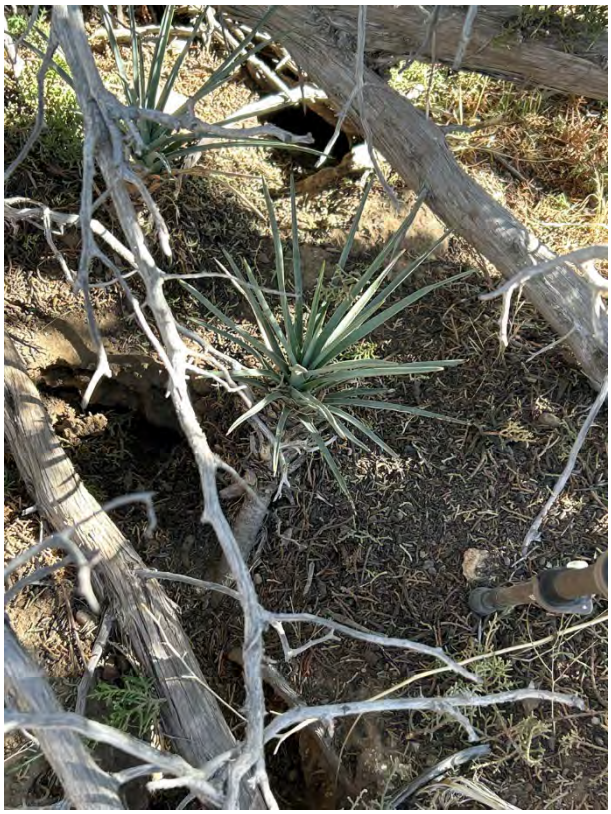
Photograph 2030. Tree #2030 Western Joshua tree *(Yucca brevifolia)*

Photograph 2031. Tree #2031 Western Joshua tree *(Yucca brevifolia)*

Photograph 2032. Tree #2032 Western Joshua tree *(Yucca brevifolia)*

Photograph 2033. Tree #2033 Western Joshua tree *(Yucca brevifolia)*

Photograph 2034. Tree #2034 Western Joshua tree *(Yucca brevifolia)*



Photograph 2035. Tree #2035 Western Joshua tree *(Yucca brevifolia)*

Photograph 2036. Tree #2036 Western Joshua tree *(Yucca brevifolia)*

Photograph 2037. Tree #2037 Western Joshua tree *(Yucca brevifolia)*

Photograph 2038. Tree #2038 Western Joshua tree *(Yucca brevifolia)*

Photograph 2039. Tree #2039 Western Joshua tree *(Yucca brevifolia)*

Photograph 2040. Tree #2040 Western Joshua tree *(Yucca brevifolia)*

Photograph 2041. Tree #2041 Western Joshua tree *(Yucca brevifolia)*

Photograph 2042. Tree #2042 Western Joshua tree *(Yucca brevifolia)*

Photograph 2043. Tree #2043 Western Joshua tree *(Yucca brevifolia)*

Photograph 2044. Tree #2044 Western Joshua tree *(Yucca brevifolia)*

Photograph 2045. Tree #2045 Western Joshua tree *(Yucca brevifolia)*

Photograph 2046. Tree #2046 Western Joshua tree *(Yucca brevifolia)*

Photograph 2047. Tree #2047 Western Joshua tree *(Yucca brevifolia)*

Photograph 2048. Tree #2048 Western Joshua tree *(Yucca brevifolia)*

Photograph 2049. Tree #2049 Western Joshua tree *(Yucca brevifolia)*

Photograph 2050. Tree #2050 Western Joshua tree *(Yucca brevifolia)*

Photograph 2051. Tree #2051 Western Joshua tree *(Yucca brevifolia)*

Photograph 2052. Tree #2052 Western Joshua tree *(Yucca brevifolia)*

Photograph 2053. Tree #2053 Western Joshua tree *(Yucca brevifolia)*

Photograph 2054. Tree #2054 Western Joshua tree *(Yucca brevifolia)*

Photograph 2055. Tree #2055 Western Joshua tree *(Yucca brevifolia)*

Photograph 2056. Tree #2056 Western Joshua tree *(Yucca brevifolia)*

Photograph 2057. Tree #2057 Western Joshua tree *(Yucca brevifolia)*

Photograph 2058. Tree #2058 Western Joshua tree *(Yucca brevifolia)*

Photograph 2059. Tree #2059 Western Joshua tree *(Yucca brevifolia)*

Photograph 2060. Tree #2060 Western Joshua tree *(Yucca brevifolia)*

Photograph 2061. Tree #2061 Western Joshua tree *(Yucca brevifolia)*

Photograph 2062. Tree #2062 Western Joshua tree *(Yucca brevifolia)*

Photograph 2063. Tree #2063 Western Joshua tree *(Yucca brevifolia)*

Photograph 2064. Tree #2064 Western Joshua tree *(Yucca brevifolia)*

Photograph 2065. Tree #2065 Western Joshua tree *(Yucca brevifolia)*

Photograph 2066. Tree #2066 Western Joshua tree *(Yucca brevifolia)*

Photograph 2067. Tree #2067 Western Joshua tree *(Yucca brevifolia)*

Photograph 2068. Tree #2068 Western Joshua tree *(Yucca brevifolia)*

Photograph 2069. Tree #2069 Western Joshua tree *(Yucca brevifolia)*

Photograph 2070. Tree #2070 Western Joshua tree *(Yucca brevifolia)*

Photograph 2071. Tree #2071 Western Joshua tree *(Yucca brevifolia)*

Photograph 2072. Tree #2072 Western Joshua tree *(Yucca brevifolia)*

Photograph 2073. Tree #2073 Western Joshua tree *(Yucca brevifolia)*

Photograph 2074. Tree #2074 Western Joshua tree *(Yucca brevifolia)*

Photograph 2075. Tree #2075 Western Joshua tree *(Yucca brevifolia)*

Photograph 2076. Tree #2076 Western Joshua tree *(Yucca brevifolia)*

Photograph 2077. Tree #2077 Western Joshua tree *(Yucca brevifolia)*

Photograph 2078. Tree #2078 Western Joshua tree *(Yucca brevifolia)*

Photograph 2079. Tree #2079 Western Joshua tree *(Yucca brevifolia)*

Photograph 2080. Tree #2080 Western Joshua tree *(Yucca brevifolia)*

Photograph 2081. Tree #2081 Western Joshua tree *(Yucca brevifolia)*

Photograph 2082. Tree #2082 Western Joshua tree *(Yucca brevifolia)*

Photograph 2083. Tree #2083 Western Joshua tree *(Yucca brevifolia)*

Photograph 2084. Tree #2084 Western Joshua tree *(Yucca brevifolia)*

Photograph 2085. Tree #2085 Western Joshua tree *(Yucca brevifolia)*

Photograph 2086. Tree #2086 Western Joshua tree *(Yucca brevifolia)*

Photograph 2087. Tree #2087 Western Joshua tree *(Yucca brevifolia)*

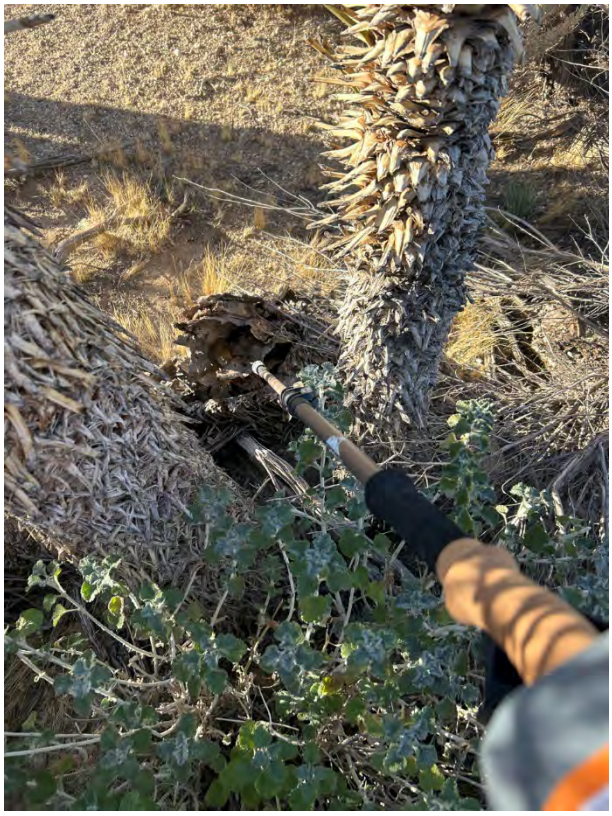
Photograph 2088. Tree #2088 Western Joshua tree *(Yucca brevifolia)*

Photograph 2089. Tree #2089 Western Joshua tree *(Yucca brevifolia)*

Photograph 2090. Tree #2090 Western Joshua tree *(Yucca brevifolia)*

Photograph 2091. Tree #2091 Western Joshua tree *(Yucca brevifolia)*

Photograph 2092. Tree #2092 Western Joshua tree *(Yucca brevifolia)*



Photograph 2093. Tree #2093 Western Joshua tree *(Yucca brevifolia)*

Photograph 2094. Tree #2094 Western Joshua tree *(Yucca brevifolia)*

Photograph 2095. Tree #2095 Western Joshua tree *(Yucca brevifolia)*

Photograph 2096. Tree #2096 Western Joshua tree *(Yucca brevifolia)*

Photograph 2098. Tree #2098 Western Joshua tree *(Yucca brevifolia)*

Photograph 2099. Tree #2099 Western Joshua tree *(Yucca brevifolia)*

Photograph 2100. Tree #2100 Western Joshua tree *(Yucca brevifolia)*

Photograph 2101. Tree #2101 Western Joshua tree *(Yucca brevifolia)*

Photograph 2102. Tree #2102 Western Joshua tree *(Yucca brevifolia)*

Photograph 2103. Tree #2103 Western Joshua tree *(Yucca brevifolia)*

Photograph 2104. Tree #2104 Western Joshua tree *(Yucca brevifolia)*

Photograph 2105. Tree #2105 Western Joshua tree *(Yucca brevifolia)*

Photograph 2106. Tree #2106 Western Joshua tree *(Yucca brevifolia)*

Photograph 2107. Tree #2107 Western Joshua tree *(Yucca brevifolia)*

Photograph 2108. Tree #2108 Western Joshua tree *(Yucca brevifolia)*

Photograph 2109. Tree #2109 Western Joshua tree *(Yucca brevifolia)*

Photograph 2110. Tree #2110 Western Joshua tree *(Yucca brevifolia)*

Photograph 2111. Tree #2111 Western Joshua tree *(Yucca brevifolia)*

Photograph 2112. Tree #2112 Western Joshua tree *(Yucca brevifolia)*

Photograph 2113. Tree #2113 Western Joshua tree *(Yucca brevifolia)*

Photograph 2114. Tree #2114 Western Joshua tree *(Yucca brevifolia)*

Photograph 2115. Tree #2115 Western Joshua tree *(Yucca brevifolia)*

Photograph 2116. Tree #2116 Western Joshua tree *(Yucca brevifolia)*

Photograph 2117. Tree #2117 Western Joshua tree *(Yucca brevifolia)*

Photograph 2118. Tree #2118 Western Joshua tree *(Yucca brevifolia)*

Photograph 2119. Tree #2119 Western Joshua tree *(Yucca brevifolia)*

Photograph 2120. Tree #2120 Western Joshua tree *(Yucca brevifolia)*

Photograph 2121. Tree #2121 Western Joshua tree *(Yucca brevifolia)*

Photograph 2122. Tree #2122 Western Joshua tree *(Yucca brevifolia)*

Photograph 2123. Tree #2123 Western Joshua tree *(Yucca brevifolia)*

Photograph 2124. Tree #2124 Western Joshua tree *(Yucca brevifolia)*

Photograph 2125. Tree #2125 Western Joshua tree *(Yucca brevifolia)*

Photograph 2126. Tree #2126 Western Joshua tree *(Yucca brevifolia)*

Photograph 2127. Tree #2127 Western Joshua tree *(Yucca brevifolia)*

Photograph 2128. Tree #2128 Western Joshua tree *(Yucca brevifolia)*

Photograph 2129. Tree #2129 Western Joshua tree *(Yucca brevifolia)*

Photograph 2130. Tree #2130 Western Joshua tree *(Yucca brevifolia)*

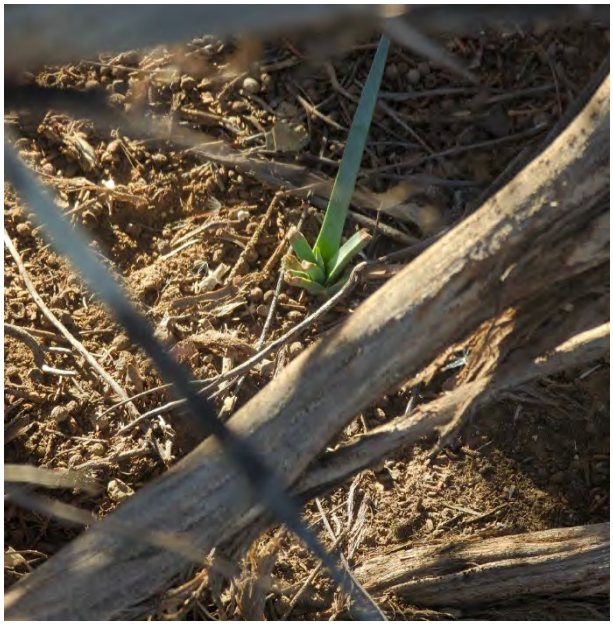
Photograph 2131. Tree #2131 Western Joshua tree *(Yucca brevifolia)*

Photograph 2132. Tree #2132 Western Joshua tree *(Yucca brevifolia)*

Photograph 2133. Tree #2133 Western Joshua tree *(Yucca brevifolia)*

Photograph 2134. Tree #2134 Western Joshua tree *(Yucca brevifolia)*

Photograph 2135. Tree #2135 Western Joshua tree *(Yucca brevifolia)*



Photograph 2136. Tree #2136 Western Joshua tree *(Yucca brevifolia)*

Photograph 2137. Tree #2137 Western Joshua tree *(Yucca brevifolia)*

Photograph 2138. Tree #2138 Western Joshua tree *(Yucca brevifolia)*

Photograph 2139. Tree #2139 Western Joshua tree *(Yucca brevifolia)*

Photograph 2140. Tree #2140 Western Joshua tree *(Yucca brevifolia)*

Photograph 2141. Tree #2141 Western Joshua tree *(Yucca brevifolia)*

Photograph 2142. Tree #2142 Western Joshua tree *(Yucca brevifolia)*

Photograph 2143. Tree #2143 Western Joshua tree *(Yucca brevifolia)*

Photograph 2144. Tree #2144 Western Joshua tree *(Yucca brevifolia)*

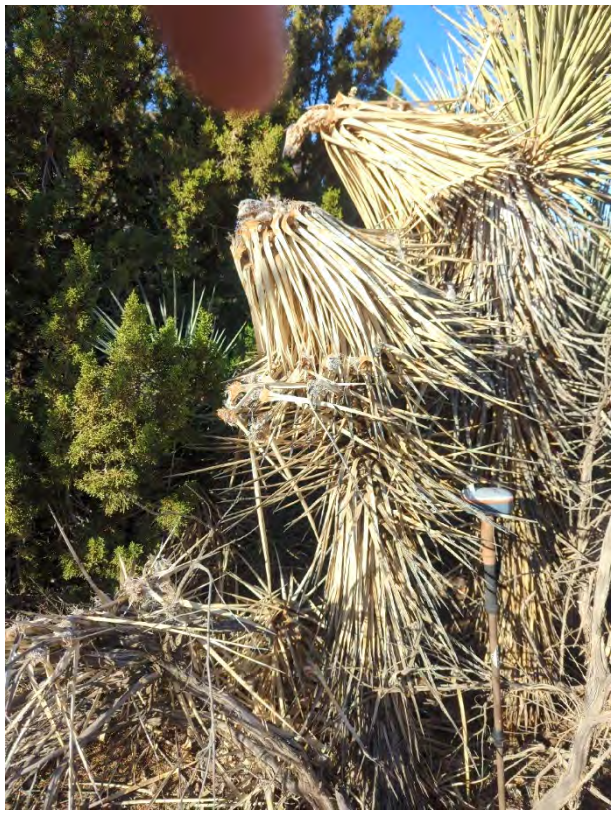
Photograph 2145. Tree #2145 Western Joshua tree *(Yucca brevifolia)*

Photograph 2146. Tree #2146 Western Joshua tree *(Yucca brevifolia)*

Photograph 2147. Tree #2147 Western Joshua tree *(Yucca brevifolia)*

Photograph 2148. Tree #2148 Western Joshua tree *(Yucca brevifolia)*

Photograph 2149. Tree #2149 Western Joshua tree *(Yucca brevifolia)*



Photograph 2150. Tree #2150 Western Joshua tree *(Yucca brevifolia)*

Photograph 2151. Tree #2151 Western Joshua tree *(Yucca brevifolia)*

Photograph 2152. Tree #2152 Western Joshua tree *(Yucca brevifolia)*

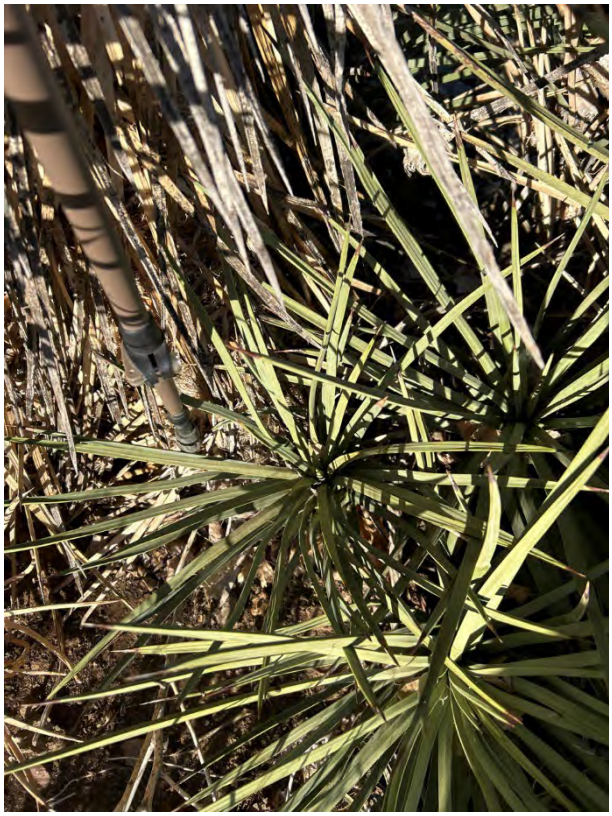
Photograph 2153. Tree #2153 Western Joshua tree *(Yucca brevifolia)*

Photograph 2154. Tree #2154 Western Joshua tree *(Yucca brevifolia)*

Photograph 2155. Tree #2155 Western Joshua tree *(Yucca brevifolia)*

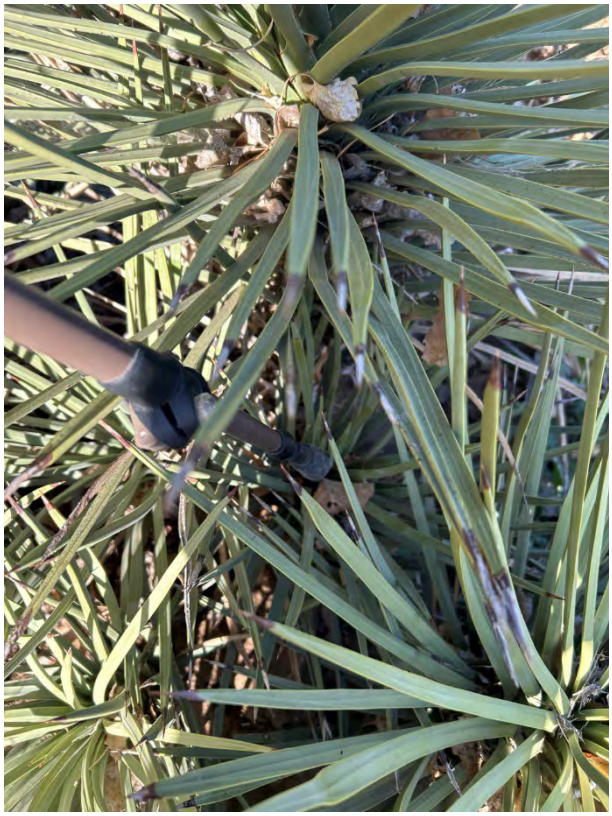
Photograph 2156. Tree #2156 Western Joshua tree *(Yucca brevifolia)*

Photograph 2157. Tree #2157 Western Joshua tree *(Yucca brevifolia)*



Photograph 2158. Tree #2158 Western Joshua tree *(Yucca brevifolia)*

Photograph 2159. Tree #2159 Western Joshua tree *(Yucca brevifolia)*



Photograph 2160. Tree #2160 Western Joshua tree *(Yucca brevifolia)*

Photograph 2161. Tree #2161 Western Joshua tree *(Yucca brevifolia)*

Photograph 2162. Tree #2162 Western Joshua tree *(Yucca brevifolia)*

Photograph 2163. Tree #2163 Western Joshua tree *(Yucca brevifolia)*

Photograph 2164. Tree #2164 Western Joshua tree *(Yucca brevifolia)*

Photograph 2165. Tree #2165 Western Joshua tree *(Yucca brevifolia)*

Photograph 2166. Tree #2166 Western Joshua tree *(Yucca brevifolia)*

Photograph 2167. Tree #2167 Western Joshua tree *(Yucca brevifolia)*

Photograph 2168. Tree #2168 Western Joshua tree *(Yucca brevifolia)*

Photograph 2169. Tree #2169 Western Joshua tree *(Yucca brevifolia)*

Photograph 2170. Tree #2170 Western Joshua tree *(Yucca brevifolia)*

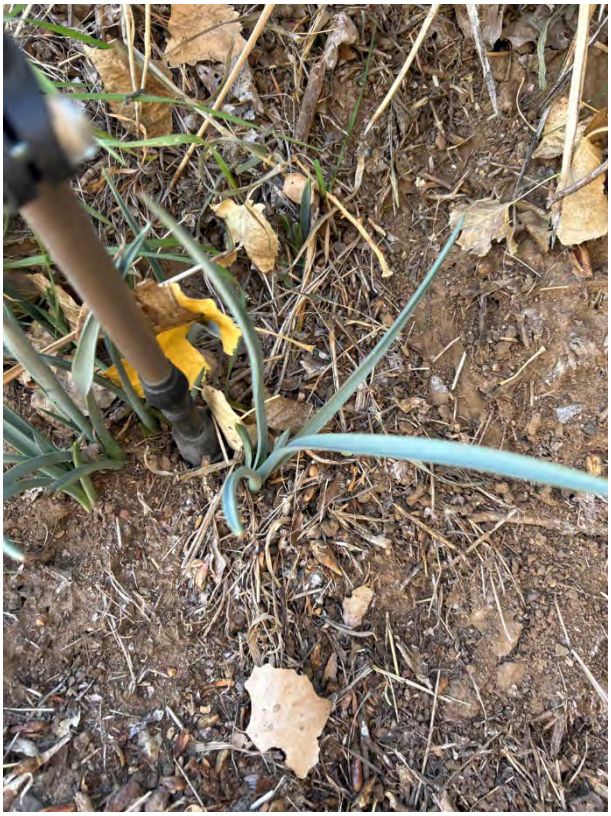
Photograph 2171. Tree #2171 Western Joshua tree *(Yucca brevifolia)*

Photograph 2172. Tree #2172 Western Joshua tree *(Yucca brevifolia)*

Photograph 2173. Tree #2173 Western Joshua tree *(Yucca brevifolia)*

Photograph 2174. Tree #2174 Western Joshua tree *(Yucca brevifolia)*

Photograph 2175. Tree #2175 Western Joshua tree *(Yucca brevifolia)*



Photograph 2176. Tree #2176 Western Joshua tree *(Yucca brevifolia)*

Photograph 2177. Tree #2177 Western Joshua tree *(Yucca brevifolia)*

Photograph 2178. Tree #2178 Western Joshua tree *(Yucca brevifolia)*

Photograph 2179. Tree #2179 Western Joshua tree *(Yucca brevifolia)*

Photograph 2180. Tree #2180 Western Joshua tree *(Yucca brevifolia)*

Photograph 2181. Tree #2181 Western Joshua tree *(Yucca brevifolia)*

Photograph 2182. Tree #2182 Western Joshua tree *(Yucca brevifolia)*

Photograph 2183. Tree #2183 Western Joshua tree *(Yucca brevifolia)*

Photograph 2184. Tree #2184 Western Joshua tree *(Yucca brevifolia)*

Photograph 2185. Tree #2185 Western Joshua tree *(Yucca brevifolia)*

Photograph 2186. Tree #2186 Western Joshua tree *(Yucca brevifolia)*

Photograph 2187. Tree #2187 Western Joshua tree *(Yucca brevifolia)*

Photograph 2188. Tree #2188 Western Joshua tree *(Yucca brevifolia)*

Photograph 2189. Tree #2189 Western Joshua tree *(Yucca brevifolia)*

Photograph 2190. Tree #2190 Western Joshua tree *(Yucca brevifolia)*

Photograph 2191. Tree #2191 Western Joshua tree *(Yucca brevifolia)*

Photograph 2192. Tree #2192 Western Joshua tree *(Yucca brevifolia)*

Photograph 2193. Tree #2193 Western Joshua tree *(Yucca brevifolia)*

Photograph 2194. Tree #2194 Western Joshua tree *(Yucca brevifolia)*

Photograph 2195. Tree #2195 Western Joshua tree *(Yucca brevifolia)*

Photograph 2196. Tree #2196 Western Joshua tree *(Yucca brevifolia)*

Photograph 2197. Tree #2197 Western Joshua tree *(Yucca brevifolia)*

Photograph 2198. Tree #2198 Western Joshua tree *(Yucca brevifolia)*

Photograph 2199. Tree #2199 Western Joshua tree *(Yucca brevifolia)*

Photograph 2200. Tree #2200 Western Joshua tree *(Yucca brevifolia)*

Photograph 2201. Tree #2201 Western Joshua tree *(Yucca brevifolia)*

Photograph 2202. Tree #2202 Western Joshua tree *(Yucca brevifolia)*

Photograph 2203. Tree #2203 Western Joshua tree *(Yucca brevifolia)*

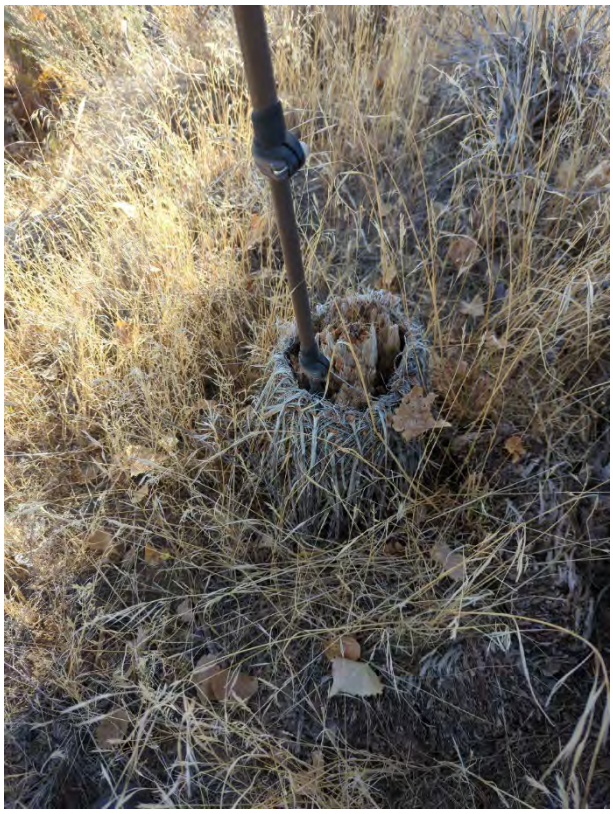
Photograph 2204. Tree #2204 Western Joshua tree *(Yucca brevifolia)*

Photograph 2205. Tree #2205 Western Joshua tree *(Yucca brevifolia)*

Photograph 2206. Tree #2206 Western Joshua tree *(Yucca brevifolia)*

Photograph 2207. Tree #2207 Western Joshua tree *(Yucca brevifolia)*

Photograph 2208. Tree #2208 Western Joshua tree *(Yucca brevifolia)*



Photograph 2209. Tree #2209 Western Joshua tree *(Yucca brevifolia)*

Photograph 2210. Tree #2210 Western Joshua tree *(Yucca brevifolia)*

Photograph 2211. Tree #2211 Western Joshua tree *(Yucca brevifolia)*

Photograph 2212. Tree #2212 Western Joshua tree *(Yucca brevifolia)*

Photograph 2213. Tree #2213 Western Joshua tree *(Yucca brevifolia)*

Photograph 2214. Tree #2214 Western Joshua tree *(Yucca brevifolia)*

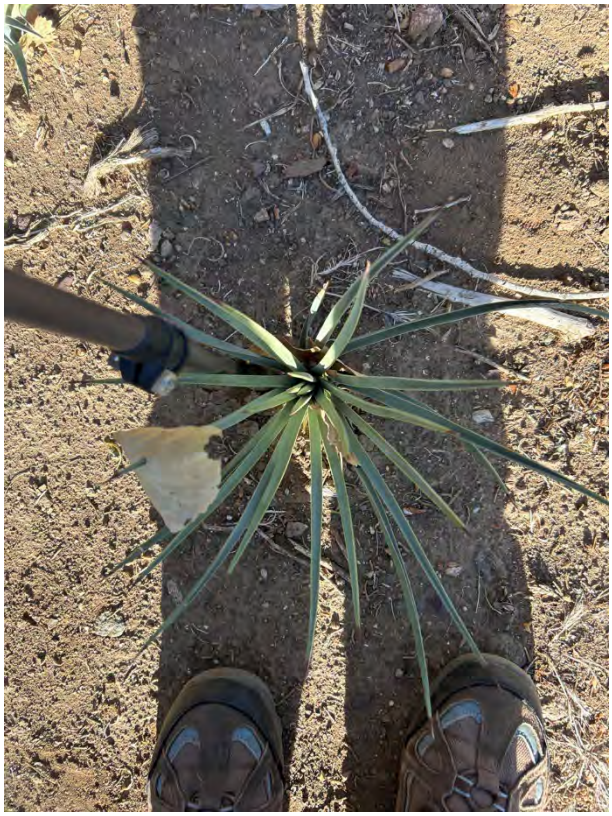
Photograph 2215. Tree #2215 Western Joshua tree *(Yucca brevifolia)*

Photograph 2216. Tree #2216 Western Joshua tree *(Yucca brevifolia)*

Photograph 2217. Tree #2217 Western Joshua tree *(Yucca brevifolia)*

Photograph 2218. Tree #2218 Western Joshua tree *(Yucca brevifolia)*

Photograph 2219. Tree #2219 Western Joshua tree *(Yucca brevifolia)*



Photograph 2220. Tree #2220 Western Joshua tree *(Yucca brevifolia)*

Photograph 2221. Tree #2221 Western Joshua tree *(Yucca brevifolia)*

Photograph 2222. Tree #2222 Western Joshua tree *(Yucca brevifolia)*

Photograph 2223. Tree #2223 Western Joshua tree *(Yucca brevifolia)*

Photograph 2224. Tree #2224 Western Joshua tree *(Yucca brevifolia)*

Photograph 2225. Tree #2225 Western Joshua tree *(Yucca brevifolia)*

Photograph 2226. Tree #2226 Western Joshua tree *(Yucca brevifolia)*

Photograph 2227. Tree #2227 Western Joshua tree *(Yucca brevifolia)*

Photograph 2228. Tree #2228 Western Joshua tree *(Yucca brevifolia)*

Photograph 2229. Tree #2229 Western Joshua tree *(Yucca brevifolia)*

Photograph 2230. Tree #2230 Western Joshua tree *(Yucca brevifolia)*

Photograph 2231. Tree #2231 Western Joshua tree *(Yucca brevifolia)*

Photograph 2232. Tree #2232 Western Joshua tree *(Yucca brevifolia)*

Photograph 2233. Tree #2233 Western Joshua tree *(Yucca brevifolia)*

Photograph 2234. Tree #2234 Western Joshua tree *(Yucca brevifolia)*

Photograph 2235. Tree #2235 Western Joshua tree *(Yucca brevifolia)*

Photograph 2236. Tree #2236 Western Joshua tree *(Yucca brevifolia)*

Photograph 2237. Tree #2237 Western Joshua tree *(Yucca brevifolia)*

Photograph 2238. Tree #2238 Western Joshua tree *(Yucca brevifolia)*

Photograph 2239. Tree #2239 Western Joshua tree *(Yucca brevifolia)*

Photograph 2240. Tree #2240 Western Joshua tree *(Yucca brevifolia)*

Photograph 2241. Tree #2241 Western Joshua tree *(Yucca brevifolia)*

Photograph 2242. Tree #2242 Western Joshua tree *(Yucca brevifolia)*

Photograph 2243. Tree #2243 Western Joshua tree *(Yucca brevifolia)*

Photograph 2244. Tree #2244 Western Joshua tree *(Yucca brevifolia)*

Photograph 2245. Tree #2245 Western Joshua tree *(Yucca brevifolia)*

Photograph 2246. Tree #2246 Western Joshua tree *(Yucca brevifolia)*

Photograph 2247. Tree #2247 Western Joshua tree *(Yucca brevifolia)*

Photograph 2248. Tree #2248 Western Joshua tree *(Yucca brevifolia)*

Photograph 2249. Tree #2249 Western Joshua tree *(Yucca brevifolia)*

Photograph 2250. Tree #2250 Western Joshua tree *(Yucca brevifolia)*

Photograph 2251. Tree #2251 Western Joshua tree *(Yucca brevifolia)*

Photograph 2252. Tree #2252 Western Joshua tree *(Yucca brevifolia)*

Photograph 2253. Tree #2253 Western Joshua tree *(Yucca brevifolia)*

Photograph 2254. Tree #2254 Western Joshua tree *(Yucca brevifolia)*

Photograph 2255. Tree #2255 Western Joshua tree *(Yucca brevifolia)*

Photograph 2256. Tree #2256 Western Joshua tree *(Yucca brevifolia)*

Photograph 2257. Tree #2257 Western Joshua tree *(Yucca brevifolia)*

Photograph 2258. Tree #2258 Western Joshua tree *(Yucca brevifolia)*

Photograph 2259. Tree #2259 Western Joshua tree *(Yucca brevifolia)*

Photograph 2260. Tree #2260 Western Joshua tree *(Yucca brevifolia)*

Photograph 2261. Tree #2261 Western Joshua tree *(Yucca brevifolia)*

Photograph 2262. Tree #2262 Western Joshua tree *(Yucca brevifolia)*

Photograph 2263. Tree #2263 Western Joshua tree *(Yucca brevifolia)*

Photograph 2264. Tree #2264 Western Joshua tree *(Yucca brevifolia)*

Photograph 2265. Tree #2265 Western Joshua tree *(Yucca brevifolia)*

Photograph 2266. Tree #2266 Western Joshua tree *(Yucca brevifolia)*

Photograph 2267. Tree #2267 Western Joshua tree *(Yucca brevifolia)*

Photograph 2268. Tree #2268 Western Joshua tree *(Yucca brevifolia)*

Photograph 2269. Tree #2269 Western Joshua tree *(Yucca brevifolia)*

Photograph 2270. Tree #2270 Western Joshua tree *(Yucca brevifolia)*

Photograph 2271. Tree #2271 Western Joshua tree *(Yucca brevifolia)*

Photograph 2272. Tree #2272 Western Joshua tree *(Yucca brevifolia)*

Photograph 2273. Tree #2273 Western Joshua tree *(Yucca brevifolia)*

Photograph 2274. Tree #2274 Western Joshua tree *(Yucca brevifolia)*

Photograph 2275. Tree #2275 Western Joshua tree *(Yucca brevifolia)*

Photograph 2276. Tree #2276 Western Joshua tree *(Yucca brevifolia)*

Photograph 2277. Tree #2277 Western Joshua tree *(Yucca brevifolia)*

Photograph 2278. Tree #2278 Western Joshua tree *(Yucca brevifolia)*

Photograph 2279. Tree #2279 Western Joshua tree *(Yucca brevifolia)*

Photograph 2280. Tree #2280 Western Joshua tree *(Yucca brevifolia)*

Photograph 2281. Tree #2281 Western Joshua tree *(Yucca brevifolia)*

Photograph 2282. Tree #2282 Western Joshua tree *(Yucca brevifolia)*

Photograph 2283. Tree #2283 Western Joshua tree *(Yucca brevifolia)*

Photograph 2284. Tree #2284 Western Joshua tree *(Yucca brevifolia)*

Photograph 2285. Tree #2285 Western Joshua tree *(Yucca brevifolia)*

Photograph 2286. Tree #2286 Western Joshua tree *(Yucca brevifolia)*

Photograph 2287. Tree #2287 Western Joshua tree *(Yucca brevifolia)*

Photograph 2288. Tree #2288 Western Joshua tree *(Yucca brevifolia)*

Photograph 2289. Tree #2289 Western Joshua tree *(Yucca brevifolia)*

Photograph 2290. Tree #2290 Western Joshua tree *(Yucca brevifolia)*

Photograph 2291. Tree #2291 Western Joshua tree *(Yucca brevifolia)*

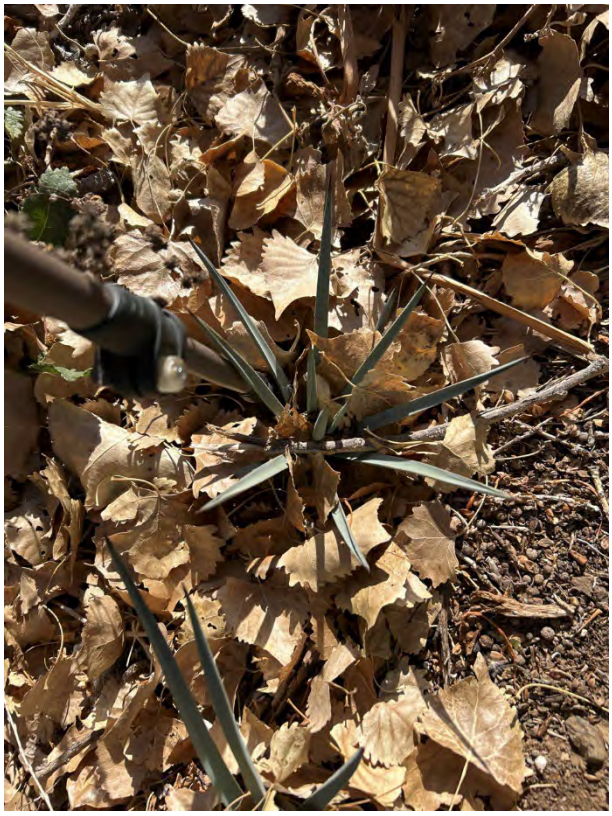
Photograph 2292. Tree #2292 Western Joshua tree *(Yucca brevifolia)*

Photograph 2293. Tree #2293 Western Joshua tree *(Yucca brevifolia)*

Photograph 2294. Tree #2294 Western Joshua tree *(Yucca brevifolia)*

Photograph 2295. Tree #2295 Western Joshua tree *(Yucca brevifolia)*

Photograph 2296. Tree #2296 Western Joshua tree *(Yucca brevifolia)*



Photograph 2297. Tree #2297 Western Joshua tree *(Yucca brevifolia)*

Photograph 2298. Tree #2298 Western Joshua tree *(Yucca brevifolia)*

Photograph 2299. Tree #2299 Western Joshua tree *(Yucca brevifolia)*

Photograph 2300. Tree #2300 Western Joshua tree *(Yucca brevifolia)*

Photograph 2301. Tree #2301 Western Joshua tree *(Yucca brevifolia)*

Photograph 2302. Tree #2302 Western Joshua tree *(Yucca brevifolia)*

Photograph 2303. Tree #2303 Western Joshua tree *(Yucca brevifolia)*

Photograph 2304. Tree #2304 Western Joshua tree *(Yucca brevifolia)*

Photograph 2305. Tree #2305 Western Joshua tree *(Yucca brevifolia)*

Photograph 2306. Tree #2306 Western Joshua tree *(Yucca brevifolia)*

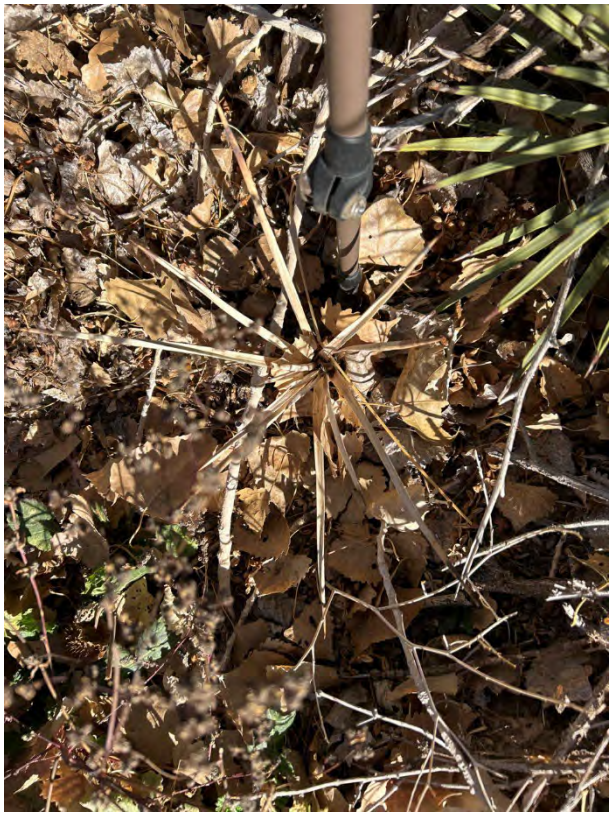
Photograph 2307. Tree #2307 Western Joshua tree *(Yucca brevifolia)*

Photograph 2308. Tree #2308 Western Joshua tree *(Yucca brevifolia)*

Photograph 2309. Tree #2309 Western Joshua tree *(Yucca brevifolia)*

Photograph 2310. Tree #2310 Western Joshua tree *(Yucca brevifolia)*

Photograph 2311. Tree #2311 Western Joshua tree *(Yucca brevifolia)*



Photograph 2312. Tree #2312 Western Joshua tree *(Yucca brevifolia)*

Photograph 2313. Tree #2313 Western Joshua tree *(Yucca brevifolia)*

Photograph 2314. Tree #2314 Western Joshua tree *(Yucca brevifolia)*

Photograph 2315. Tree #2315 Western Joshua tree *(Yucca brevifolia)*

Photograph 2316. Tree #2316 Western Joshua tree *(Yucca brevifolia)*

Photograph 2317. Tree #2317 Western Joshua tree *(Yucca brevifolia)*

Photograph 2318. Tree #2318 Western Joshua tree *(Yucca brevifolia)*

Photograph 2319. Tree #2319 Western Joshua tree *(Yucca brevifolia)*

Photograph 2320. Tree #2320 Western Joshua tree *(Yucca brevifolia)*

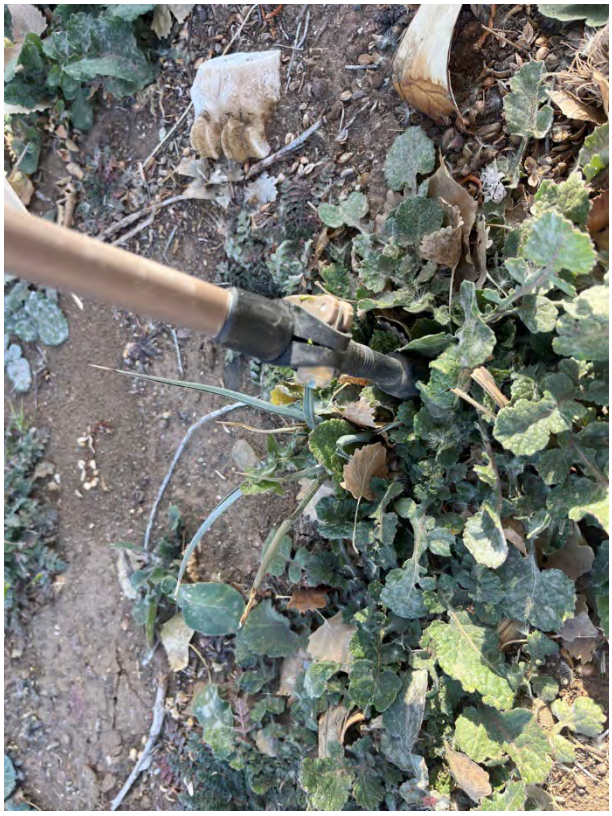
Photograph 2321. Tree #2321 Western Joshua tree *(Yucca brevifolia)*

Photograph 2322. Tree #2322 Western Joshua tree *(Yucca brevifolia)*

Photograph 2323. Tree #2323 Western Joshua tree *(Yucca brevifolia)*

Photograph 2324. Tree #2324 Western Joshua tree *(Yucca brevifolia)*

Photograph 2325. Tree #2325 Western Joshua tree *(Yucca brevifolia)*



Photograph 2326. Tree #2326 Western Joshua tree *(Yucca brevifolia)*

Photograph 2327. Tree #2327 Western Joshua tree *(Yucca brevifolia)*

Photograph 2328. Tree #2328 Western Joshua tree *(Yucca brevifolia)*

Photograph 2329. Tree #2329 Western Joshua tree *(Yucca brevifolia)*

Photograph 2330. Tree #2330 Western Joshua tree *(Yucca brevifolia)*

Photograph 2331. Tree #2331 Western Joshua tree *(Yucca brevifolia)*

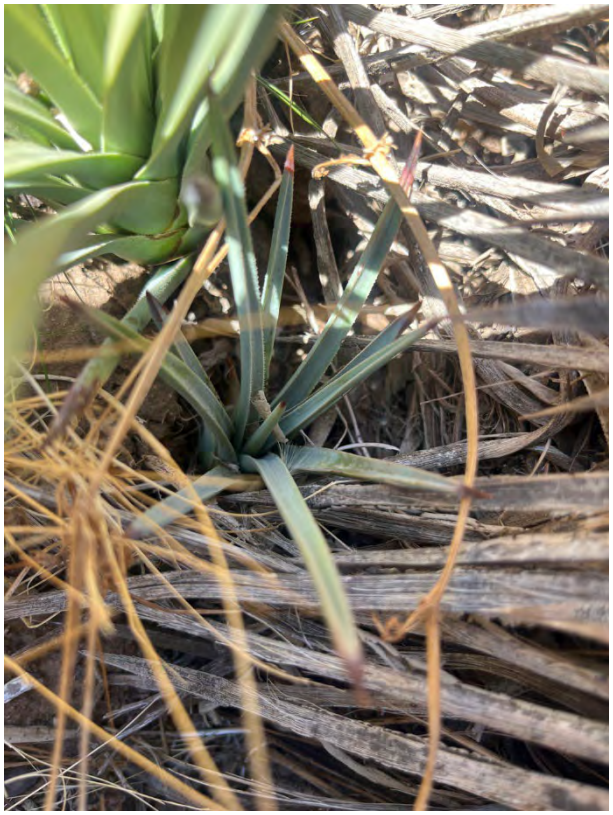
Photograph 2332. Tree #2332 Western Joshua tree *(Yucca brevifolia)*

Photograph 2333. Tree #2333 Western Joshua tree *(Yucca brevifolia)*

Photograph 2334. Tree #2334 Western Joshua tree *(Yucca brevifolia)*

Photograph 2335. Tree #2335 Western Joshua tree *(Yucca brevifolia)*

Photograph 2336. Tree #2336 Western Joshua tree *(Yucca brevifolia)*



Photograph 2337. Tree #2337 Western Joshua tree *(Yucca brevifolia)*

Photograph 2338. Tree #2338 Western Joshua tree *(Yucca brevifolia)*

Photograph 2339. Tree #2339 Western Joshua tree *(Yucca brevifolia)*

Photograph 2340. Tree #2340 Western Joshua tree *(Yucca brevifolia)*

Photograph 2341. Tree #2341 Western Joshua tree *(Yucca brevifolia)*

Photograph 2342. Tree #2342 Western Joshua tree *(Yucca brevifolia)*

Photograph 2343. Tree #2343 Western Joshua tree *(Yucca brevifolia)*

Photograph 2344. Tree #2344 Western Joshua tree *(Yucca brevifolia)*

Photograph 2345. Tree #2345 Western Joshua tree *(Yucca brevifolia)*

Photograph 2346. Tree #2346 Western Joshua tree *(Yucca brevifolia)*

Photograph 2347. Tree #2347 Western Joshua tree *(Yucca brevifolia)*

Photograph 2348. Tree #2348 Western Joshua tree *(Yucca brevifolia)*

Photograph 2349. Tree #2349 Western Joshua tree *(Yucca brevifolia)*

Photograph 2350. Tree #2350 Western Joshua tree *(Yucca brevifolia)*

Photograph 2351. Tree #2351 Western Joshua tree *(Yucca brevifolia)*

Photograph 2352. Tree #2352 Western Joshua tree *(Yucca brevifolia)*

Photograph 2353. Tree #2353 Western Joshua tree *(Yucca brevifolia)*

Photograph 2354. Tree #2354 Western Joshua tree *(Yucca brevifolia)*

Photograph 2355. Tree #2355 Western Joshua tree *(Yucca brevifolia)*

Photograph 2356. Tree #2356 Western Joshua tree *(Yucca brevifolia)*

Photograph 2357. Tree #2357 Western Joshua tree *(Yucca brevifolia)*

Photograph 2358. Tree #2358 Western Joshua tree *(Yucca brevifolia)*

Photograph 2359. Tree #2359 Western Joshua tree *(Yucca brevifolia)*

Photograph 2360. Tree #2360 Western Joshua tree *(Yucca brevifolia)*

Photograph 2361. Tree #2361 Western Joshua tree *(Yucca brevifolia)*

Photograph 2362. Tree #2362 Western Joshua tree *(Yucca brevifolia)*

Photograph 2363. Tree #2363 Western Joshua tree *(Yucca brevifolia)*

Photograph 2364. Tree #2364 Western Joshua tree *(Yucca brevifolia)*

Photograph 2365. Tree #2365 Western Joshua tree *(Yucca brevifolia)*

Photograph 2366. Tree #2366 Western Joshua tree *(Yucca brevifolia)*

Photograph 2367. Tree #2367 Western Joshua tree *(Yucca brevifolia)*

Photograph 2368. Tree #2368 Western Joshua tree *(Yucca brevifolia)*

Photograph 2369. Tree #2369 Western Joshua tree *(Yucca brevifolia)*

Photograph 2370. Tree #2370 Western Joshua tree *(Yucca brevifolia)*

Photograph 2371. Tree #2371 Western Joshua tree *(Yucca brevifolia)*

Photograph 2372. Tree #2372 Western Joshua tree *(Yucca brevifolia)*

Photograph 2373. Tree #2373 Western Joshua tree *(Yucca brevifolia)*

Photograph 2374. Tree #2374 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2376. Tree #2376 Western Joshua tree *(Yucca brevifolia)*

Photograph 2377. Tree #2377 Western Joshua tree *(Yucca brevifolia)*

Photograph 2378. Tree #2378 Western Joshua tree *(Yucca brevifolia)*

Photograph 2379. Tree #2379 Western Joshua tree *(Yucca brevifolia)*

Photograph 2380. Tree #2380 Western Joshua tree *(Yucca brevifolia)*

Photograph 2381. Tree #2381 Western Joshua tree *(Yucca brevifolia)*

Photograph 2382. Tree #2382 Western Joshua tree *(Yucca brevifolia)*

Photograph 2383. Tree #2383 Western Joshua tree *(Yucca brevifolia)*

Photograph 2384. Tree #2384 Western Joshua tree *(Yucca brevifolia)*

Photograph 2385. Tree #2385 Western Joshua tree *(Yucca brevifolia)*

Photograph 2386. Tree #2386 Western Joshua tree *(Yucca brevifolia)*

Photograph 2387. Tree #2387 Western Joshua tree *(Yucca brevifolia)*

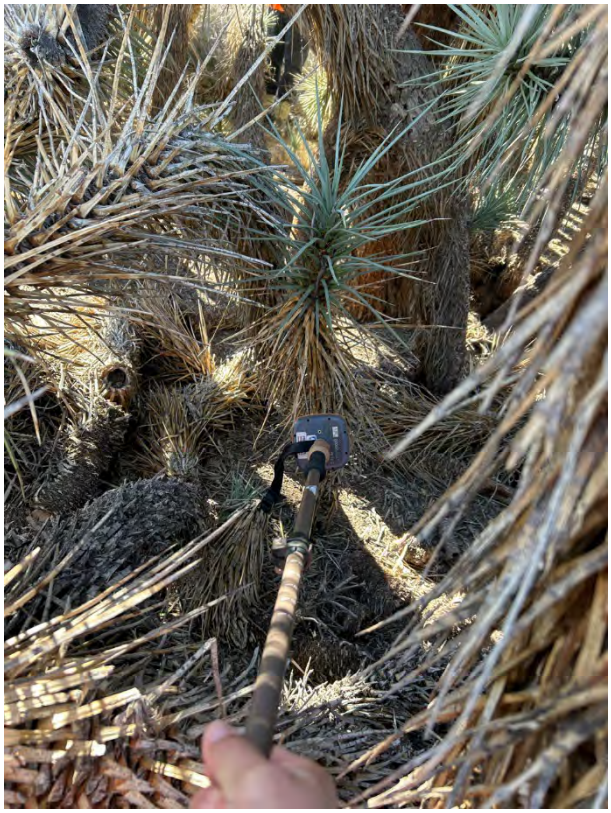
Photograph 2388. Tree #2388 Western Joshua tree *(Yucca brevifolia)*

Photograph 2389. Tree #2389 Western Joshua tree *(Yucca brevifolia)*

Photograph 2390. Tree #2390 Western Joshua tree *(Yucca brevifolia)*

Photograph 2391. Tree #2391 Western Joshua tree *(Yucca brevifolia)*

Photograph 2392. Tree #2392 Western Joshua tree *(Yucca brevifolia)*



Photograph 2393. Tree #2393 Western Joshua tree *(Yucca brevifolia)*

Photograph 2394. Tree #2394 Western Joshua tree *(Yucca brevifolia)*

Photograph 2395. Tree #2395 Western Joshua tree *(Yucca brevifolia)*

Photograph 2396. Tree #2396 Western Joshua tree *(Yucca brevifolia)*

Photograph 2397. Tree #2397 Western Joshua tree *(Yucca brevifolia)*

Photograph 2398. Tree #2398 Western Joshua tree *(Yucca brevifolia)*

Photograph 2399. Tree #2399 Western Joshua tree *(Yucca brevifolia)*

Photograph 2400. Tree #2400 Western Joshua tree *(Yucca brevifolia)*

Photograph 2401. Tree #2401 Western Joshua tree *(Yucca brevifolia)*

Photograph 2402. Tree #2402 Western Joshua tree *(Yucca brevifolia)*

Photograph 2403. Tree #2403 Western Joshua tree *(Yucca brevifolia)*

Photograph 2404. Tree #2404 Western Joshua tree *(Yucca brevifolia)*

Photograph 2405. Tree #2405 Western Joshua tree *(Yucca brevifolia)*

Photograph 2406. Tree #2406 Western Joshua tree *(Yucca brevifolia)*

Photograph 2407. Tree #2407 Western Joshua tree *(Yucca brevifolia)*

Photograph 2408. Tree #2408 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2410. Tree #2410 Western Joshua tree *(Yucca brevifolia)*

Photograph 2411. Tree #2411 Western Joshua tree *(Yucca brevifolia)*

Photograph 2412. Tree #2412 Western Joshua tree *(Yucca brevifolia)*

Photograph 2413. Tree #2413 Western Joshua tree *(Yucca brevifolia)*

Photograph 2414. Tree #2414 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2419. Tree #2419 Western Joshua tree *(Yucca brevifolia)*

Photograph 2420. Tree #2420 Western Joshua tree *(Yucca brevifolia)*

Photograph 2421. Tree #2421 Western Joshua tree *(Yucca brevifolia)*

Photograph 2422. Tree #2422 Western Joshua tree *(Yucca brevifolia)*

Photograph 2423. Tree #2423 Western Joshua tree *(Yucca brevifolia)*

Photograph 2424. Tree #2424 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2434. Tree #2434 Western Joshua tree *(Yucca brevifolia)*

Photograph 2435. Tree #2435 Western Joshua tree *(Yucca brevifolia)*

Photograph 2436. Tree #2436 Western Joshua tree *(Yucca brevifolia)*

Photograph 2437. Tree #2437 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2440. Tree #2440 Western Joshua tree *(Yucca brevifolia)*

Photograph 2441. Tree #2441 Western Joshua tree *(Yucca brevifolia)*

Photograph 2442. Tree #2442 Western Joshua tree *(Yucca brevifolia)*

Photograph 2443. Tree #2443 Western Joshua tree *(Yucca brevifolia)*

Photograph 2444. Tree #2444 Western Joshua tree *(Yucca brevifolia)*

Photograph 2445. Tree #2445 Western Joshua tree *(Yucca brevifolia)*

Photograph 2446. Tree #2446 Western Joshua tree *(Yucca brevifolia)*

Photograph 2447. Tree #2447 Western Joshua tree *(Yucca brevifolia)*

Photograph 2448. Tree #2448 Western Joshua tree *(Yucca brevifolia)*

Photograph 2449. Tree #2449 Western Joshua tree *(Yucca brevifolia)*

Photograph 2450. Tree #2450 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2454. Tree #2454 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2495. Tree #2495 Western Joshua tree *(Yucca brevifolia)*

Photograph 2496. Tree #2496 Western Joshua tree *(Yucca brevifolia)*

Photograph 2497. Tree #2497 Western Joshua tree *(Yucca brevifolia)*

Photograph 2498. Tree #2498 Western Joshua tree *(Yucca brevifolia)*

Photograph 2499. Tree #2499 Western Joshua tree (Yucca brevifolia)

Photograph 2500. Tree #2500 Western Joshua tree (Yucca brevifolia)

Photograph 2501. Tree #2501 Western Joshua tree *(Yucca brevifolia)*

Photograph 2502. Tree #2502 Western Joshua tree *(Yucca brevifolia)*

Photograph 2503. Tree #2503 Western Joshua tree *(Yucca brevifolia)*

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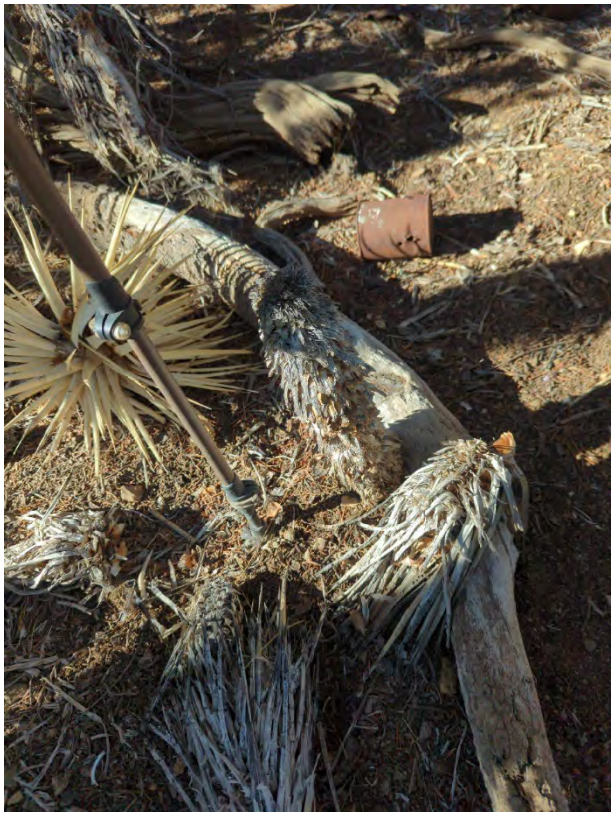

Photograph 2520. Tree #2520 Western Joshua tree *(Yucca brevifolia)*

Photograph 2521. Tree #2521 Western Joshua tree *(Yucca brevifolia)*

Photograph 2522. Tree #2522 Western Joshua tree *(Yucca brevifolia)*

Photograph 2523. Tree #2523 Western Joshua tree *(Yucca brevifolia)*

Photograph 2524. Tree #2524 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2543. Tree #2543 Western Joshua tree *(Yucca brevifolia)*

Photograph 2544. Tree #2544 Western Joshua tree *(Yucca brevifolia)*

Photograph 2545. Tree #2545 Western Joshua tree *(Yucca brevifolia)*

Photograph 2546. Tree #2546 Western Joshua tree *(Yucca brevifolia)*

Photograph 2547. Tree #2547 Western Joshua tree *(Yucca brevifolia)*

Photograph 2548. Tree #2548 Western Joshua tree *(Yucca brevifolia)*

Photograph 2549. Tree #2549 Western Joshua tree *(Yucca brevifolia)*

Photograph 2550. Tree #2550 Western Joshua tree *(Yucca brevifolia)*

Photograph 2551. Tree #2551 Western Joshua tree *(Yucca brevifolia)*

Photograph 2552. Tree #2552 Western Joshua tree *(Yucca brevifolia)*

Photograph 2553. Tree #2553 Western Joshua tree *(Yucca brevifolia)*

Photograph 2554. Tree #2554 Western Joshua tree *(Yucca brevifolia)*

Photograph 2555. Tree #2555 Western Joshua tree *(Yucca brevifolia)*

Photograph 2556. Tree #2556 Western Joshua tree *(Yucca brevifolia)*

Photograph 2557. Tree #2557 Western Joshua tree *(Yucca brevifolia)*

Photograph 2558. Tree #2558 Western Joshua tree *(Yucca brevifolia)*

Photograph 2559. Tree #2559 Western Joshua tree *(Yucca brevifolia)*

Photograph 2560. Tree #2560 Western Joshua tree *(Yucca brevifolia)*

Photograph 2561. Tree #2561 Western Joshua tree *(Yucca brevifolia)*

Photograph 2562. Tree #2562 Western Joshua tree *(Yucca brevifolia)*

Photograph 2563. Tree #2563 Western Joshua tree *(Yucca brevifolia)*

Photograph 2564. Tree #2564 Western Joshua tree *(Yucca brevifolia)*

Photograph 2565. Tree #2565 Western Joshua tree *(Yucca brevifolia)*

Photograph 2566. Tree #2566 Western Joshua tree *(Yucca brevifolia)*

Photograph 2567. Tree #2567 Western Joshua tree *(Yucca brevifolia)*

Photograph 2568. Tree #2568 Western Joshua tree *(Yucca brevifolia)*

Photograph 2569. Tree #2569 Western Joshua tree *(Yucca brevifolia)*

Photograph 2570. Tree #2570 Western Joshua tree *(Yucca brevifolia)*

Photograph 2571. Tree #2571 Western Joshua tree *(Yucca brevifolia)*

Photograph 2572. Tree #2572 Western Joshua tree *(Yucca brevifolia)*

Photograph 2573. Tree #2573 Western Joshua tree *(Yucca brevifolia)*

Photograph 2574. Tree #2574 Western Joshua tree *(Yucca brevifolia)*

Photograph 2575. Tree #2575 Western Joshua tree *(Yucca brevifolia)*

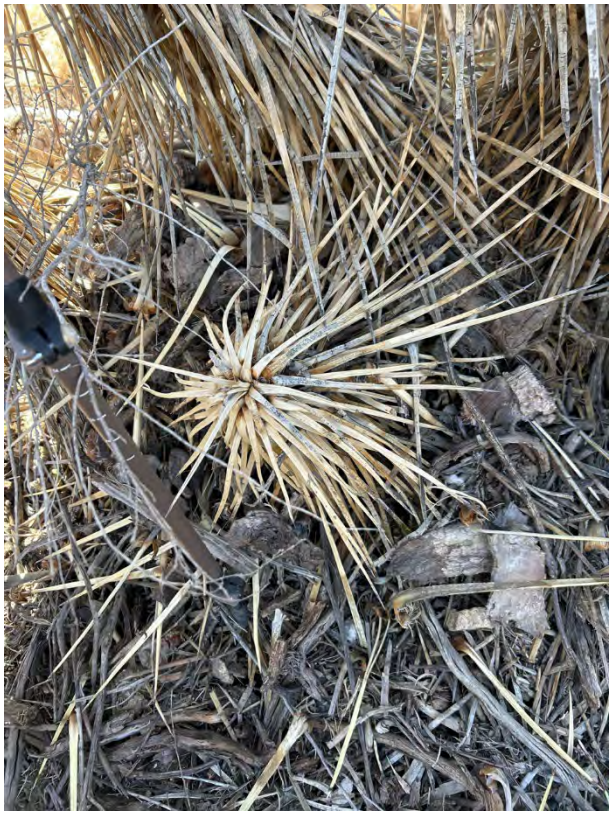
Photograph 2576. Tree #2576 Western Joshua tree *(Yucca brevifolia)*

Photograph 2577. Tree #2577 Western Joshua tree *(Yucca brevifolia)*

Photograph 2578. Tree #2578 Western Joshua tree *(Yucca brevifolia)*

Photograph 2579. Tree #2579 Western Joshua tree *(Yucca brevifolia)*

Photograph 2580. Tree #2580 Western Joshua tree *(Yucca brevifolia)*



Photograph 2581. Tree #2581 Western Joshua tree *(Yucca brevifolia)*

Photograph 2582. Tree #2582 Western Joshua tree *(Yucca brevifolia)*

Photograph 2583. Tree #2583 Western Joshua tree *(Yucca brevifolia)*

Photograph 2584. Tree #2584 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2588. Tree #2588 Western Joshua tree *(Yucca brevifolia)*

Photograph 2589. Tree #2589 Western Joshua tree *(Yucca brevifolia)*

Photograph 2590. Tree #2590 Western Joshua tree *(Yucca brevifolia)*

Photograph 2591. Tree #2591 Western Joshua tree *(Yucca brevifolia)*

Photograph 2592. Tree #2592 Western Joshua tree *(Yucca brevifolia)*

Photograph 2593. Tree #2593 Western Joshua tree *(Yucca brevifolia)*

Photograph 2594. Tree #2594 Western Joshua tree *(Yucca brevifolia)*

Photograph 2595. Tree #2595 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2597. Tree #2597 Western Joshua tree *(Yucca brevifolia)*

Photograph 2598. Tree #2598 Western Joshua tree *(Yucca brevifolia)*

Photograph 2599. Tree #2599 Western Joshua tree *(Yucca brevifolia)*

Photograph 2600. Tree #2600 Western Joshua tree *(Yucca brevifolia)*

Photograph 2601. Tree #2601 Western Joshua tree *(Yucca brevifolia)*

Photograph 2602. Tree #2602 Western Joshua tree *(Yucca brevifolia)*

Photograph 2603. Tree #2603 Western Joshua tree *(Yucca brevifolia)*

Photograph 2604. Tree #2604 Western Joshua tree *(Yucca brevifolia)*

Photograph 2605. Tree #2605 Western Joshua tree *(Yucca brevifolia)*

Photograph 2606. Tree #2606 Western Joshua tree *(Yucca brevifolia)*

Photograph 2607. Tree #2607 Western Joshua tree *(Yucca brevifolia)*

Photograph 2608. Tree #2608 Western Joshua tree *(Yucca brevifolia)*

Photograph 2609. Tree #2609 Western Joshua tree *(Yucca brevifolia)*

Photograph 2610. Tree #2610 Western Joshua tree *(Yucca brevifolia)*

Photograph 2611. Tree #2611 Western Joshua tree *(Yucca brevifolia)*

Photograph 2612. Tree #2612 Western Joshua tree *(Yucca brevifolia)*

Photograph 2613. Tree #2613 Western Joshua tree *(Yucca brevifolia)*

Photograph 2614. Tree #2614 Western Joshua tree *(Yucca brevifolia)*

Photograph 2615. Tree #2615 Western Joshua tree *(Yucca brevifolia)*

Photograph 2616. Tree #2616 Western Joshua tree *(Yucca brevifolia)*

Photograph 2617. Tree #2617 Western Joshua tree *(Yucca brevifolia)*

Photograph 2618. Tree #2618 Western Joshua tree *(Yucca brevifolia)*

Photograph 2619. Tree #2619 Western Joshua tree *(Yucca brevifolia)*

Photograph 2620. Tree #2620 Western Joshua tree *(Yucca brevifolia)*

Photograph 2621. Tree #2621 Western Joshua tree *(Yucca brevifolia)*

Photograph 2622. Tree #2622 Western Joshua tree *(Yucca brevifolia)*

Photograph 2623. Tree #2623 Western Joshua tree *(Yucca brevifolia)*

Photograph 2624. Tree #2624 Western Joshua tree *(Yucca brevifolia)*

Photograph 2625. Tree #2625 Western Joshua tree *(Yucca brevifolia)*

Photograph 2626. Tree #2626 Western Joshua tree *(Yucca brevifolia)*

Photograph 2627. Tree #2627 Western Joshua tree *(Yucca brevifolia)*

Photograph 2628. Tree #2628 Western Joshua tree *(Yucca brevifolia)*

Photograph 2629. Tree #2629 Western Joshua tree *(Yucca brevifolia)*

Photograph 2630. Tree #2630 Western Joshua tree *(Yucca brevifolia)*

Photograph 2631. Tree #2631 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2633. Tree #2633 Western Joshua tree *(Yucca brevifolia)*

Photograph 2634. Tree #2634 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2636. Tree #2636 Western Joshua tree *(Yucca brevifolia)*

Photograph 2637. Tree #2637 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2639. Tree #2639 Western Joshua tree *(Yucca brevifolia)*

Photograph 2640. Tree #2640 Western Joshua tree *(Yucca brevifolia)*

Photograph 2641. Tree #2641 Western Joshua tree *(Yucca brevifolia)*

Photograph 2642. Tree #2642 Western Joshua tree *(Yucca brevifolia)*

Photograph 2643. Tree #2643 Western Joshua tree *(Yucca brevifolia)*

Photograph 2644. Tree #2644 Western Joshua tree *(Yucca brevifolia)*

Photograph 2645. Tree #2645 Western Joshua tree *(Yucca brevifolia)*

Photograph 2646. Tree #2646 Western Joshua tree *(Yucca brevifolia)*

Photograph 2647. Tree #2647 Western Joshua tree *(Yucca brevifolia)*

Photograph 2648. Tree #2648 Western Joshua tree *(Yucca brevifolia)*

Photograph 2649. Tree #2649 Western Joshua tree *(Yucca brevifolia)*

Photograph 2650. Tree #2650 Western Joshua tree *(Yucca brevifolia)*

Photograph 2651. Tree #2651 Western Joshua tree *(Yucca brevifolia)*

Photograph 2652. Tree #2652 Western Joshua tree *(Yucca brevifolia)*

Photograph 2653. Tree #2653 Western Joshua tree *(Yucca brevifolia)*

Photograph 2654. Tree #2654 Western Joshua tree *(Yucca brevifolia)*

Photograph 2655. Tree #2655 Western Joshua tree *(Yucca brevifolia)*

Photograph 2656. Tree #2656 Western Joshua tree *(Yucca brevifolia)*

Photograph 2657. Tree #2657 Western Joshua tree *(Yucca brevifolia)*

Photograph 2658. Tree #2658 Western Joshua tree *(Yucca brevifolia)*

Photograph 2659. Tree #2659 Western Joshua tree *(Yucca brevifolia)*

Photograph 2660. Tree #2660 Western Joshua tree *(Yucca brevifolia)*

Photograph 2661. Tree #2661 Western Joshua tree *(Yucca brevifolia)*

Photograph 2662. Tree #2662 Western Joshua tree *(Yucca brevifolia)*

Photograph 2663. Tree #2663 Western Joshua tree *(Yucca brevifolia)*

Photograph 2664. Tree #2664 Western Joshua tree *(Yucca brevifolia)*

Photograph 2665. Tree #2665 Western Joshua tree *(Yucca brevifolia)*

Photograph 2666. Tree #2666 Western Joshua tree *(Yucca brevifolia)*

Photograph 2667. Tree #2667 Western Joshua tree *(Yucca brevifolia)*

Photograph 2668. Tree #2668 Western Joshua tree *(Yucca brevifolia)*

Photograph 2669. Tree #2669 Western Joshua tree *(Yucca brevifolia)*

Photograph 2670. Tree #2670 Western Joshua tree *(Yucca brevifolia)*

Photograph 2671. Tree #2671 Western Joshua tree *(Yucca brevifolia)*

Photograph 2672. Tree #2672 Western Joshua tree *(Yucca brevifolia)*

Photograph 2673. Tree #2673 Western Joshua tree *(Yucca brevifolia)*

Photograph 2674. Tree #2674 Western Joshua tree *(Yucca brevifolia)*

Photograph 2675. Tree #2675 Western Joshua tree *(Yucca brevifolia)*

Photograph 2676. Tree #2676 Western Joshua tree *(Yucca brevifolia)*

Photograph 2677. Tree #2677 Western Joshua tree *(Yucca brevifolia)*

Photograph 2678. Tree #2678 Western Joshua tree *(Yucca brevifolia)*

Photograph 2679. Tree #2679 Western Joshua tree *(Yucca brevifolia)*

Photograph 2680. Tree #2680 Western Joshua tree *(Yucca brevifolia)*

Photograph 2681. Tree #2681 Western Joshua tree *(Yucca brevifolia)*

Photograph 2682. Tree #2682 Western Joshua tree *(Yucca brevifolia)*

Photograph 2683. Tree #2683 Western Joshua tree *(Yucca brevifolia)*

Photograph 2684. Tree #2684 Western Joshua tree *(Yucca brevifolia)*

Photograph 2685. Tree #2685 Western Joshua tree *(Yucca brevifolia)*

Photograph 2686. Tree #2686 Western Joshua tree *(Yucca brevifolia)*

Photograph 2687. Tree #2687 Western Joshua tree *(Yucca brevifolia)*

Photograph 2688. Tree #2688 Western Joshua tree *(Yucca brevifolia)*

Photograph 2689. Tree #2689 Western Joshua tree *(Yucca brevifolia)*

Photograph 2690. Tree #2690 Western Joshua tree *(Yucca brevifolia)*

Photograph 2691. Tree #2691 Western Joshua tree *(Yucca brevifolia)*

Photograph 2692. Tree #2692 Western Joshua tree *(Yucca brevifolia)*

Photograph 2693. Tree #2693 Western Joshua tree *(Yucca brevifolia)*

Photograph 2694. Tree #2694 Western Joshua tree *(Yucca brevifolia)*

Photograph 2695. Tree #2695 Western Joshua tree *(Yucca brevifolia)*

Photograph 2696. Tree #2696 Western Joshua tree *(Yucca brevifolia)*

Photograph 2697. Tree #2697 Western Joshua tree *(Yucca brevifolia)*

Photograph 2698. Tree #2698 Western Joshua tree *(Yucca brevifolia)*

Photograph 2699. Tree #2699 Western Joshua tree *(Yucca brevifolia)*

Photograph 2700. Tree #2700 Western Joshua tree *(Yucca brevifolia)*

Photograph 2701. Tree #2701 Western Joshua tree *(Yucca brevifolia)*

Photograph 2702. Tree #2702 Western Joshua tree *(Yucca brevifolia)*

Photograph 2703. Tree #2703 Western Joshua tree *(Yucca brevifolia)*

Photograph 2704. Tree #2704 Western Joshua tree *(Yucca brevifolia)*

Photograph 2705. Tree #2705 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2711. Tree #2711 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2724. Tree #2724 Western Joshua tree *(Yucca brevifolia)*

Photograph 2725. Tree #2725 Western Joshua tree *(Yucca brevifolia)*

Photograph 2726. Tree #2726 Western Joshua tree *(Yucca brevifolia)*

Photograph 2727. Tree #2727 Western Joshua tree *(Yucca brevifolia)*

Photograph 2728. Tree #2728 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2730. Tree #2730 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2732. Tree #2732 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2734. Tree #2734 Western Joshua tree *(Yucca brevifolia)*

Photograph 2735. Tree #2735 Western Joshua tree *(Yucca brevifolia)*

Photograph 2736. Tree #2736 Western Joshua tree *(Yucca brevifolia)*

Photograph 2737. Tree #2737 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2739. Tree #2739 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2743. Tree #2743 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2745. Tree #2745 Western Joshua tree *(Yucca brevifolia)*

Photograph 2746. Tree #2746 Western Joshua tree *(Yucca brevifolia)*

Photograph 2747. Tree #2747 Western Joshua tree *(Yucca brevifolia)*

Photograph 2748. Tree #2748 Western Joshua tree *(Yucca brevifolia)*

Photograph 2749. Tree #2749 Western Joshua tree *(Yucca brevifolia)*

Photograph 2750. Tree #2750 Western Joshua tree *(Yucca brevifolia)*

Photograph 2751. Tree #2751 Western Joshua tree *(Yucca brevifolia)*

Photograph 2752. Tree #2752 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2754. Tree #2754 Western Joshua tree *(Yucca brevifolia)*

Photograph 2755. Tree #2755 Western Joshua tree *(Yucca brevifolia)*

Photograph 2756. Tree #2756 Western Joshua tree *(Yucca brevifolia)*

Photograph 2757. Tree #2757 Western Joshua tree *(Yucca brevifolia)*

Photograph 2758. Tree #2758 Western Joshua tree *(Yucca brevifolia)*

Photograph 2759. Tree #2759 Western Joshua tree *(Yucca brevifolia)*

Photograph 2760. Tree #2760 Western Joshua tree *(Yucca brevifolia)*

Photograph 2761. Tree #2761 Western Joshua tree *(Yucca brevifolia)*

Photograph 2762. Tree #2762 Western Joshua tree *(Yucca brevifolia)*

Photograph 2763. Tree #2763 Western Joshua tree *(Yucca brevifolia)*

Photograph 2764. Tree #2764 Western Joshua tree *(Yucca brevifolia)*

Photograph 2765. Tree #2765 Western Joshua tree *(Yucca brevifolia)*

Photograph 2766. Tree #2766 Western Joshua tree *(Yucca brevifolia)*

Photograph 2767. Tree #2767 Western Joshua tree *(Yucca brevifolia)*

Photograph 2768. Tree #2768 Western Joshua tree *(Yucca brevifolia)*

Photograph 2769. Tree #2769 Western Joshua tree *(Yucca brevifolia)*

Photograph 2770. Tree #2770 Western Joshua tree *(Yucca brevifolia)*

Photograph 2771. Tree #2771 Western Joshua tree *(Yucca brevifolia)*

Photograph 2772. Tree #2772 Western Joshua tree *(Yucca brevifolia)*

Photograph 2773. Tree #2773 Western Joshua tree *(Yucca brevifolia)*

Photograph 2774. Tree #2774 Western Joshua tree *(Yucca brevifolia)*

Photograph 2775. Tree #2775 Western Joshua tree *(Yucca brevifolia)*

Photograph 2776. Tree #2776 Western Joshua tree *(Yucca brevifolia)*

Photograph 2777. Tree #2777 Western Joshua tree *(Yucca brevifolia)*

Photograph 2778. Tree #2778 Western Joshua tree *(Yucca brevifolia)*

Photograph 2779. Tree #2779 Western Joshua tree *(Yucca brevifolia)*

Photograph 2780. Tree #2780 Western Joshua tree *(Yucca brevifolia)*

Photograph 2781. Tree #2781 Western Joshua tree *(Yucca brevifolia)*

Photograph 2782. Tree #2782 Western Joshua tree *(Yucca brevifolia)*

Photograph 2783. Tree #2783 Western Joshua tree *(Yucca brevifolia)*

Photograph 2784. Tree #2784 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2793. Tree #2793 Western Joshua tree *(Yucca brevifolia)*

Photograph 2794. Tree #2794 Western Joshua tree *(Yucca brevifolia)*

Photograph 2795. Tree #2795 Western Joshua tree *(Yucca brevifolia)*

Photograph 2796. Tree #2796 Western Joshua tree *(Yucca brevifolia)*

Photograph 2797. Tree #2797 Western Joshua tree *(Yucca brevifolia)*

Photograph 2798. Tree #2798 Western Joshua tree *(Yucca brevifolia)*

Photograph 2799. Tree #2799 Western Joshua tree *(Yucca brevifolia)*

Photograph 2800. Tree #2800 Western Joshua tree *(Yucca brevifolia)*

Photograph 2801. Tree #2801 Western Joshua tree *(Yucca brevifolia)*

Photograph 2802. Tree #2802 Western Joshua tree *(Yucca brevifolia)*

Photograph 2803. Tree #2803 Western Joshua tree *(Yucca brevifolia)*

Photograph 2804. Tree #2804 Western Joshua tree *(Yucca brevifolia)*

Photograph 2805. Tree #2805 Western Joshua tree *(Yucca brevifolia)*

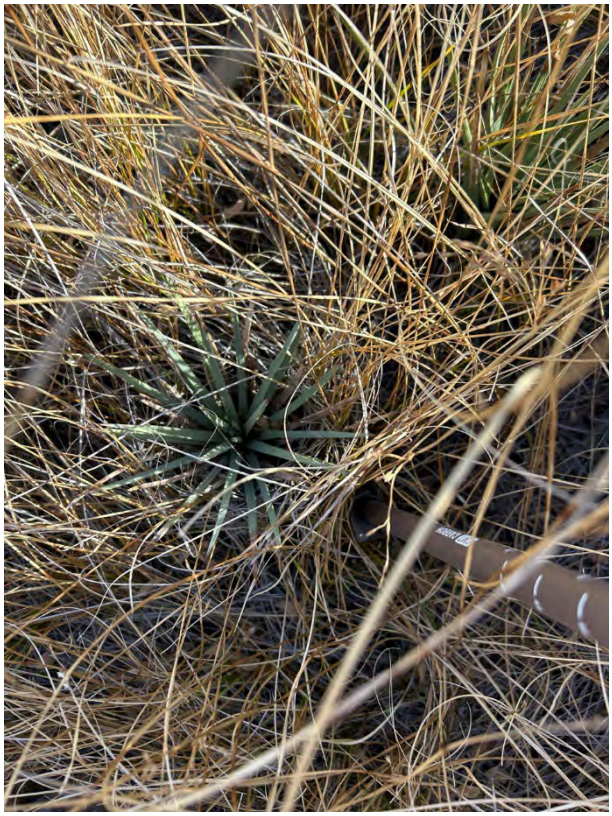
Photograph 2806. Tree #2806 Western Joshua tree *(Yucca brevifolia)*

Photograph 2807. Tree #2807 Western Joshua tree *(Yucca brevifolia)*

Photograph 2808. Tree #2808 Western Joshua tree *(Yucca brevifolia)*

Photograph 2809. Tree #2809 Western Joshua tree *(Yucca brevifolia)*

Photograph 2810. Tree #2810 Western Joshua tree *(Yucca brevifolia)*



Photograph 2811. Tree #2811 Western Joshua tree *(Yucca brevifolia)*

Photograph 2812. Tree #2812 Western Joshua tree *(Yucca brevifolia)*

Photograph 2813. Tree #2813 Western Joshua tree *(Yucca brevifolia)*

Photograph 2814. Tree #2814 Western Joshua tree *(Yucca brevifolia)*

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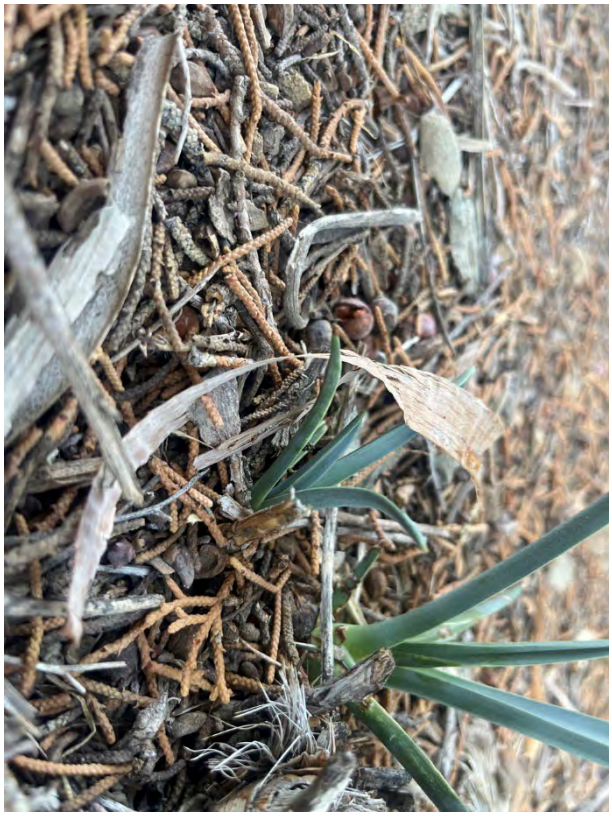
Photograph 2822. Tree #2822 Western Joshua tree *(Yucca brevifolia)*

Photograph 2823. Tree #2823 Western Joshua tree *(Yucca brevifolia)*

Photograph 2824. Tree #2824 Western Joshua tree *(Yucca brevifolia)*

Photograph 2825. Tree #2825 Western Joshua tree *(Yucca brevifolia)*

Photograph 2826. Tree #2826 Western Joshua tree *(Yucca brevifolia)*



Photograph 2827. Tree #2827 Western Joshua tree *(Yucca brevifolia)*

Photograph 2828. Tree #2828 Western Joshua tree *(Yucca brevifolia)*

Photograph 2829. Tree #2829 Western Joshua tree *(Yucca brevifolia)*

Photograph 2830. Tree #2830 Western Joshua tree *(Yucca brevifolia)*

Photograph 2831. Tree #2831 Western Joshua tree *(Yucca brevifolia)*

Photograph 2832. Tree #2832 Western Joshua tree *(Yucca brevifolia)*

Photograph 2833. Tree #2833 Western Joshua tree *(Yucca brevifolia)*

Photograph 2834. Tree #2834 Western Joshua tree *(Yucca brevifolia)*

Photograph 2835. Tree #2835 Western Joshua tree *(Yucca brevifolia)*

Photograph 2836. Tree #2836 Western Joshua tree *(Yucca brevifolia)*

Photograph 2837. Tree #2837 Western Joshua tree *(Yucca brevifolia)*

Photograph 2838. Tree #2838 Western Joshua tree *(Yucca brevifolia)*

Photograph 2839. Tree #2839 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2841. Tree #2841 Western Joshua tree *(Yucca brevifolia)*

Photograph 2842. Tree #2842 Western Joshua tree *(Yucca brevifolia)*

Photograph 2843. Tree #2843 Western Joshua tree *(Yucca brevifolia)*

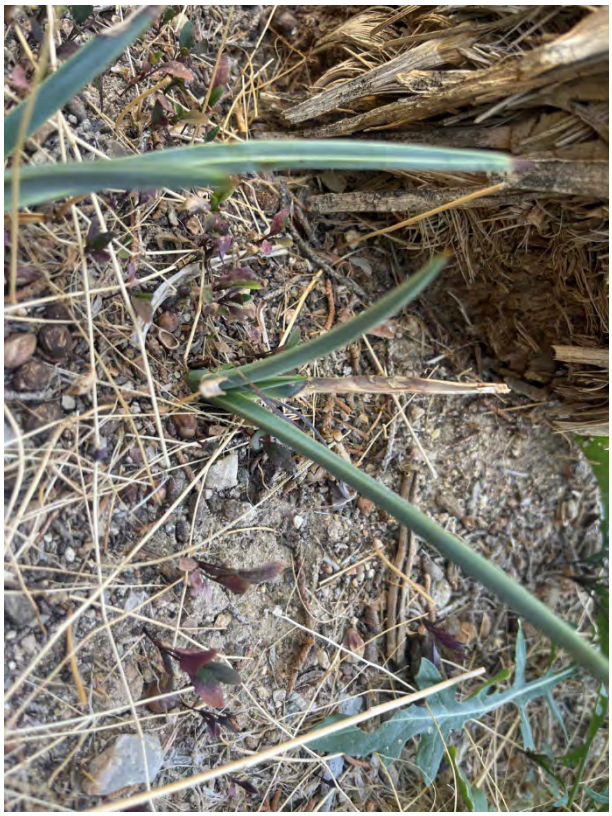
Photograph 2844. Tree #2844 Western Joshua tree *(Yucca brevifolia)*

Photograph 2845. Tree #2845 Western Joshua tree *(Yucca brevifolia)*

Photograph 2846. Tree #2846 Western Joshua tree *(Yucca brevifolia)*

Photograph 2847. Tree #2847 Western Joshua tree *(Yucca brevifolia)*

Photograph 2848. Tree #2848 Western Joshua tree *(Yucca brevifolia)*



Photograph 2849. Tree #2849 Western Joshua tree *(Yucca brevifolia)*

Photograph 2850. Tree #2850 Western Joshua tree *(Yucca brevifolia)*

Photograph 2851. Tree #2851 Western Joshua tree *(Yucca brevifolia)*

Photograph 2852. Tree #2852 Western Joshua tree *(Yucca brevifolia)*

Photograph 2853. Tree #2853 Western Joshua tree *(Yucca brevifolia)*

Photograph 2854. Tree #2854 Western Joshua tree *(Yucca brevifolia)*

Photograph 2855. Tree #2855 Western Joshua tree *(Yucca brevifolia)*

Photograph 2856. Tree #2856 Western Joshua tree *(Yucca brevifolia)*

Photograph 2857. Tree #2857 Western Joshua tree *(Yucca brevifolia)*

Photograph 2858. Tree #2858 Western Joshua tree *(Yucca brevifolia)*

Photograph 2859. Tree #2859 Western Joshua tree *(Yucca brevifolia)*

Photograph 2860. Tree #2860 Western Joshua tree *(Yucca brevifolia)*

Photograph 2861. Tree #2861 Western Joshua tree *(Yucca brevifolia)*

Photograph 2862. Tree #2862 Western Joshua tree *(Yucca brevifolia)*

Photograph 2863. Tree #2863 Western Joshua tree *(Yucca brevifolia)*

Photograph 2864. Tree #2864 Western Joshua tree *(Yucca brevifolia)*

Photograph 2865. Tree #2865 Western Joshua tree *(Yucca brevifolia)*

Photograph 2866. Tree #2866 Western Joshua tree *(Yucca brevifolia)*

Photograph 2867. Tree #2867 Western Joshua tree *(Yucca brevifolia)*

Photograph 2868. Tree #2868 Western Joshua tree *(Yucca brevifolia)*

Photograph 2869. Tree #2869 Western Joshua tree *(Yucca brevifolia)*

Photograph 2870. Tree #2870 Western Joshua tree *(Yucca brevifolia)*

Photograph 2871. Tree #2871 Western Joshua tree *(Yucca brevifolia)*

Photograph 2872. Tree #2872 Western Joshua tree *(Yucca brevifolia)*

Photograph 2873. Tree #2873 Western Joshua tree *(Yucca brevifolia)*

Photograph 2874. Tree #2874 Western Joshua tree *(Yucca brevifolia)*

Photograph 2875. Tree #2875 Western Joshua tree *(Yucca brevifolia)*

Photograph 2876. Tree #2876 Western Joshua tree *(Yucca brevifolia)*

Photograph 2877. Tree #2877 Western Joshua tree *(Yucca brevifolia)*

Photograph 2878. Tree #2878 Western Joshua tree *(Yucca brevifolia)*

Photograph 2879. Tree #2879 Western Joshua tree *(Yucca brevifolia)*

Photograph 2880. Tree #2880 Western Joshua tree *(Yucca brevifolia)*

Photograph 2881. Tree #2881 Western Joshua tree *(Yucca brevifolia)*

Photograph 2882. Tree #2882 Western Joshua tree *(Yucca brevifolia)*

Photograph 2883. Tree #2883 Western Joshua tree *(Yucca brevifolia)*

Photograph 2884. Tree #2884 Western Joshua tree *(Yucca brevifolia)*

Photograph 2885. Tree #2885 Western Joshua tree *(Yucca brevifolia)*

Photograph 2886. Tree #2886 Western Joshua tree *(Yucca brevifolia)*

Photograph 2887. Tree #2887 Western Joshua tree *(Yucca brevifolia)*

Photograph 2888. Tree #2888 Western Joshua tree *(Yucca brevifolia)*

Photograph 2889. Tree #2889 Western Joshua tree *(Yucca brevifolia)*

Photograph 2890. Tree #2890 Western Joshua tree *(Yucca brevifolia)*

Photograph 2891. Tree #2891 Western Joshua tree *(Yucca brevifolia)*

Photograph 2892. Tree #2892 Western Joshua tree *(Yucca brevifolia)*

Photograph 2893. Tree #2893 Western Joshua tree *(Yucca brevifolia)*

Photograph 2894. Tree #2894 Western Joshua tree *(Yucca brevifolia)*

Photograph 2895. Tree #2895 Western Joshua tree *(Yucca brevifolia)*

Photograph 2896. Tree #2896 Western Joshua tree *(Yucca brevifolia)*

Photograph 2897. Tree #2897 Western Joshua tree *(Yucca brevifolia)*

Photograph 2898. Tree #2898 Western Joshua tree *(Yucca brevifolia)*

Photograph 2899. Tree #2899 Western Joshua tree *(Yucca brevifolia)*

Photograph 2900. Tree #2900 Western Joshua tree *(Yucca brevifolia)*

Photograph 2901. Tree #2901 Western Joshua tree *(Yucca brevifolia)*

Photograph 2902. Tree #2902 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2904. Tree #2904 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2919. Tree #2919 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2926. Tree #2926 Western Joshua tree *(Yucca brevifolia)*

Photograph 2927. Tree #2927 Western Joshua tree *(Yucca brevifolia)*

Photograph 2928. Tree #2928 Western Joshua tree *(Yucca brevifolia)*

Photograph 2929. Tree #2929 Western Joshua tree *(Yucca brevifolia)*

Photograph 2930. Tree #2930 Western Joshua tree *(Yucca brevifolia)*

Photograph 2931. Tree #2931 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2933. Tree #2933 Western Joshua tree *(Yucca brevifolia)*

Photograph 2934. Tree #2934 Western Joshua tree *(Yucca brevifolia)*

Photograph 2935. Tree #2935 Western Joshua tree *(Yucca brevifolia)*

Photograph 2936. Tree #2936 Western Joshua tree *(Yucca brevifolia)*

Photograph 2937. Tree #2937 Western Joshua tree *(Yucca brevifolia)*

Photograph 2938. Tree #2938 Western Joshua tree *(Yucca brevifolia)*

Photograph 2939. Tree #2939 Western Joshua tree *(Yucca brevifolia)*

Photograph 2940. Tree #2940 Western Joshua tree *(Yucca brevifolia)*

Photograph 2941. Tree #2941 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2946. Tree #2946 Western Joshua tree *(Yucca brevifolia)*

Photograph 2947. Tree #2947 Western Joshua tree *(Yucca brevifolia)*

Photograph 2948. Tree #2948 Western Joshua tree *(Yucca brevifolia)*

Photograph 2949. Tree #2949 Western Joshua tree *(Yucca brevifolia)*

Photograph 2950. Tree #2950 Western Joshua tree *(Yucca brevifolia)*

Photograph 2951. Tree #2951 Western Joshua tree *(Yucca brevifolia)*

Photograph 2952. Tree #2952 Western Joshua tree *(Yucca brevifolia)*

Photograph 2953. Tree #2953 Western Joshua tree *(Yucca brevifolia)*

Photograph 2954. Tree #2954 Western Joshua tree *(Yucca brevifolia)*

Photograph 2955. Tree #2955 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2958. Tree #2958 Western Joshua tree *(Yucca brevifolia)*

Photograph 2959. Tree #2959 Western Joshua tree *(Yucca brevifolia)*

Photograph 2960. Tree #2960 Western Joshua tree *(Yucca brevifolia)*

Photograph 2961. Tree #2961 Western Joshua tree *(Yucca brevifolia)*

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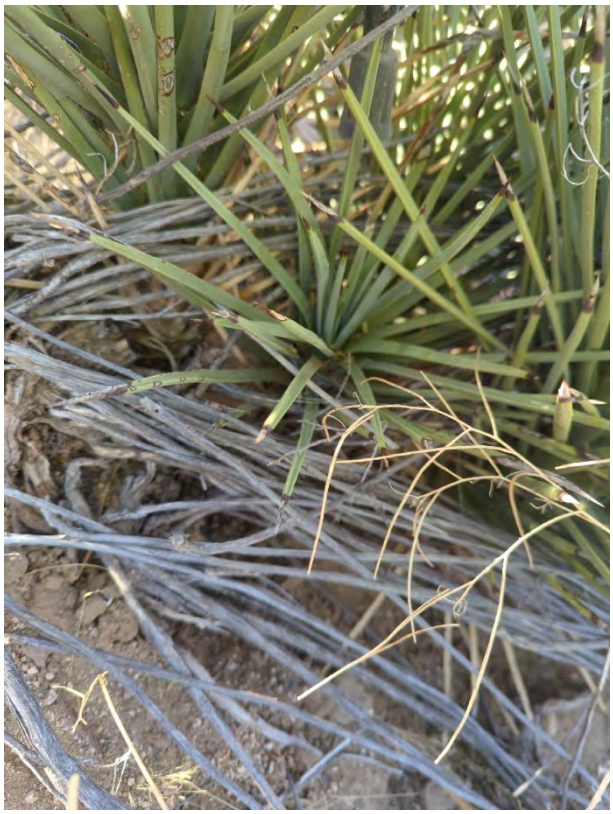
Photograph 2966. Tree #2966 Western Joshua tree *(Yucca brevifolia)*

Photograph 2967. Tree #2967 Western Joshua tree *(Yucca brevifolia)*

Photograph 2968. Tree #2968 Western Joshua tree *(Yucca brevifolia)*

Photograph 2969. Tree #2969 Western Joshua tree *(Yucca brevifolia)*

Photograph 2970. Tree #2970 Western Joshua tree *(Yucca brevifolia)*



Photograph 2971. Tree #2971 Western Joshua tree *(Yucca brevifolia)*

Photograph 2972. Tree #2972 Western Joshua tree *(Yucca brevifolia)*

Photograph 2973. Tree #2973 Western Joshua tree *(Yucca brevifolia)*

Photograph 2974. Tree #2974 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2989. Tree #2989 Western Joshua tree *(Yucca brevifolia)*

Photograph 2990. Tree #2990 Western Joshua tree *(Yucca brevifolia)*

Photograph 2991. Tree #2991 Western Joshua tree *(Yucca brevifolia)*

Photograph 2992. Tree #2992 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2995. Tree #2995 Western Joshua tree *(Yucca brevifolia)*

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Photograph 2997. Tree #2997 Western Joshua tree *(Yucca brevifolia)*

Photograph 2998. Tree #2998 Western Joshua tree *(Yucca brevifolia)*

Photograph 2999. Tree #2999 Western Joshua tree *(Yucca brevifolia)*

Photograph 3000. Tree #3000 Western Joshua tree *(Yucca brevifolia)*

Photograph 3001. Tree #3001 Western Joshua tree *(Yucca brevifolia)*

Photograph 3002. Tree #3002 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3006. Tree #3006 Western Joshua tree *(Yucca brevifolia)*

Photograph 3007. Tree #3007 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3010. Tree #3010 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3020. Tree #3020 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3071. Tree #3071 Western Joshua tree *(Yucca brevifolia)*

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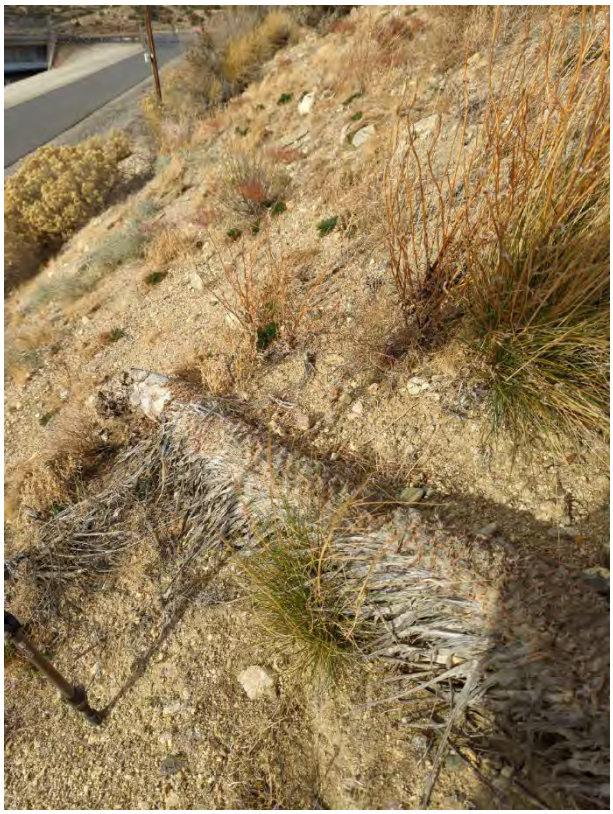
Photograph 3088. Tree #3088 Western Joshua tree *(Yucca brevifolia)*



Photograph 3089. Tree #3089 Western Joshua tree *(Yucca brevifolia)*

Photograph 3090. Tree #3090 Western Joshua tree *(Yucca brevifolia)*

Photograph 3091. Tree #3091 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3099. Tree #3099 Western Joshua tree *(Yucca brevifolia)*

Photograph 3100. Tree #3100 Western Joshua tree *(Yucca brevifolia)*

Photograph 3101. Tree #3101 Western Joshua tree *(Yucca brevifolia)*

Photograph 3102. Tree #3102 Western Joshua tree *(Yucca brevifolia)*

Photograph 3103. Tree #3103 Western Joshua tree *(Yucca brevifolia)*

Photograph 3104. Tree #3104 Western Joshua tree *(Yucca brevifolia)*

Photograph 3105. Tree #3105 Western Joshua tree *(Yucca brevifolia)*

Photograph 3106. Tree #3106 Western Joshua tree *(Yucca brevifolia)*

Photograph 3107. Tree #3107 Western Joshua tree *(Yucca brevifolia)*

Photograph 3108. Tree #3108 Western Joshua tree *(Yucca brevifolia)*

Photograph 3109. Tree #3109 Western Joshua tree *(Yucca brevifolia)*

Photograph 3110. Tree #3110 Western Joshua tree *(Yucca brevifolia)*

Photograph 3111. Tree #3111 Western Joshua tree *(Yucca brevifolia)*

Photograph 3112. Tree #3112 Western Joshua tree *(Yucca brevifolia)*

Photograph 3113. Tree #3113 Western Joshua tree *(Yucca brevifolia)*

Photograph 3114. Tree #3114 Western Joshua tree *(Yucca brevifolia)*

Photograph 3115. Tree #3115 Western Joshua tree *(Yucca brevifolia)*

Photograph 3116. Tree #3116 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3118. Tree #3118 Western Joshua tree *(Yucca brevifolia)*

Photograph 3119. Tree #3119 Western Joshua tree *(Yucca brevifolia)*

Photograph 3120. Tree #3120 Western Joshua tree *(Yucca brevifolia)*

Photograph 3121. Tree #3121 Western Joshua tree *(Yucca brevifolia)*

Photograph 3122. Tree #3122 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3129. Tree #3129 Western Joshua tree *(Yucca brevifolia)*

Photograph 3130. Tree #3130 Western Joshua tree *(Yucca brevifolia)*

Photograph 3131. Tree #3131 Western Joshua tree *(Yucca brevifolia)*

Photograph 3132. Tree #3132 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3136. Tree #3136 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3141. Tree #3141 Western Joshua tree *(Yucca brevifolia)*

Photograph 3142. Tree #3142 Western Joshua tree *(Yucca brevifolia)*

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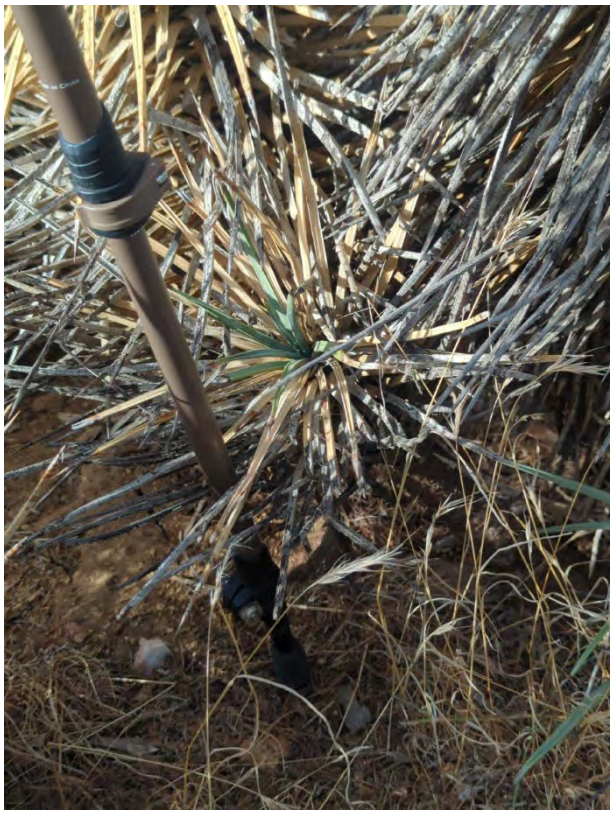
Photograph 3154. Tree #3154 Western Joshua tree *(Yucca brevifolia)*

Photograph 3155. Tree #3155 Western Joshua tree *(Yucca brevifolia)*

Photograph 3156. Tree #3156 Western Joshua tree *(Yucca brevifolia)*



Photograph 3157. Tree #3157 Western Joshua tree *(Yucca brevifolia)*

Photograph 3158. Tree #3158 Western Joshua tree *(Yucca brevifolia)*

Photograph 3159. Tree #3159 Western Joshua tree *(Yucca brevifolia)*

Photograph 3160. Tree #3160 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3162. Tree #3162 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3200. Tree #3200 Western Joshua tree *(Yucca brevifolia)*

Photograph 3201. Tree #3201 Western Joshua tree *(Yucca brevifolia)*

Photograph 3202. Tree #3202 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3209. Tree #3209 Western Joshua tree *(Yucca brevifolia)*

Photograph 3210. Tree #3210 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3219. Tree #3219 Western Joshua tree *(Yucca brevifolia)*

Photograph 3220. Tree #3220 Western Joshua tree *(Yucca brevifolia)*

Photograph 3221. Tree #3221 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3223. Tree #3223 Western Joshua tree *(Yucca brevifolia)*

Photograph 3224. Tree #3224 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3227. Tree #3227 Western Joshua tree *(Yucca brevifolia)*

Photograph 3228. Tree #3228 Western Joshua tree *(Yucca brevifolia)*

Photograph 3229. Tree #3229 Western Joshua tree *(Yucca brevifolia)*

Photograph 3230. Tree #3230 Western Joshua tree *(Yucca brevifolia)*

Photograph 3231. Tree #3231 Western Joshua tree *(Yucca brevifolia)*

Photograph 3232. Tree #3232 Western Joshua tree *(Yucca brevifolia)*

Photograph 3233. Tree #3233 Western Joshua tree *(Yucca brevifolia)*

Photograph 3234. Tree #3234 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3236. Tree #3236 Western Joshua tree *(Yucca brevifolia)*

Photograph 3237. Tree #3237 Western Joshua tree *(Yucca brevifolia)*

Photograph 3238. Tree #3238 Western Joshua tree *(Yucca brevifolia)*

Photograph 3239. Tree #3239 Western Joshua tree *(Yucca brevifolia)*

Photograph 3240. Tree #3240 Western Joshua tree *(Yucca brevifolia)*

Photograph 3241. Tree #3241 Western Joshua tree *(Yucca brevifolia)*

Photograph 3242. Tree #3242 Western Joshua tree *(Yucca brevifolia)*

Photograph 3243. Tree #3243 Western Joshua tree *(Yucca brevifolia)*

Photograph 3244. Tree #3244 Western Joshua tree *(Yucca brevifolia)*

Photograph 3245. Tree #3245 Western Joshua tree *(Yucca brevifolia)*

Photograph 3246. Tree #3246 Western Joshua tree *(Yucca brevifolia)*

Photograph 3247. Tree #3247 Western Joshua tree *(Yucca brevifolia)*

Photograph 3248. Tree #3248 Western Joshua tree *(Yucca brevifolia)*

Photograph 3249. Tree #3249 Western Joshua tree *(Yucca brevifolia)*

Photograph 3250. Tree #3250 Western Joshua tree *(Yucca brevifolia)*

Photograph 3251. Tree #3251 Western Joshua tree *(Yucca brevifolia)*

Photograph 3252. Tree #3252 Western Joshua tree *(Yucca brevifolia)*

Photograph 3253. Tree #3253 Western Joshua tree *(Yucca brevifolia)*

Photograph 3254. Tree #3254 Western Joshua tree *(Yucca brevifolia)*

Photograph 3255. Tree #3255 Western Joshua tree *(Yucca brevifolia)*

Photograph 3256. Tree #3256 Western Joshua tree *(Yucca brevifolia)*

Photograph 3257. Tree #3257 Western Joshua tree *(Yucca brevifolia)*

Photograph 3258. Tree #3258 Western Joshua tree *(Yucca brevifolia)*

Photograph 3259. Tree #3259 Western Joshua tree *(Yucca brevifolia)*

Photograph 3260. Tree #3260 Western Joshua tree *(Yucca brevifolia)*

Photograph 3261. Tree #3261 Western Joshua tree *(Yucca brevifolia)*

Photograph 3262. Tree #3262 Western Joshua tree *(Yucca brevifolia)*

Photograph 3263. Tree #3263 Western Joshua tree *(Yucca brevifolia)*

Photograph 3264. Tree #3264 Western Joshua tree *(Yucca brevifolia)*

Photograph 3265. Tree #3265 Western Joshua tree *(Yucca brevifolia)*

Photograph 3266. Tree #3266 Western Joshua tree *(Yucca brevifolia)*

Photograph 3267. Tree #3267 Western Joshua tree *(Yucca brevifolia)*

Photograph 3268. Tree #3268 Western Joshua tree *(Yucca brevifolia)*

Photograph 3269. Tree #3269 Western Joshua tree *(Yucca brevifolia)*

Photograph 3270. Tree #3270 Western Joshua tree *(Yucca brevifolia)*

Photograph 3271. Tree #3271 Western Joshua tree *(Yucca brevifolia)*

Photograph 3272. Tree #3272 Western Joshua tree *(Yucca brevifolia)*

Photograph 3273. Tree #3273 Western Joshua tree *(Yucca brevifolia)*

Photograph 3274. Tree #3274 Western Joshua tree *(Yucca brevifolia)*

Photograph 3275. Tree #3275 Western Joshua tree *(Yucca brevifolia)*

Photograph 3276. Tree #3276 Western Joshua tree *(Yucca brevifolia)*

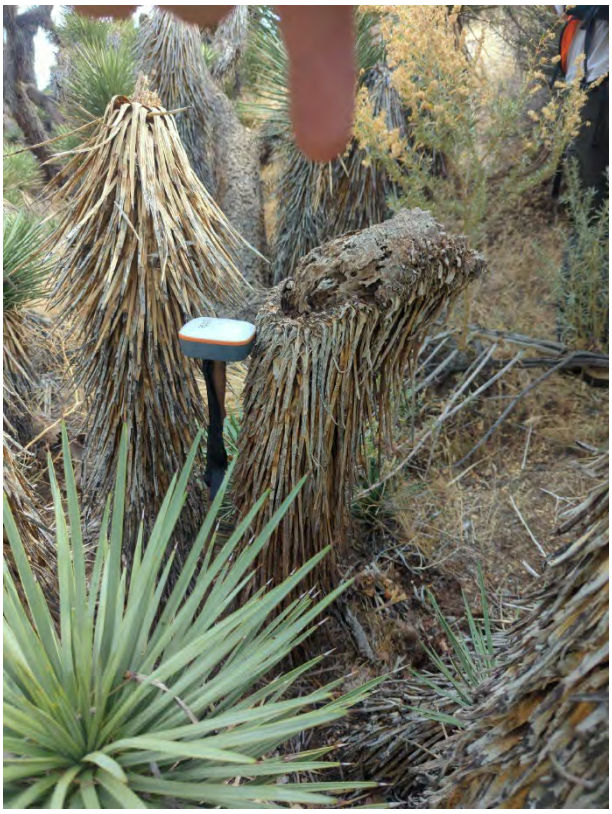
Photograph 3277. Tree #3277 Western Joshua tree *(Yucca brevifolia)*

Photograph 3278. Tree #3278 Western Joshua tree *(Yucca brevifolia)*

Photograph 3279. Tree #3279 Western Joshua tree *(Yucca brevifolia)*

Photograph 3280. Tree #3280 Western Joshua tree *(Yucca brevifolia)*

Photograph 3281. Tree #3281 Western Joshua tree *(Yucca brevifolia)*



Photograph 3282. Tree #3282 Western Joshua tree *(Yucca brevifolia)*

Photograph 3283. Tree #3283 Western Joshua tree *(Yucca brevifolia)*

Photograph 3284. Tree #3284 Western Joshua tree *(Yucca brevifolia)*

Photograph 3285. Tree #3285 Western Joshua tree *(Yucca brevifolia)*

Photograph 3286. Tree #3286 Western Joshua tree *(Yucca brevifolia)*

Photograph 3287. Tree #3287 Western Joshua tree *(Yucca brevifolia)*

Photograph 3288. Tree #3288 Western Joshua tree *(Yucca brevifolia)*

Photograph 3289. Tree #3289 Western Joshua tree *(Yucca brevifolia)*

Photograph 3290. Tree #3290 Western Joshua tree *(Yucca brevifolia)*

Photograph 3291. Tree #3291 Western Joshua tree *(Yucca brevifolia)*

Photograph 3292. Tree #3292 Western Joshua tree *(Yucca brevifolia)*

Photograph 3293. Tree #3293 Western Joshua tree *(Yucca brevifolia)*

Photograph 3294. Tree #3294 Western Joshua tree *(Yucca brevifolia)*

Photograph 3295. Tree #3295 Western Joshua tree *(Yucca brevifolia)*

Photograph 3296. Tree #3296 Western Joshua tree *(Yucca brevifolia)*

Photograph 3297. Tree #3297 Western Joshua tree *(Yucca brevifolia)*

Photograph 3298. Tree #3298 Western Joshua tree *(Yucca brevifolia)*

Photograph 3299. Tree #3299 Western Joshua tree *(Yucca brevifolia)*

Photograph 3300. Tree #3300 Western Joshua tree *(Yucca brevifolia)*

Photograph 3301. Tree #3301 Western Joshua tree *(Yucca brevifolia)*

Photograph 3302. Tree #3302 Western Joshua tree *(Yucca brevifolia)*

Photograph 3303. Tree #3303 Western Joshua tree *(Yucca brevifolia)*

Photograph 3304. Tree #3304 Western Joshua tree *(Yucca brevifolia)*

Photograph 3305. Tree #3305 Western Joshua tree *(Yucca brevifolia)*

Photograph 3306. Tree #3306 Western Joshua tree *(Yucca brevifolia)*

Photograph 3307. Tree #3307 Western Joshua tree *(Yucca brevifolia)*

Photograph 3308. Tree #3308 Western Joshua tree *(Yucca brevifolia)*

Photograph 3309. Tree #3309 Western Joshua tree *(Yucca brevifolia)*

Photograph 3310. Tree #3310 Western Joshua tree *(Yucca brevifolia)*

Photograph 3311. Tree #3311 Western Joshua tree *(Yucca brevifolia)*

Photograph 3312. Tree #3312 Western Joshua tree *(Yucca brevifolia)*

Photograph 3313. Tree #3313 Western Joshua tree *(Yucca brevifolia)*

Photograph 3314. Tree #3314 Western Joshua tree *(Yucca brevifolia)*

Photograph 3315. Tree #3315 Western Joshua tree *(Yucca brevifolia)*

Photograph 3316. Tree #3316 Western Joshua tree *(Yucca brevifolia)*

Photograph 3317. Tree #3317 Western Joshua tree *(Yucca brevifolia)*

Photograph 3318. Tree #3318 Western Joshua tree *(Yucca brevifolia)*

Photograph 3319. Tree #3319 Western Joshua tree *(Yucca brevifolia)*

Photograph 3320. Tree #3320 Western Joshua tree *(Yucca brevifolia)*

Photograph 3321. Tree #3321 Western Joshua tree *(Yucca brevifolia)*

Photograph 3322. Tree #3322 Western Joshua tree *(Yucca brevifolia)*

Photograph 3323. Tree #3323 Western Joshua tree *(Yucca brevifolia)*

Photograph 3324. Tree #3324 Western Joshua tree *(Yucca brevifolia)*

Photograph 3325. Tree #3325 Western Joshua tree *(Yucca brevifolia)*

Photograph 3326. Tree #3326 Western Joshua tree *(Yucca brevifolia)*

Photograph 3327. Tree #3327 Western Joshua tree *(Yucca brevifolia)*

Photograph 3328. Tree #3328 Western Joshua tree *(Yucca brevifolia)*

Photograph 3329. Tree #3329 Western Joshua tree *(Yucca brevifolia)*

Photograph 3330. Tree #3330 Western Joshua tree *(Yucca brevifolia)*

Photograph 3331. Tree #3331 Western Joshua tree *(Yucca brevifolia)*

Photograph 3332. Tree #3332 Western Joshua tree *(Yucca brevifolia)*

Photograph 3333. Tree #3333 Western Joshua tree *(Yucca brevifolia)*

Photograph 3334. Tree #3334 Western Joshua tree *(Yucca brevifolia)*

Photograph 3335. Tree #3335 Western Joshua tree *(Yucca brevifolia)*

Photograph 3336. Tree #3336 Western Joshua tree *(Yucca brevifolia)*

Photograph 3337. Tree #3337 Western Joshua tree *(Yucca brevifolia)*

Photograph 3338. Tree #3338 Western Joshua tree *(Yucca brevifolia)*

Photograph 3339. Tree #3339 Western Joshua tree *(Yucca brevifolia)*

Photograph 3340. Tree #3340 Western Joshua tree *(Yucca brevifolia)*

Photograph 3341. Tree #3341 Western Joshua tree *(Yucca brevifolia)*

Photograph 3342. Tree #3342 Western Joshua tree *(Yucca brevifolia)*

Photograph 3343. Tree #3343 Western Joshua tree *(Yucca brevifolia)*

Photograph 3344. Tree #3344 Western Joshua tree *(Yucca brevifolia)*

Photograph 3345. Tree #3345 Western Joshua tree *(Yucca brevifolia)*

Photograph 3346. Tree #3346 Western Joshua tree *(Yucca brevifolia)*

Photograph 3347. Tree #3347 Western Joshua tree *(Yucca brevifolia)*

Photograph 3348. Tree #3348 Western Joshua tree *(Yucca brevifolia)*

Photograph 3349. Tree #3349 Western Joshua tree *(Yucca brevifolia)*

Photograph 3350. Tree #3350 Western Joshua tree *(Yucca brevifolia)*

Photograph 3351. Tree #3351 Western Joshua tree *(Yucca brevifolia)*

Photograph 3352. Tree #3352 Western Joshua tree *(Yucca brevifolia)*

Photograph 3353. Tree #3353 Western Joshua tree *(Yucca brevifolia)*

Photograph 3354. Tree #3354 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3356. Tree #3356 Western Joshua tree *(Yucca brevifolia)*

Photograph 3357. Tree #3357 Western Joshua tree *(Yucca brevifolia)*

Photograph 3358. Tree #3358 Western Joshua tree *(Yucca brevifolia)*

Photograph 3359. Tree #3359 Western Joshua tree *(Yucca brevifolia)*

Photograph 3360. Tree #3360 Western Joshua tree *(Yucca brevifolia)*

Photograph 3361. Tree #3361 Western Joshua tree *(Yucca brevifolia)*

Photograph 3362. Tree #3362 Western Joshua tree *(Yucca brevifolia)*

Photograph 3363. Tree #3363 Western Joshua tree *(Yucca brevifolia)*

Photograph 3364. Tree #3364 Western Joshua tree *(Yucca brevifolia)*

Photograph 3365. Tree #3365 Western Joshua tree *(Yucca brevifolia)*

Photograph 3366. Tree #3366 Western Joshua tree *(Yucca brevifolia)*

Photograph 3367. Tree #3367 Western Joshua tree *(Yucca brevifolia)*

Photograph 3368. Tree #3368 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3370. Tree #3370 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3372. Tree #3372 Western Joshua tree *(Yucca brevifolia)*

Photograph 3373. Tree #3373 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3375. Tree #3375 Western Joshua tree *(Yucca brevifolia)*

Photograph 3376. Tree #3376 Western Joshua tree *(Yucca brevifolia)*

Photograph 3377. Tree #3377 Western Joshua tree *(Yucca brevifolia)*

Photograph 3378. Tree #3378 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3381. Tree #3381 Western Joshua tree *(Yucca brevifolia)*

Photograph 3382. Tree #3382 Western Joshua tree *(Yucca brevifolia)*

Photograph 3383. Tree #3383 Western Joshua tree *(Yucca brevifolia)*

Photograph 3384. Tree #3384 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3399. Tree #3399 Western Joshua tree *(Yucca brevifolia)*

Photograph 3400. Tree #3400 Western Joshua tree *(Yucca brevifolia)*

Photograph 3401. Tree #3401 Western Joshua tree *(Yucca brevifolia)*

Photograph 3402. Tree #3402 Western Joshua tree *(Yucca brevifolia)*

Photograph 3403. Tree #3403 Western Joshua tree *(Yucca brevifolia)*

Photograph 3404. Tree #3404 Western Joshua tree *(Yucca brevifolia)*

Photograph 3405. Tree #3405 Western Joshua tree *(Yucca brevifolia)*

Photograph 3406. Tree #3406 Western Joshua tree *(Yucca brevifolia)*

Photograph 3407. Tree #3407 Western Joshua tree *(Yucca brevifolia)*

Photograph 3408. Tree #3408 Western Joshua tree *(Yucca brevifolia)*

Photograph 3409. Tree #3409 Western Joshua tree *(Yucca brevifolia)*

Photograph 3410. Tree #3410 Western Joshua tree *(Yucca brevifolia)*

Photograph 3411. Tree #3411 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3421. Tree #3421 Western Joshua tree *(Yucca brevifolia)*

Photograph 3422. Tree #3422 Western Joshua tree *(Yucca brevifolia)*

Photograph 3423. Tree #3423 Western Joshua tree *(Yucca brevifolia)*

Photograph 3424. Tree #3424 Western Joshua tree *(Yucca brevifolia)*

Photograph 3425. Tree #3425 Western Joshua tree *(Yucca brevifolia)*

Photograph 3426. Tree #3426 Western Joshua tree *(Yucca brevifolia)*

Photograph 3427. Tree #3427 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3435. Tree #3435 Western Joshua tree *(Yucca brevifolia)*

Photograph 3436. Tree #3436 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3439. Tree #3439 Western Joshua tree *(Yucca brevifolia)*

Photograph 3440. Tree #3440 Western Joshua tree *(Yucca brevifolia)*

Photograph 3441. Tree #3441 Western Joshua tree *(Yucca brevifolia)*

Photograph 3442. Tree #3442 Western Joshua tree *(Yucca brevifolia)*

Photograph 3443. Tree #3443 Western Joshua tree *(Yucca brevifolia)*

Photograph 3444. Tree #3444 Western Joshua tree *(Yucca brevifolia)*

Photograph 3445. Tree #3445 Western Joshua tree *(Yucca brevifolia)*

Photograph 3446. Tree #3446 Western Joshua tree *(Yucca brevifolia)*

Photograph 3447. Tree #3447 Western Joshua tree *(Yucca brevifolia)*

Photograph 3448. Tree #3448 Western Joshua tree *(Yucca brevifolia)*

Photograph 3449. Tree #3449 Western Joshua tree *(Yucca brevifolia)*

Photograph 3450. Tree #3450 Western Joshua tree *(Yucca brevifolia)*

Photograph 3451. Tree #3451 Western Joshua tree *(Yucca brevifolia)*

Photograph 3452. Tree #3452 Western Joshua tree *(Yucca brevifolia)*

Photograph 3453. Tree #3453 Western Joshua tree *(Yucca brevifolia)*

Photograph 3454. Tree #3454 Western Joshua tree *(Yucca brevifolia)*

Photograph 3455. Tree #3455 Western Joshua tree *(Yucca brevifolia)*

Photograph 3456. Tree #3456 Western Joshua tree *(Yucca brevifolia)*

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Photograph 3461. Tree #3461 Western Joshua tree *(Yucca brevifolia)*

Photograph 3462. Tree #3462 Western Joshua tree *(Yucca brevifolia)*

Photograph 3463. Tree #3463 Western Joshua tree *(Yucca brevifolia)*

Photograph 3464. Tree #3464 Western Joshua tree *(Yucca brevifolia)*

Photograph 3465. Tree #3465 Western Joshua tree *(Yucca brevifolia)*

Photograph 3466. Tree #3466 Western Joshua tree *(Yucca brevifolia)*

Photograph 3467. Tree #3467 Western Joshua tree *(Yucca brevifolia)*

Photograph 3468. Tree #3468 Western Joshua tree *(Yucca brevifolia)*

Photograph 3470. Tree #3470 Western Joshua tree *(Yucca brevifolia)*

Photograph 3469. Tree #3469 Western Joshua tree *(Yucca brevifolia)*

Photograph 3471. Tree #3471 Western Joshua tree *(Yucca brevifolia)*

Attachment 2

Western Joshua Tree Census Table

Western Joshua Tree Census Table[1]

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1	>1 meter but <5 meters	Live	No	None
2	<1 meter	Live	No	None
3	>1 meter but <5 meters	Live	No	None
4	<1 meter	Live	No	None
5	<1 meter	Live	No	None
7	>1 meter but <5 meters	Live	No	None
8	<1 meter	Live	No	None
9	<1 meter	Live	No	None
10	>1 meter but <5 meters	Live	No	None
11	<1 meter	Live	No	None
12	<1 meter	Dead	No	None
13	<1 meter	Live	No	None
14	<1 meter	Live	No	None
15	>1 meter but <5 meters	Dead	No	None
16	<1 meter	Dead	No	None
17	<1 meter	Dead	No	None
18	<1 meter	Live	No	None
19	<1 meter	Live	No	None
20	<1 meter	Live	No	None
21	<1 meter	Live	No	None
22	<1 meter	Dead	No	None
23	<1 meter	Live	No	None
24	<1 meter	Live	No	None
25	<1 meter	Live	No	None
26	<1 meter	Live	No	None
27	<1 meter	Live	No	None
28	<1 meter	Dead	No	None
29	<1 meter	Dead	No	None
30	>1 meter but <5 meters	Dead	No	None
31	<1 meter	Live	No	None
32	<1 meter	Live	No	None
33	<1 meter	Live	No	None
34	<1 meter	Live	No	None
35	>1 meter but <5 meters	Live	No	None
36	>1 meter but <5 meters	Dead	No	None
37	>1 meter but <5 meters	Live	No	None

[1] Due to a labeling error, two tree IDs (6 and 2097) are not included in the table. Although the tree IDs range from 1 to 3471, the total number of trees in the table is 3,469.

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
38	>1 meter but <5 meters	Dead	No	None
39	>1 meter but <5 meters	Dead	No	None
40	<1 meter	Dead	No	None
41	<1 meter	Live	No	None
42	<1 meter	Live	No	None
43	<1 meter	Dead	No	None
44	<1 meter	Live	No	None
45	<1 meter	Live	No	None
46	<1 meter	Live	No	None
47	<1 meter	Dead	No	None
48	<1 meter	Dead	No	None
49	<1 meter	Live	No	None
50	<1 meter	Live	No	None
51	<1 meter	Live	No	None
52	<1 meter	Live	No	None
53	<1 meter	Live	No	None
54	<1 meter	Live	No	None
55	<1 meter	Live	No	None
56	>1 meter but <5 meters	Live	Yes	None
57	≥ 5 meters	Live	Yes	None
58	<1 meter	Live	No	None
59	<1 meter	Live	No	None
60	>1 meter but <5 meters	Live	No	None
61	<1 meter	Live	No	None
62	>1 meter but <5 meters	Live	No	None
63	>1 meter but <5 meters	Live	No	None
64	>1 meter but <5 meters	Live	No	None
65	>1 meter but <5 meters	Live	No	None
66	>1 meter but <5 meters	Live	No	None
67	<1 meter	Live	No	None
68	<1 meter	Live	No	None
69	<1 meter	Live	No	None
70	>1 meter but <5 meters	Dead	No	None
71	>1 meter but <5 meters	Live	Yes	None
72	<1 meter	Live	No	None
73	<1 meter	Live	No	None
74	>1 meter but <5 meters	Live	No	None
75	>1 meter but <5 meters	Live	No	None
76	>1 meter but <5 meters	Dead	Yes	None
77	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
78	>1 meter but <5 meters	Dead	Yes	None
79	>1 meter but <5 meters	Live	No	None
80	<1 meter	Dead	No	None
81	>1 meter but <5 meters	Live	No	None
82	>1 meter but <5 meters	Dead	Yes	None
83	<1 meter	Live	No	None
84	<1 meter	Live	No	None
85	<1 meter	Dead	No	None
86	<1 meter	Dead	No	None
87	>1 meter but <5 meters	Live	No	None
88	>1 meter but <5 meters	Live	No	None
89	<1 meter	Live	No	None
90	<1 meter	Live	No	None
91	<1 meter	Live	No	None
92	<1 meter	Live	No	None
93	<1 meter	Live	No	None
94	>1 meter but <5 meters	Live	No	None
95	>1 meter but <5 meters	Live	No	None
96	<1 meter	Live	No	None
97	<1 meter	Live	No	None
98	<1 meter	Live	No	None
99	<1 meter	Live	No	None
100	<1 meter	Live	No	None
101	<1 meter	Live	No	None
102	<1 meter	Live	No	None
103	<1 meter	Live	No	None
104	<1 meter	Live	No	None
105	<1 meter	Live	No	None
106	<1 meter	Live	No	None
107	<1 meter	Dead	No	None
108	<1 meter	Live	No	None
109	<1 meter	Live	No	None
110	<1 meter	Live	No	None
111	<1 meter	Live	No	None
112	<1 meter	Live	No	None
113	<1 meter	Live	No	None
114	<1 meter	Live	No	None
115	<1 meter	Live	No	None
116	>1 meter but <5 meters	Live	No	None
117	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
118	>1 meter but <5 meters	Live	Yes	None
119	>1 meter but <5 meters	Live	No	None
120	>1 meter but <5 meters	Live	No	None
121	>1 meter but <5 meters	Live	Yes	None
122	<1 meter	Live	No	None
123	>1 meter but <5 meters	Live	Yes	None
124	>1 meter but <5 meters	Live	Yes	None
125	<1 meter	Live	No	None
126	<1 meter	Live	No	None
127	>1 meter but <5 meters	Dead	Yes	None
128	<1 meter	Live	No	None
129	<1 meter	Live	No	None
130	>1 meter but <5 meters	Dead	Yes	None
131	>1 meter but <5 meters	Dead	Yes	None
132	>1 meter but <5 meters	Live	Yes	None
133	>1 meter but <5 meters	Dead	No	None
134	<1 meter	Live	No	None
135	<1 meter	Live	No	None
136	>1 meter but <5 meters	Dead	No	None
137	<1 meter	Dead	No	None
138	<1 meter	Dead	No	None
139	<1 meter	Dead	No	None
140	<1 meter	Dead	No	None
141	<1 meter	Live	No	None
142	<1 meter	Dead	No	None
143	<1 meter	Live	No	None
144	<1 meter	Dead	No	None
145	<1 meter	Dead	No	None
146	<1 meter	Dead	No	None
147	<1 meter	Dead	No	None
148	<1 meter	Dead	No	None
149	>1 meter but <5 meters	Dead	No	None
150	>1 meter but <5 meters	Dead	No	None
151	<1 meter	Dead	No	None
152	<1 meter	Live	No	None
153	<1 meter	Dead	No	None
154	<1 meter	Dead	No	None
155	<1 meter	Dead	No	None
156	<1 meter	Dead	No	None
157	<1 meter	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
158	<1 meter	Live	No	None
159	<1 meter	Live	No	None
160	<1 meter	Live	No	None
161	>1 meter but <5 meters	Dead	No	None
162	>1 meter but <5 meters	Dead	Yes	None
163	>1 meter but <5 meters	Dead	No	None
164	>1 meter but <5 meters	Dead	No	None
165	<1 meter	Dead	No	None
166	<1 meter	Dead	No	None
167	<1 meter	Dead	No	None
168	<1 meter	Live	No	None
169	<1 meter	Dead	No	None
170	>1 meter but <5 meters	Live	No	None
171	<1 meter	Live	No	None
172	<1 meter	Live	No	None
173	<1 meter	Live	No	None
174	<1 meter	Live	No	None
175	<1 meter	Live	No	None
176	<1 meter	Live	No	None
177	<1 meter	Live	No	None
178	<1 meter	Live	No	None
179	<1 meter	Live	No	None
180	<1 meter	Live	No	None
181	<1 meter	Live	No	None
182	<1 meter	Live	No	None
183	<1 meter	Live	No	None
184	<1 meter	Live	No	None
185	>1 meter but <5 meters	Live	No	None
186	>1 meter but <5 meters	Live	No	None
187	>1 meter but <5 meters	Live	No	None
188	<1 meter	Live	No	None
189	<1 meter	Live	No	None
190	<1 meter	Live	No	None
191	<1 meter	Live	No	None
192	>1 meter but <5 meters	Dead	No	None
193	<1 meter	Live	No	None
194	<1 meter	Live	No	None
195	<1 meter	Dead	No	None
196	<1 meter	Live	No	None
197	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
198	<1 meter	Live	No	None
199	<1 meter	Live	No	None
200	<1 meter	Live	No	None
201	<1 meter	Live	No	None
202	<1 meter	Live	No	None
203	<1 meter	Live	No	None
204	>1 meter but <5 meters	Live	No	None
205	<1 meter	Live	No	None
206	<1 meter	Live	No	None
207	<1 meter	Live	No	None
208	<1 meter	Live	No	None
209	<1 meter	Live	No	None
210	<1 meter	Live	Yes	None
211	<1 meter	Live	No	None
212	<1 meter	Live	No	None
213	<1 meter	Live	No	None
214	<1 meter	Live	No	None
215	<1 meter	Live	No	None
216	<1 meter	Live	No	None
217	<1 meter	Live	No	None
218	<1 meter	Dead	No	None
219	<1 meter	Live	No	None
220	<1 meter	Live	No	None
221	<1 meter	Dead	No	None
222	<1 meter	Dead	No	None
223	<1 meter	Live	No	None
224	<1 meter	Live	No	None
225	<1 meter	Live	Yes	None
226	<1 meter	Live	No	None
227	<1 meter	Live	No	None
228	<1 meter	Live	No	None
229	<1 meter	Live	No	None
230	<1 meter	Live	No	None
231	<1 meter	Live	No	None
232	<1 meter	Live	No	None
233	<1 meter	Live	No	None
234	<1 meter	Live	No	None
235	<1 meter	Dead	No	None
236	<1 meter	Dead	No	None
237	<1 meter	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
238	<1 meter	Dead	No	None
239	<1 meter	Dead	No	None
240	<1 meter	Live	No	None
241	>1 meter but <5 meters	Live	No	None
242	>1 meter but <5 meters	Live	No	None
243	>1 meter but <5 meters	Live	Yes	None
244	>1 meter but <5 meters	Live	Yes	None
245	<1 meter	Live	No	None
246	<1 meter	Live	No	None
247	<1 meter	Live	No	None
248	<1 meter	Live	No	None
249	<1 meter	Live	No	None
250	<1 meter	Live	No	None
251	<1 meter	Live	No	None
252	<1 meter	Live	No	None
253	<1 meter	Live	No	None
254	<1 meter	Live	No	None
255	<1 meter	Live	No	None
256	>1 meter but <5 meters	Dead	Yes	None
257	<1 meter	Live	No	None
258	<1 meter	Dead	No	None
259	<1 meter	Live	No	None
260	>1 meter but <5 meters	Live	No	None
261	<1 meter	Live	No	None
262	<1 meter	Live	No	None
263	<1 meter	Live	No	None
264	<1 meter	Live	No	None
265	>1 meter but <5 meters	Live	No	None
266	<1 meter	Live	No	None
267	<1 meter	Live	No	None
268	>1 meter but <5 meters	Live	Yes	None
269	<1 meter	Live	No	None
270	<1 meter	Live	No	None
271	>1 meter but <5 meters	Live	No	None
272	<1 meter	Live	Yes	None
273	>1 meter but <5 meters	Live	No	None
274	<1 meter	Live	No	None
275	<1 meter	Live	No	None
276	>1 meter but <5 meters	Live	No	None
277	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
278	<1 meter	Live	No	None
279	>1 meter but <5 meters	Dead	No	None
280	<1 meter	Live	No	None
281	<1 meter	Live	No	None
282	<1 meter	Live	No	None
283	<1 meter	Live	Yes	None
284	<1 meter	Live	No	None
285	<1 meter	Live	No	None
286	<1 meter	Live	No	None
287	<1 meter	Dead	No	None
288	>1 meter but <5 meters	Dead	Yes	None
289	<1 meter	Live	No	None
290	>1 meter but <5 meters	Dead	Yes	None
291	>1 meter but <5 meters	Live	No	None
292	>1 meter but <5 meters	Live	Yes	None
293	>1 meter but <5 meters	Live	No	None
294	>1 meter but <5 meters	Live	Yes	None
295	<1 meter	Dead	No	None
296	>1 meter but <5 meters	Dead	Yes	None
297	>1 meter but <5 meters	Live	No	None
298	>1 meter but <5 meters	Live	Yes	None
299	<1 meter	Live	No	None
300	>1 meter but <5 meters	Live	Yes	None
301	<1 meter	Live	No	None
302	<1 meter	Live	No	None
303	>1 meter but <5 meters	Live	Yes	None
304	<1 meter	Live	No	None
305	<1 meter	Live	No	None
306	>1 meter but <5 meters	Live	Yes	None
307	<1 meter	Dead	No	None
308	<1 meter	Dead	No	None
309	>1 meter but <5 meters	Dead	Yes	None
310	<1 meter	Live	No	None
311	<1 meter	Live	No	None
312	<1 meter	Dead	No	None
313	<1 meter	Live	No	None
314	<1 meter	Live	No	None
315	<1 meter	Dead	No	None
316	>1 meter but <5 meters	Dead	No	None
317	>1 meter but <5 meters	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
318	>1 meter but <5 meters	Dead	No	None
319	>1 meter but <5 meters	Live	Yes	Fruiting
320	>1 meter but <5 meters	Live	No	None
321	>1 meter but <5 meters	Live	No	None
322	>1 meter but <5 meters	Live	No	None
323	<1 meter	Live	No	None
324	>1 meter but <5 meters	Live	No	None
325	<1 meter	Live	No	None
326	<1 meter	Live	No	None
327	>1 meter but <5 meters	Dead	Yes	None
328	>1 meter but <5 meters	Dead	Yes	None
329	>1 meter but <5 meters	Live	No	None
330	>1 meter but <5 meters	Dead	No	None
331	>1 meter but <5 meters	Live	No	None
332	>1 meter but <5 meters	Dead	No	None
333	>1 meter but <5 meters	Live	No	None
334	>1 meter but <5 meters	Live	No	None
335	<1 meter	Live	No	None
336	<1 meter	Dead	No	None
337	<1 meter	Dead	No	None
338	<1 meter	Live	No	None
339	<1 meter	Live	No	None
340	<1 meter	Live	No	None
341	>1 meter but <5 meters	Dead	Yes	None
342	>1 meter but <5 meters	Live	No	None
343	<1 meter	Live	No	None
344	<1 meter	Live	No	None
345	>1 meter but <5 meters	Live	No	None
346	>1 meter but <5 meters	Dead	No	None
347	>1 meter but <5 meters	Dead	No	None
348	<1 meter	Live	No	None
349	>1 meter but <5 meters	Dead	No	None
350	<1 meter	Live	No	None
351	<1 meter	Live	Yes	None
352	>1 meter but <5 meters	Live	No	None
353	<1 meter	Live	No	None
354	>1 meter but <5 meters	Live	Yes	None
355	>1 meter but <5 meters	Live	No	None
356	>1 meter but <5 meters	Dead	Yes	None
357	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
358	>1 meter but <5 meters	Dead	No	None
359	>1 meter but <5 meters	Live	No	None
360	>1 meter but <5 meters	Live	No	None
361	>1 meter but <5 meters	Live	No	None
362	<1 meter	Live	No	None
363	>1 meter but <5 meters	Live	No	None
364	<1 meter	Live	No	None
365	>1 meter but <5 meters	Live	Yes	None
366	>1 meter but <5 meters	Live	No	None
367	<1 meter	Live	No	None
368	>1 meter but <5 meters	Live	No	None
369	>1 meter but <5 meters	Dead	Yes	None
370	>1 meter but <5 meters	Live	No	None
371	<1 meter	Live	No	None
372	<1 meter	Live	No	None
373	<1 meter	Live	No	None
374	<1 meter	Live	No	None
375	<1 meter	Live	No	None
376	<1 meter	Live	No	None
377	>1 meter but <5 meters	Live	No	None
378	>1 meter but <5 meters	Live	No	None
379	<1 meter	Dead	No	None
380	<1 meter	Dead	No	None
381	<1 meter	Dead	No	None
382	<1 meter	Dead	No	None
383	<1 meter	Live	No	None
384	<1 meter	Live	No	None
385	<1 meter	Live	No	None
386	<1 meter	Live	No	None
387	>1 meter but <5 meters	Live	Yes	None
388	<1 meter	Live	No	None
389	<1 meter	Live	No	None
390	<1 meter	Live	No	None
391	<1 meter	Live	No	None
392	<1 meter	Live	No	None
393	<1 meter	Live	No	None
394	<1 meter	Live	No	None
395	<1 meter	Live	No	None
396	<1 meter	Live	No	None
397	<1 meter	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
398	<1 meter	Live	No	None
399	<1 meter	Live	No	None
400	>1 meter but <5 meters	Live	No	None
401	<1 meter	Live	No	None
402	>1 meter but <5 meters	Dead	Yes	None
403	>1 meter but <5 meters	Live	Yes	None
404	<1 meter	Live	No	None
405	<1 meter	Live	No	None
406	<1 meter	Live	No	None
407	<1 meter	Live	No	None
408	<1 meter	Live	No	None
409	<1 meter	Live	No	None
410	<1 meter	Live	No	None
411	<1 meter	Live	No	None
412	<1 meter	Live	No	None
413	>1 meter but <5 meters	Live	Yes	None
414	<1 meter	Live	No	None
415	<1 meter	Live	No	None
416	<1 meter	Live	No	None
417	<1 meter	Live	No	None
418	<1 meter	Live	No	None
419	<1 meter	Live	No	None
420	>1 meter but <5 meters	Live	Yes	None
421	<1 meter	Live	No	None
422	>1 meter but <5 meters	Live	No	None
423	<1 meter	Live	No	None
424	<1 meter	Live	No	None
425	<1 meter	Live	No	None
426	<1 meter	Live	No	None
427	<1 meter	Live	No	None
428	>1 meter but <5 meters	Live	No	None
429	>1 meter but <5 meters	Dead	No	None
430	<1 meter	Live	No	None
431	<1 meter	Dead	No	None
432	<1 meter	Dead	No	None
433	<1 meter	Dead	No	None
434	>1 meter but <5 meters	Live	No	None
435	<1 meter	Live	No	None
436	>1 meter but <5 meters	Dead	No	None
437	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
438	<1 meter	Live	No	None
439	>1 meter but <5 meters	Live	Yes	None
440	<1 meter	Live	No	None
441	<1 meter	Dead	No	None
442	<1 meter	Live	No	None
443	<1 meter	Live	No	None
444	>1 meter but <5 meters	Live	Yes	None
445	>1 meter but <5 meters	Live	No	None
446	<1 meter	Live	No	None
447	>1 meter but <5 meters	Live	No	None
448	>1 meter but <5 meters	Live	Yes	None
449	<1 meter	Live	No	None
450	<1 meter	Live	No	None
451	>1 meter but <5 meters	Live	Yes	None
452	>1 meter but <5 meters	Live	Yes	None
453	>1 meter but <5 meters	Live	Yes	None
454	>1 meter but <5 meters	Live	Yes	None
455	<1 meter	Live	No	None
456	>1 meter but <5 meters	Live	Yes	None
457	<1 meter	Live	No	None
458	<1 meter	Live	No	None
459	>1 meter but <5 meters	Live	Yes	None
460	<1 meter	Live	No	None
461	<1 meter	Live	No	None
462	>1 meter but <5 meters	Live	Yes	None
463	>1 meter but <5 meters	Live	Yes	None
464	>1 meter but <5 meters	Live	Yes	None
465	>1 meter but <5 meters	Dead	Yes	None
466	<1 meter	Live	No	None
467	<1 meter	Live	No	None
468	<1 meter	Live	No	None
469	<1 meter	Live	No	None
470	<1 meter	Dead	No	None
471	<1 meter	Live	No	None
472	>1 meter but <5 meters	Live	No	None
473	<1 meter	Live	No	None
474	<1 meter	Live	No	None
475	<1 meter	Live	No	None
476	>1 meter but <5 meters	Live	Yes	None
477	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
478	>1 meter but <5 meters	Live	Yes	None
479	>1 meter but <5 meters	Live	Yes	None
480	>1 meter but <5 meters	Live	No	None
481	<1 meter	Live	No	None
482	<1 meter	Live	No	None
483	<1 meter	Live	No	None
484	<1 meter	Live	No	None
485	<1 meter	Live	No	None
486	>1 meter but <5 meters	Live	No	None
487	<1 meter	Live	No	None
488	<1 meter	Live	No	None
489	<1 meter	Live	No	None
490	<1 meter	Live	No	None
491	<1 meter	Live	No	None
492	>1 meter but <5 meters	Live	No	None
493	<1 meter	Live	No	None
494	<1 meter	Live	No	None
495	<1 meter	Live	No	None
496	<1 meter	Live	No	None
497	>1 meter but <5 meters	Live	No	None
498	>1 meter but <5 meters	Live	No	None
499	>1 meter but <5 meters	Live	Yes	None
500	<1 meter	Live	No	None
501	>1 meter but <5 meters	Live	Yes	None
502	>1 meter but <5 meters	Live	Yes	None
503	>1 meter but <5 meters	Live	Yes	None
504	>1 meter but <5 meters	Live	No	None
505	>1 meter but <5 meters	Live	No	None
506	<1 meter	Live	No	None
507	<1 meter	Live	No	None
508	>1 meter but <5 meters	Live	No	None
509	>1 meter but <5 meters	Live	No	None
510	>1 meter but <5 meters	Live	No	None
511	>1 meter but <5 meters	Live	No	None
512	<1 meter	Live	No	None
513	<1 meter	Live	No	None
514	<1 meter	Dead	No	None
515	<1 meter	Live	No	None
516	>1 meter but <5 meters	Live	No	None
517	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
518	>1 meter but <5 meters	Live	No	None
519	>1 meter but <5 meters	Live	Yes	None
520	>1 meter but <5 meters	Live	No	None
521	<1 meter	Live	No	None
522	<1 meter	Live	No	None
523	<1 meter	Live	No	None
524	<1 meter	Live	No	None
525	<1 meter	Live	No	None
526	<1 meter	Dead	No	None
527	>1 meter but <5 meters	Live	No	None
528	>1 meter but <5 meters	Live	No	None
529	>1 meter but <5 meters	Live	No	None
530	<1 meter	Live	No	None
531	<1 meter	Live	No	None
532	<1 meter	Live	No	None
533	<1 meter	Live	No	None
534	>1 meter but <5 meters	Live	No	None
535	>1 meter but <5 meters	Live	Yes	None
536	<1 meter	Live	No	None
537	>1 meter but <5 meters	Live	Yes	None
538	>1 meter but <5 meters	Dead	No	None
539	<1 meter	Live	No	None
540	<1 meter	Live	No	None
541	<1 meter	Live	No	None
542	<1 meter	Live	No	None
543	>1 meter but <5 meters	Dead	No	None
544	>1 meter but <5 meters	Live	No	None
545	>1 meter but <5 meters	Live	Yes	None
546	>1 meter but <5 meters	Dead	No	None
547	<1 meter	Live	No	None
548	>1 meter but <5 meters	Dead	Yes	None
549	>1 meter but <5 meters	Dead	No	None
550	>1 meter but <5 meters	Dead	No	None
551	<1 meter	Dead	No	None
552	<1 meter	Dead	No	None
553	<1 meter	Live	No	None
554	>1 meter but <5 meters	Live	No	None
555	<1 meter	Live	No	None
556	>1 meter but <5 meters	Live	Yes	None
557	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
558	>1 meter but <5 meters	Live	No	None
559	>1 meter but <5 meters	Live	No	None
560	>1 meter but <5 meters	Dead	Yes	None
561	>1 meter but <5 meters	Live	Yes	None
562	<1 meter	Live	No	None
563	<1 meter	Live	No	None
564	<1 meter	Live	No	None
565	<1 meter	Live	No	None
566	<1 meter	Live	No	None
567	<1 meter	Live	No	None
568	<1 meter	Live	No	None
569	<1 meter	Live	No	None
570	<1 meter	Live	No	None
571	>1 meter but <5 meters	Live	Yes	None
572	<1 meter	Live	No	None
573	<1 meter	Live	No	None
574	<1 meter	Live	No	None
575	<1 meter	Live	No	None
576	<1 meter	Live	No	None
577	>1 meter but <5 meters	Live	Yes	None
578	<1 meter	Live	No	None
579	<1 meter	Live	No	None
580	>1 meter but <5 meters	Live	Yes	None
581	>1 meter but <5 meters	Live	Yes	None
582	<1 meter	Live	No	None
583	>1 meter but <5 meters	Live	Yes	None
584	<1 meter	Live	No	None
585	>1 meter but <5 meters	Dead	No	None
586	>1 meter but <5 meters	Live	No	None
587	>1 meter but <5 meters	Dead	No	None
588	<1 meter	Live	No	None
589	<1 meter	Live	No	None
590	>1 meter but <5 meters	Dead	No	None
591	>1 meter but <5 meters	Dead	No	None
592	>1 meter but <5 meters	Live	No	None
593	>1 meter but <5 meters	Live	No	None
594	>1 meter but <5 meters	Live	No	None
595	<1 meter	Live	No	None
596	<1 meter	Live	No	None
597	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
598	>1 meter but <5 meters	Live	No	None
599	<1 meter	Live	No	None
600	<1 meter	Live	No	None
601	<1 meter	Live	No	None
602	<1 meter	Live	No	None
603	<1 meter	Live	No	None
604	≥ 5 meters	Dead	Yes	None
605	<1 meter	Live	No	None
606	<1 meter	Live	No	None
607	>1 meter but <5 meters	Live	No	None
608	<1 meter	Live	No	None
609	<1 meter	Live	No	None
610	>1 meter but <5 meters	Live	No	None
611	>1 meter but <5 meters	Live	No	None
612	≥ 5 meters	Live	Yes	None
613	>1 meter but <5 meters	Live	Yes	None
614	<1 meter	Dead	No	None
615	>1 meter but <5 meters	Dead	Yes	None
616	<1 meter	Live	No	None
617	<1 meter	Live	No	None
618	<1 meter	Live	No	None
619	>1 meter but <5 meters	Live	No	None
620	<1 meter	Live	No	None
621	<1 meter	Live	No	None
622	<1 meter	Live	No	None
623	>1 meter but <5 meters	Live	Yes	None
624	>1 meter but <5 meters	Live	Yes	None
625	>1 meter but <5 meters	Dead	No	None
626	>1 meter but <5 meters	Live	No	None
627	>1 meter but <5 meters	Live	No	None
628	>1 meter but <5 meters	Dead	No	None
629	≥ 5 meters	Live	Yes	None
630	>1 meter but <5 meters	Live	No	None
631	>1 meter but <5 meters	Live	No	None
632	>1 meter but <5 meters	Live	No	None
633	<1 meter	Live	No	None
634	>1 meter but <5 meters	Live	Yes	None
635	<1 meter	Live	No	None
636	<1 meter	Live	No	None
637	<1 meter	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
638	<1 meter	Live	No	None
639	>1 meter but <5 meters	Dead	No	None
640	≥ 5 meters	Live	Yes	None
641	<1 meter	Live	No	None
642	>1 meter but <5 meters	Live	No	None
643	<1 meter	Live	No	None
644	>1 meter but <5 meters	Live	Yes	None
645	<1 meter	Live	No	None
646	>1 meter but <5 meters	Live	No	None
647	≥ 5 meters	Live	Yes	None
648	>1 meter but <5 meters	Dead	No	None
649	<1 meter	Live	No	None
650	>1 meter but <5 meters	Live	No	None
651	<1 meter	Live	No	None
652	>1 meter but <5 meters	Live	Yes	None
653	>1 meter but <5 meters	Live	No	None
654	>1 meter but <5 meters	Live	No	None
655	<1 meter	Live	No	None
656	≥ 5 meters	Live	Yes	None
657	<1 meter	Live	No	None
658	<1 meter	Live	No	None
659	<1 meter	Live	No	None
660	<1 meter	Live	No	None
661	<1 meter	Live	No	None
662	<1 meter	Live	No	None
663	<1 meter	Live	No	None
664	<1 meter	Live	No	None
665	<1 meter	Live	No	None
666	<1 meter	Live	No	None
667	<1 meter	Dead	No	None
668	<1 meter	Live	No	None
669	<1 meter	Live	No	None
670	<1 meter	Live	No	None
671	<1 meter	Live	No	None
672	<1 meter	Live	No	None
673	<1 meter	Live	No	None
674	<1 meter	Live	No	None
675	<1 meter	Live	No	None
676	≥ 5 meters	Live	Yes	None
677	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
678	>1 meter but <5 meters	Live	No	None
679	>1 meter but <5 meters	Live	No	None
680	>1 meter but <5 meters	Live	No	None
681	>1 meter but <5 meters	Live	No	None
682	≥ 5 meters	Live	Yes	None
683	<1 meter	Live	No	None
684	<1 meter	Live	No	None
685	≥ 5 meters	Live	Yes	None
686	<1 meter	Live	No	None
687	<1 meter	Dead	No	None
688	>1 meter but <5 meters	Live	Yes	None
689	>1 meter but <5 meters	Live	Yes	None
690	>1 meter but <5 meters	Live	No	None
691	≥ 5 meters	Live	Yes	None
692	<1 meter	Live	No	None
693	>1 meter but <5 meters	Live	Yes	None
694	>1 meter but <5 meters	Dead	Yes	None
695	>1 meter but <5 meters	Live	Yes	None
696	>1 meter but <5 meters	Live	Yes	None
697	<1 meter	Live	No	None
698	<1 meter	Live	No	None
699	<1 meter	Live	No	None
700	<1 meter	Live	No	None
701	>1 meter but <5 meters	Live	Yes	None
702	<1 meter	Live	No	None
703	<1 meter	Live	No	None
704	<1 meter	Live	No	None
705	<1 meter	Live	No	None
706	>1 meter but <5 meters	Live	Yes	None
707	>1 meter but <5 meters	Live	Yes	None
708	<1 meter	Live	No	None
709	>1 meter but <5 meters	Dead	Yes	None
710	>1 meter but <5 meters	Live	Yes	None
711	>1 meter but <5 meters	Live	Yes	None
712	>1 meter but <5 meters	Live	Yes	None
713	>1 meter but <5 meters	Dead	No	None
714	<1 meter	Live	No	None
715	≥ 5 meters	Live	Yes	None
716	>1 meter but <5 meters	Dead	No	None
717	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
718	<1 meter	Live	No	None
719	>1 meter but <5 meters	Live	No	None
720	<1 meter	Live	No	None
721	<1 meter	Live	No	None
722	<1 meter	Live	No	None
723	<1 meter	Live	No	None
724	>1 meter but <5 meters	Live	Yes	None
725	<1 meter	Live	No	None
726	<1 meter	Live	No	None
727	>1 meter but <5 meters	Live	Yes	None
728	<1 meter	Live	No	None
729	<1 meter	Live	No	None
730	>1 meter but <5 meters	Live	No	None
731	>1 meter but <5 meters	Live	Yes	None
732	>1 meter but <5 meters	Live	No	None
733	<1 meter	Live	No	None
734	<1 meter	Live	No	None
735	<1 meter	Live	No	None
736	<1 meter	Live	No	None
737	<1 meter	Live	No	None
738	<1 meter	Live	No	None
739	<1 meter	Live	No	None
740	>1 meter but <5 meters	Dead	Yes	None
741	≥ 5 meters	Live	Yes	None
742	<1 meter	Live	No	None
743	<1 meter	Live	Yes	None
744	<1 meter	Live	No	None
745	>1 meter but <5 meters	Live	Yes	None
746	<1 meter	Live	No	None
747	<1 meter	Live	No	None
748	≥ 5 meters	Live	Yes	None
749	≥ 5 meters	Live	Yes	None
750	≥ 5 meters	Live	Yes	None
751	≥ 5 meters	Dead	Yes	None
752	>1 meter but <5 meters	Dead	No	None
753	≥ 5 meters	Live	Yes	None
754	<1 meter	Live	No	None
755	>1 meter but <5 meters	Live	Yes	None
756	>1 meter but <5 meters	Dead	No	None
757	≥ 5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
758	>1 meter but <5 meters	Live	Yes	None
759	>1 meter but <5 meters	Live	Yes	None
760	<1 meter	Live	No	None
761	<1 meter	Live	No	None
762	>1 meter but <5 meters	Live	No	None
763	<1 meter	Live	No	None
764	<1 meter	Live	No	None
765	≥ 5 meters	Live	Yes	None
766	>1 meter but <5 meters	Dead	Yes	None
767	>1 meter but <5 meters	Live	Yes	None
768	>1 meter but <5 meters	Live	No	None
769	≥ 5 meters	Live	Yes	None
770	≥ 5 meters	Dead	Yes	None
771	<1 meter	Dead	No	None
772	>1 meter but <5 meters	Dead	Yes	None
773	>1 meter but <5 meters	Dead	Yes	None
774	<1 meter	Live	No	None
775	>1 meter but <5 meters	Live	Yes	None
776	<1 meter	Live	No	None
777	>1 meter but <5 meters	Live	Yes	None
778	>1 meter but <5 meters	Live	Yes	None
779	>1 meter but <5 meters	Dead	Yes	None
780	>1 meter but <5 meters	Dead	Yes	None
781	<1 meter	Dead	No	None
782	≥ 5 meters	Live	No	None
783	>1 meter but <5 meters	Live	Yes	None
784	>1 meter but <5 meters	Live	No	None
785	>1 meter but <5 meters	Live	Yes	None
786	≥ 5 meters	Live	Yes	None
787	>1 meter but <5 meters	Live	Yes	None
788	<1 meter	Live	No	None
789	>1 meter but <5 meters	Live	No	None
790	>1 meter but <5 meters	Live	No	None
791	>1 meter but <5 meters	Live	Yes	None
792	<1 meter	Live	No	None
793	<1 meter	Live	No	None
794	>1 meter but <5 meters	Dead	Yes	None
795	≥ 5 meters	Live	Yes	None
796	>1 meter but <5 meters	Live	No	None
797	≥ 5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
798	>1 meter but <5 meters	Dead	No	None
799	>1 meter but <5 meters	Live	No	None
800	≥ 5 meters	Live	Yes	None
801	<1 meter	Live	No	None
802	<1 meter	Live	No	None
803	<1 meter	Live	No	None
804	>1 meter but <5 meters	Live	No	None
805	>1 meter but <5 meters	Live	Yes	None
806	>1 meter but <5 meters	Dead	No	None
807	<1 meter	Live	No	None
808	<1 meter	Dead	No	None
809	<1 meter	Live	No	None
810	<1 meter	Live	No	None
811	<1 meter	Live	No	None
812	>1 meter but <5 meters	Live	Yes	None
813	<1 meter	Live	No	None
814	<1 meter	Live	No	None
815	<1 meter	Live	No	None
816	<1 meter	Live	No	None
817	<1 meter	Live	No	None
818	<1 meter	Live	No	None
819	<1 meter	Live	No	None
820	<1 meter	Live	No	None
821	<1 meter	Live	No	None
822	>1 meter but <5 meters	Live	Yes	None
823	<1 meter	Live	No	None
824	>1 meter but <5 meters	Live	Yes	None
825	>1 meter but <5 meters	Live	Yes	None
826	>1 meter but <5 meters	Dead	Yes	None
827	<1 meter	Live	No	None
828	<1 meter	Live	No	None
829	>1 meter but <5 meters	Live	Yes	None
830	<1 meter	Live	No	None
831	<1 meter	Live	No	None
832	>1 meter but <5 meters	Live	Yes	None
833	>1 meter but <5 meters	Live	No	None
834	>1 meter but <5 meters	Live	Yes	None
835	<1 meter	Live	No	None
836	<1 meter	Live	No	None
837	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
838	<1 meter	Live	No	None
839	>1 meter but <5 meters	Live	Yes	None
840	>1 meter but <5 meters	Live	No	None
841	>1 meter but <5 meters	Live	No	None
842	>1 meter but <5 meters	Live	No	None
843	<1 meter	Live	No	None
844	<1 meter	Live	No	None
845	>1 meter but <5 meters	Live	No	None
846	<1 meter	Live	No	None
847	>1 meter but <5 meters	Live	No	None
848	<1 meter	Live	No	None
849	>1 meter but <5 meters	Live	Yes	None
850	>1 meter but <5 meters	Dead	No	None
851	>1 meter but <5 meters	Live	No	None
852	>1 meter but <5 meters	Live	No	None
853	<1 meter	Live	No	None
854	<1 meter	Live	No	None
855	<1 meter	Live	No	None
856	<1 meter	Live	No	None
857	>1 meter but <5 meters	Dead	Yes	None
858	<1 meter	Live	No	None
859	>1 meter but <5 meters	Dead	No	None
860	<1 meter	Live	No	None
861	>1 meter but <5 meters	Live	No	None
862	<1 meter	Live	No	None
863	>1 meter but <5 meters	Dead	Yes	None
864	>1 meter but <5 meters	Live	No	None
865	>1 meter but <5 meters	Live	No	None
866	>1 meter but <5 meters	Dead	No	None
867	>1 meter but <5 meters	Dead	No	None
868	≥ 5 meters	Live	Yes	None
869	<1 meter	Live	No	None
870	>1 meter but <5 meters	Dead	Yes	None
871	≥ 5 meters	Live	Yes	None
872	>1 meter but <5 meters	Live	Yes	None
873	≥ 5 meters	Live	Yes	None
874	>1 meter but <5 meters	Live	Yes	None
875	<1 meter	Live	No	None
876	>1 meter but <5 meters	Dead	Yes	None
877	>1 meter but <5 meters	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
878	≥ 5 meters	Live	Yes	None
879	>1 meter but <5 meters	Live	Yes	None
880	<1 meter	Live	No	None
881	>1 meter but <5 meters	Live	Yes	None
882	<1 meter	Live	No	None
883	<1 meter	Live	No	None
884	>1 meter but <5 meters	Dead	Yes	None
885	>1 meter but <5 meters	Live	Yes	None
886	>1 meter but <5 meters	Live	Yes	None
887	>1 meter but <5 meters	Live	Yes	None
888	≥ 5 meters	Dead	Yes	None
889	>1 meter but <5 meters	Live	Yes	None
890	>1 meter but <5 meters	Dead	Yes	None
891	≥ 5 meters	Dead	Yes	None
892	>1 meter but <5 meters	Dead	Yes	None
893	>1 meter but <5 meters	Live	No	None
894	>1 meter but <5 meters	Live	Yes	None
895	<1 meter	Live	No	None
896	<1 meter	Live	No	None
897	>1 meter but <5 meters	Live	Yes	None
898	<1 meter	Live	No	None
899	>1 meter but <5 meters	Live	Yes	None
900	<1 meter	Live	No	None
901	>1 meter but <5 meters	Live	No	None
902	<1 meter	Live	No	None
903	<1 meter	Live	No	None
904	<1 meter	Live	No	None
905	<1 meter	Live	No	None
906	<1 meter	Live	No	None
907	<1 meter	Live	No	None
908	<1 meter	Dead	No	None
909	<1 meter	Dead	No	None
910	<1 meter	Live	No	None
911	<1 meter	Live	No	None
912	<1 meter	Live	No	None
913	<1 meter	Live	No	None
914	<1 meter	Live	No	None
915	<1 meter	Live	No	None
916	<1 meter	Live	No	None
917	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
918	<1 meter	Live	No	None
919	>1 meter but <5 meters	Live	Yes	None
920	<1 meter	Live	No	None
921	<1 meter	Live	No	None
922	>1 meter but <5 meters	Live	No	None
923	>1 meter but <5 meters	Live	No	None
924	>1 meter but <5 meters	Live	Yes	None
925	>1 meter but <5 meters	Live	Yes	None
926	>1 meter but <5 meters	Live	No	None
927	<1 meter	Live	No	None
928	<1 meter	Live	No	None
929	<1 meter	Live	No	None
930	≥ 5 meters	Live	Yes	None
931	<1 meter	Live	No	None
932	>1 meter but <5 meters	Live	No	None
933	≥ 5 meters	Live	Yes	None
934	>1 meter but <5 meters	Live	Yes	None
935	<1 meter	Live	No	None
936	>1 meter but <5 meters	Live	No	None
937	>1 meter but <5 meters	Live	Yes	None
938	<1 meter	Live	No	None
939	<1 meter	Live	No	None
940	≥ 5 meters	Dead	Yes	None
941	≥ 5 meters	Live	Yes	None
942	≥ 5 meters	Dead	No	None
943	<1 meter	Dead	No	None
944	>1 meter but <5 meters	Dead	Yes	None
945	<1 meter	Live	No	None
946	>1 meter but <5 meters	Live	No	None
947	>1 meter but <5 meters	Dead	No	None
948	<1 meter	Live	No	None
949	≥ 5 meters	Dead	Yes	None
950	<1 meter	Live	No	None
951	<1 meter	Live	No	None
952	>1 meter but <5 meters	Live	No	None
953	>1 meter but <5 meters	Live	No	None
954	<1 meter	Live	No	None
955	>1 meter but <5 meters	Live	Yes	None
956	>1 meter but <5 meters	Live	Yes	None
957	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
958	>1 meter but <5 meters	Live	Yes	None
959	>1 meter but <5 meters	Dead	No	None
960	>1 meter but <5 meters	Live	No	None
961	<1 meter	Live	No	None
962	≥ 5 meters	Live	Yes	None
963	<1 meter	Live	No	None
964	>1 meter but <5 meters	Live	No	None
965	>1 meter but <5 meters	Live	Yes	None
966	<1 meter	Live	No	None
967	≥ 5 meters	Live	Yes	None
968	>1 meter but <5 meters	Live	No	None
969	>1 meter but <5 meters	Live	Yes	None
970	<1 meter	Live	No	None
971	>1 meter but <5 meters	Live	Yes	None
972	<1 meter	Live	No	None
973	≥ 5 meters	Live	Yes	None
974	<1 meter	Live	No	None
975	<1 meter	Live	No	None
976	<1 meter	Live	No	None
977	>1 meter but <5 meters	Live	Yes	None
978	<1 meter	Live	No	None
979	≥ 5 meters	Dead	Yes	None
980	>1 meter but <5 meters	Dead	No	None
981	>1 meter but <5 meters	Dead	Yes	None
982	≥ 5 meters	Live	Yes	None
983	>1 meter but <5 meters	Live	Yes	None
984	≥ 5 meters	Live	Yes	None
985	≥ 5 meters	Live	Yes	None
986	>1 meter but <5 meters	Live	Yes	None
987	≥ 5 meters	Live	No	None
988	>1 meter but <5 meters	Live	No	None
989	>1 meter but <5 meters	Live	Yes	None
990	<1 meter	Live	No	None
991	>1 meter but <5 meters	Live	Yes	None
992	≥ 5 meters	Dead	Yes	None
993	>1 meter but <5 meters	Dead	Yes	None
994	>1 meter but <5 meters	Live	No	None
995	>1 meter but <5 meters	Live	No	None
996	>1 meter but <5 meters	Live	Yes	None
997	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
998	>1 meter but <5 meters	Dead	No	None
999	≥ 5 meters	Live	Yes	None
1000	>1 meter but <5 meters	Dead	Yes	None
1001	>1 meter but <5 meters	Live	Yes	None
1002	<1 meter	Live	No	None
1003	≥ 5 meters	Dead	Yes	None
1004	<1 meter	Dead	No	None
1005	≥ 5 meters	Live	Yes	None
1006	>1 meter but <5 meters	Live	Yes	None
1007	<1 meter	Live	No	None
1008	≥ 5 meters	Live	Yes	None
1009	>1 meter but <5 meters	Live	Yes	None
1010	<1 meter	Live	No	None
1011	>1 meter but <5 meters	Live	Yes	None
1012	>1 meter but <5 meters	Dead	No	None
1013	>1 meter but <5 meters	Live	Yes	None
1014	≥ 5 meters	Live	Yes	None
1015	≥ 5 meters	Live	Yes	None
1016	>1 meter but <5 meters	Dead	Yes	None
1017	>1 meter but <5 meters	Live	Yes	None
1018	<1 meter	Live	No	None
1019	>1 meter but <5 meters	Dead	Yes	None
1020	>1 meter but <5 meters	Live	Yes	None
1021	>1 meter but <5 meters	Live	Yes	None
1022	>1 meter but <5 meters	Live	Yes	None
1023	>1 meter but <5 meters	Live	No	None
1024	>1 meter but <5 meters	Live	Yes	None
1025	<1 meter	Live	Yes	None
1026	<1 meter	Live	Yes	None
1027	>1 meter but <5 meters	Dead	Yes	None
1028	≥ 5 meters	Live	Yes	None
1029	>1 meter but <5 meters	Live	Yes	None
1030	<1 meter	Live	No	None
1031	<1 meter	Live	No	None
1032	>1 meter but <5 meters	Live	Yes	None
1033	>1 meter but <5 meters	Live	Yes	None
1034	>1 meter but <5 meters	Live	Yes	None
1035	≥ 5 meters	Live	Yes	None
1036	>1 meter but <5 meters	Live	No	None
1037	>1 meter but <5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1038	<1 meter	Live	No	None
1039	<1 meter	Live	No	None
1040	<1 meter	Live	No	None
1041	>1 meter but <5 meters	Live	No	None
1042	>1 meter but <5 meters	Live	No	None
1043	>1 meter but <5 meters	Live	No	None
1044	<1 meter	Live	No	None
1045	<1 meter	Live	No	None
1046	>1 meter but <5 meters	Live	Yes	None
1047	>1 meter but <5 meters	Live	Yes	None
1048	>1 meter but <5 meters	Live	No	None
1049	>1 meter but <5 meters	Live	No	None
1050	>1 meter but <5 meters	Dead	Yes	None
1051	≥ 5 meters	Dead	No	None
1052	>1 meter but <5 meters	Live	No	None
1053	≥ 5 meters	Dead	Yes	None
1054	>1 meter but <5 meters	Dead	Yes	None
1055	>1 meter but <5 meters	Dead	Yes	None
1056	>1 meter but <5 meters	Dead	No	None
1057	>1 meter but <5 meters	Dead	Yes	None
1058	<1 meter	Live	No	None
1059	<1 meter	Dead	No	None
1060	<1 meter	Live	No	None
1061	≥ 5 meters	Live	Yes	None
1062	<1 meter	Live	No	None
1063	>1 meter but <5 meters	Live	Yes	None
1064	>1 meter but <5 meters	Live	Yes	None
1065	<1 meter	Live	No	None
1066	>1 meter but <5 meters	Live	No	None
1067	>1 meter but <5 meters	Live	Yes	None
1068	≥ 5 meters	Live	Yes	None
1069	>1 meter but <5 meters	Live	Yes	None
1070	≥ 5 meters	Live	Yes	None
1071	>1 meter but <5 meters	Live	No	None
1072	<1 meter	Live	No	None
1073	≥ 5 meters	Live	Yes	None
1074	≥ 5 meters	Live	Yes	None
1075	<1 meter	Live	Yes	None
1076	<1 meter	Live	No	None
1077	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1078	>1 meter but <5 meters	Live	Yes	None
1079	>1 meter but <5 meters	Live	Yes	None
1080	>1 meter but <5 meters	Live	No	None
1081	>1 meter but <5 meters	Live	No	None
1082	<1 meter	Dead	No	None
1083	<1 meter	Live	No	None
1084	<1 meter	Live	Yes	None
1085	≥ 5 meters	Live	Yes	None
1086	≥ 5 meters	Live	Yes	None
1087	>1 meter but <5 meters	Live	No	None
1088	>1 meter but <5 meters	Dead	Yes	None
1089	<1 meter	Live	No	None
1090	>1 meter but <5 meters	Dead	Yes	None
1091	<1 meter	Live	No	None
1092	>1 meter but <5 meters	Live	No	None
1093	>1 meter but <5 meters	Dead	No	None
1094	<1 meter	Dead	No	None
1095	>1 meter but <5 meters	Live	No	None
1096	<1 meter	Live	No	None
1097	<1 meter	Live	No	None
1098	>1 meter but <5 meters	Live	No	None
1099	<1 meter	Live	No	None
1100	<1 meter	Live	No	None
1101	>1 meter but <5 meters	Live	Yes	None
1102	<1 meter	Live	No	None
1103	>1 meter but <5 meters	Live	No	None
1104	>1 meter but <5 meters	Live	No	None
1105	<1 meter	Live	No	None
1106	>1 meter but <5 meters	Dead	Yes	None
1107	>1 meter but <5 meters	Live	No	None
1108	≥ 5 meters	Live	Yes	None
1109	>1 meter but <5 meters	Dead	Yes	None
1110	<1 meter	Live	No	None
1111	>1 meter but <5 meters	Live	No	None
1112	<1 meter	Live	No	None
1113	<1 meter	Live	No	None
1114	<1 meter	Live	No	None
1115	<1 meter	Dead	No	None
1116	>1 meter but <5 meters	Dead	No	None
1117	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1118	>1 meter but <5 meters	Live	Yes	None
1119	<1 meter	Live	No	None
1120	<1 meter	Live	No	None
1121	>1 meter but <5 meters	Live	No	None
1122	>1 meter but <5 meters	Dead	Yes	None
1123	<1 meter	Live	No	None
1124	<1 meter	Live	No	None
1125	<1 meter	Live	No	None
1126	<1 meter	Dead	No	None
1127	>1 meter but <5 meters	Live	No	None
1128	>1 meter but <5 meters	Live	No	None
1129	>1 meter but <5 meters	Live	No	None
1130	>1 meter but <5 meters	Live	Yes	None
1131	>1 meter but <5 meters	Live	Yes	None
1132	>1 meter but <5 meters	Live	Yes	None
1133	<1 meter	Live	No	None
1134	<1 meter	Live	No	None
1135	<1 meter	Live	No	None
1136	>1 meter but <5 meters	Live	Yes	None
1137	>1 meter but <5 meters	Live	Yes	None
1138	>1 meter but <5 meters	Live	Yes	None
1139	<1 meter	Live	No	None
1140	<1 meter	Live	No	None
1141	<1 meter	Live	No	None
1142	<1 meter	Live	No	None
1143	<1 meter	Live	No	None
1144	>1 meter but <5 meters	Live	No	None
1145	<1 meter	Live	No	None
1146	>1 meter but <5 meters	Live	No	None
1147	>1 meter but <5 meters	Live	No	None
1148	>1 meter but <5 meters	Dead	Yes	None
1149	>1 meter but <5 meters	Live	No	None
1150	>1 meter but <5 meters	Live	No	None
1151	>1 meter but <5 meters	Live	No	None
1152	<1 meter	Live	No	None
1153	<1 meter	Live	No	None
1154	<1 meter	Live	No	None
1155	>1 meter but <5 meters	Live	Yes	None
1156	<1 meter	Live	No	None
1157	>1 meter but <5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1158	>1 meter but <5 meters	Live	Yes	None
1159	<1 meter	Dead	No	None
1160	<1 meter	Live	No	None
1161	<1 meter	Live	No	None
1162	<1 meter	Dead	No	None
1163	<1 meter	Dead	No	None
1164	>1 meter but <5 meters	Live	No	None
1165	<1 meter	Live	No	None
1166	<1 meter	Live	No	None
1167	<1 meter	Live	No	None
1168	<1 meter	Live	No	None
1169	>1 meter but <5 meters	Live	Yes	None
1170	<1 meter	Live	No	None
1171	<1 meter	Live	No	None
1172	>1 meter but <5 meters	Live	No	None
1173	<1 meter	Live	No	None
1174	<1 meter	Live	No	None
1175	<1 meter	Live	No	None
1176	<1 meter	Live	No	None
1177	<1 meter	Live	No	None
1178	<1 meter	Live	No	None
1179	<1 meter	Live	No	None
1180	>1 meter but <5 meters	Dead	No	None
1181	<1 meter	Dead	No	None
1182	>1 meter but <5 meters	Live	Yes	None
1183	<1 meter	Live	No	None
1184	>1 meter but <5 meters	Dead	Yes	None
1185	<1 meter	Live	No	None
1186	<1 meter	Live	No	None
1187	<1 meter	Live	No	None
1188	>1 meter but <5 meters	Dead	Yes	None
1189	<1 meter	Live	No	None
1190	<1 meter	Live	No	None
1191	<1 meter	Live	No	None
1192	<1 meter	Live	No	None
1193	>1 meter but <5 meters	Live	Yes	None
1194	<1 meter	Live	No	None
1195	<1 meter	Live	No	None
1196	>1 meter but <5 meters	Dead	Yes	None
1197	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1198	<1 meter	Live	No	None
1199	<1 meter	Live	Yes	None
1200	<1 meter	Live	No	None
1201	>1 meter but <5 meters	Live	Yes	None
1202	>1 meter but <5 meters	Live	No	None
1203	>1 meter but <5 meters	Live	Yes	None
1204	<1 meter	Live	No	None
1205	<1 meter	Live	No	None
1206	>1 meter but <5 meters	Live	No	None
1207	>1 meter but <5 meters	Live	No	None
1208	>1 meter but <5 meters	Live	Yes	None
1209	>1 meter but <5 meters	Live	Yes	None
1210	>1 meter but <5 meters	Live	No	None
1211	>1 meter but <5 meters	Live	Yes	None
1212	>1 meter but <5 meters	Dead	No	None
1213	>1 meter but <5 meters	Live	Yes	None
1214	<1 meter	Live	No	None
1215	<1 meter	Live	No	None
1216	<1 meter	Live	No	None
1217	<1 meter	Live	No	None
1218	>1 meter but <5 meters	Live	Yes	None
1219	>1 meter but <5 meters	Live	No	None
1220	<1 meter	Live	No	None
1221	<1 meter	Live	No	None
1222	<1 meter	Live	No	None
1223	<1 meter	Live	No	None
1224	<1 meter	Live	No	None
1225	<1 meter	Live	No	None
1226	<1 meter	Dead	No	None
1227	≥ 5 meters	Live	Yes	None
1228	<1 meter	Live	No	None
1229	>1 meter but <5 meters	Live	No	None
1230	<1 meter	Live	No	None
1231	<1 meter	Live	No	None
1232	<1 meter	Live	No	None
1233	<1 meter	Live	No	None
1234	>1 meter but <5 meters	Live	Yes	None
1235	>1 meter but <5 meters	Dead	Yes	None
1236	<1 meter	Live	No	None
1237	<1 meter	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1238	>1 meter but <5 meters	Live	No	None
1239	<1 meter	Live	No	None
1240	<1 meter	Live	No	None
1241	<1 meter	Live	No	None
1242	>1 meter but <5 meters	Live	No	None
1243	>1 meter but <5 meters	Live	No	None
1244	<1 meter	Live	No	None
1245	>1 meter but <5 meters	Live	Yes	None
1246	<1 meter	Live	No	None
1247	>1 meter but <5 meters	Dead	Yes	None
1248	≥ 5 meters	Live	Yes	None
1249	>1 meter but <5 meters	Live	Yes	None
1250	<1 meter	Live	No	None
1251	>1 meter but <5 meters	Live	No	None
1252	>1 meter but <5 meters	Live	No	None
1253	<1 meter	Live	No	None
1254	<1 meter	Live	No	None
1255	<1 meter	Dead	No	None
1256	<1 meter	Dead	No	None
1257	<1 meter	Live	No	None
1258	<1 meter	Live	No	None
1259	<1 meter	Dead	No	None
1260	>1 meter but <5 meters	Live	No	None
1261	<1 meter	Live	No	None
1262	<1 meter	Live	Yes	None
1263	>1 meter but <5 meters	Live	Yes	None
1264	<1 meter	Dead	No	None
1265	<1 meter	Live	No	None
1266	<1 meter	Dead	No	None
1267	<1 meter	Live	No	None
1268	<1 meter	Live	No	None
1269	<1 meter	Live	No	None
1270	<1 meter	Live	No	None
1271	<1 meter	Live	No	None
1272	<1 meter	Dead	No	None
1273	<1 meter	Live	No	None
1274	<1 meter	Dead	No	None
1275	>1 meter but <5 meters	Live	No	None
1276	<1 meter	Live	No	None
1277	<1 meter	Dead	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1278	>1 meter but <5 meters	Live	Yes	None
1279	>1 meter but <5 meters	Live	Yes	None
1280	>1 meter but <5 meters	Live	Yes	None
1281	>1 meter but <5 meters	Dead	Yes	None
1282	>1 meter but <5 meters	Live	Yes	None
1283	>1 meter but <5 meters	Live	Yes	None
1284	>1 meter but <5 meters	Live	Yes	None
1285	<1 meter	Live	No	None
1286	>1 meter but <5 meters	Live	Yes	None
1287	<1 meter	Live	No	None
1288	>1 meter but <5 meters	Dead	Yes	None
1289	>1 meter but <5 meters	Dead	Yes	None
1290	>1 meter but <5 meters	Live	No	None
1291	<1 meter	Live	No	None
1292	>1 meter but <5 meters	Live	No	None
1293	>1 meter but <5 meters	Live	No	None
1294	<1 meter	Live	No	None
1295	<1 meter	Live	No	None
1296	<1 meter	Live	No	None
1297	≥ 5 meters	Live	Yes	None
1298	≥ 5 meters	Live	Yes	None
1299	<1 meter	Dead	No	None
1300	<1 meter	Live	No	None
1301	<1 meter	Live	No	None
1302	<1 meter	Live	No	None
1303	<1 meter	Live	No	None
1304	≥ 5 meters	Live	Yes	None
1305	≥ 5 meters	Live	Yes	None
1306	>1 meter but <5 meters	Dead	Yes	None
1307	>1 meter but <5 meters	Live	Yes	None
1308	<1 meter	Live	No	None
1309	>1 meter but <5 meters	Live	No	None
1310	<1 meter	Live	No	None
1311	<1 meter	Dead	No	None
1312	<1 meter	Live	No	None
1313	<1 meter	Live	No	None
1314	>1 meter but <5 meters	Live	No	None
1315	>1 meter but <5 meters	Live	No	None
1316	<1 meter	Live	No	None
1317	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1318	<1 meter	Live	No	None
1319	>1 meter but <5 meters	Live	Yes	None
1320	<1 meter	Live	No	None
1321	<1 meter	Live	No	None
1322	<1 meter	Live	No	None
1323	<1 meter	Live	No	None
1324	<1 meter	Live	No	None
1325	<1 meter	Dead	No	None
1326	<1 meter	Live	No	None
1327	<1 meter	Live	No	None
1328	<1 meter	Live	No	None
1329	<1 meter	Live	No	None
1330	<1 meter	Live	No	None
1331	<1 meter	Dead	No	None
1332	<1 meter	Dead	No	None
1333	<1 meter	Dead	No	None
1334	<1 meter	Live	No	None
1335	<1 meter	Live	No	None
1336	<1 meter	Live	No	None
1337	<1 meter	Live	No	None
1338	<1 meter	Dead	No	None
1339	<1 meter	Dead	No	None
1340	<1 meter	Dead	No	None
1341	<1 meter	Live	No	None
1342	>1 meter but <5 meters	Live	Yes	None
1343	>1 meter but <5 meters	Live	No	None
1344	≥ 5 meters	Live	Yes	None
1345	<1 meter	Live	No	None
1346	<1 meter	Live	No	None
1347	<1 meter	Dead	No	None
1348	<1 meter	Dead	No	None
1349	>1 meter but <5 meters	Live	Yes	None
1350	>1 meter but <5 meters	Live	No	None
1351	<1 meter	Live	No	None
1352	<1 meter	Live	No	None
1353	<1 meter	Live	No	None
1354	<1 meter	Live	No	None
1355	<1 meter	Live	No	None
1356	<1 meter	Dead	No	None
1357	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1358	<1 meter	Live	No	None
1359	<1 meter	Live	No	None
1360	<1 meter	Live	No	None
1361	<1 meter	Live	No	None
1362	<1 meter	Live	No	None
1363	<1 meter	Live	No	None
1364	<1 meter	Live	No	None
1365	<1 meter	Live	No	None
1366	>1 meter but <5 meters	Live	Yes	None
1367	<1 meter	Live	No	None
1368	<1 meter	Live	No	None
1369	<1 meter	Live	No	None
1370	>1 meter but <5 meters	Live	Yes	None
1371	>1 meter but <5 meters	Live	Yes	None
1372	<1 meter	Dead	No	None
1373	>1 meter but <5 meters	Dead	Yes	None
1374	>1 meter but <5 meters	Live	No	None
1375	>1 meter but <5 meters	Live	Yes	None
1376	>1 meter but <5 meters	Dead	Yes	None
1377	<1 meter	Live	No	None
1378	<1 meter	Live	No	None
1379	>1 meter but <5 meters	Live	Yes	None
1380	<1 meter	Live	No	None
1381	>1 meter but <5 meters	Live	Yes	None
1382	>1 meter but <5 meters	Live	Yes	None
1383	<1 meter	Live	No	None
1384	>1 meter but <5 meters	Live	Yes	None
1385	>1 meter but <5 meters	Live	No	None
1386	>1 meter but <5 meters	Live	No	None
1387	>1 meter but <5 meters	Live	No	None
1388	≥ 5 meters	Live	Yes	None
1389	<1 meter	Live	No	None
1390	<1 meter	Live	No	None
1391	≥ 5 meters	Live	Yes	None
1392	>1 meter but <5 meters	Live	No	None
1393	>1 meter but <5 meters	Live	No	None
1394	<1 meter	Live	No	None
1395	<1 meter	Live	No	None
1396	<1 meter	Live	No	None
1397	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1398	>1 meter but <5 meters	Dead	Yes	None
1399	>1 meter but <5 meters	Live	Yes	None
1400	<1 meter	Live	No	None
1401	>1 meter but <5 meters	Live	Yes	None
1402	>1 meter but <5 meters	Live	No	None
1403	<1 meter	Live	No	None
1404	>1 meter but <5 meters	Live	Yes	None
1405	<1 meter	Live	Yes	None
1406	>1 meter but <5 meters	Live	Yes	None
1407	>1 meter but <5 meters	Live	No	None
1408	>1 meter but <5 meters	Live	No	None
1409	>1 meter but <5 meters	Live	No	None
1410	<1 meter	Live	No	None
1411	>1 meter but <5 meters	Live	No	None
1412	>1 meter but <5 meters	Live	Yes	None
1413	>1 meter but <5 meters	Dead	No	None
1414	>1 meter but <5 meters	Live	Yes	None
1415	<1 meter	Live	No	None
1416	<1 meter	Live	Yes	None
1417	<1 meter	Live	No	None
1418	>1 meter but <5 meters	Dead	Yes	None
1419	<1 meter	Live	No	None
1420	>1 meter but <5 meters	Live	No	None
1421	>1 meter but <5 meters	Live	No	None
1422	>1 meter but <5 meters	Live	No	None
1423	<1 meter	Live	No	None
1424	<1 meter	Live	No	None
1425	>1 meter but <5 meters	Live	No	None
1426	<1 meter	Live	Yes	None
1427	>1 meter but <5 meters	Live	No	None
1428	<1 meter	Dead	No	None
1429	<1 meter	Live	No	None
1430	<1 meter	Live	No	None
1431	>1 meter but <5 meters	Live	Yes	None
1432	>1 meter but <5 meters	Live	Yes	None
1433	>1 meter but <5 meters	Live	Yes	None
1434	<1 meter	Live	No	None
1435	≥ 5 meters	Live	Yes	None
1436	≥ 5 meters	Live	Yes	None
1437	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1438	>1 meter but <5 meters	Dead	Yes	None
1439	<1 meter	Live	No	None
1440	>1 meter but <5 meters	Live	Yes	None
1441	<1 meter	Live	No	None
1442	<1 meter	Live	No	None
1443	>1 meter but <5 meters	Live	No	None
1444	>1 meter but <5 meters	Live	Yes	None
1445	>1 meter but <5 meters	Live	No	None
1446	<1 meter	Live	No	None
1447	<1 meter	Dead	No	None
1448	>1 meter but <5 meters	Live	Yes	None
1449	<1 meter	Live	No	None
1450	>1 meter but <5 meters	Live	Yes	None
1451	>1 meter but <5 meters	Dead	Yes	None
1452	>1 meter but <5 meters	Live	Yes	None
1453	>1 meter but <5 meters	Live	No	None
1454	>1 meter but <5 meters	Live	Yes	None
1455	<1 meter	Live	No	None
1456	>1 meter but <5 meters	Live	No	None
1457	<1 meter	Live	No	None
1458	>1 meter but <5 meters	Live	No	None
1459	<1 meter	Dead	No	None
1460	<1 meter	Live	No	None
1461	<1 meter	Dead	No	None
1462	<1 meter	Live	No	None
1463	<1 meter	Live	No	None
1464	<1 meter	Dead	No	None
1465	<1 meter	Dead	No	None
1466	<1 meter	Live	No	None
1467	<1 meter	Dead	No	None
1468	>1 meter but <5 meters	Live	Yes	None
1469	<1 meter	Live	Yes	None
1470	>1 meter but <5 meters	Live	Yes	None
1471	<1 meter	Live	No	None
1472	<1 meter	Live	No	None
1473	<1 meter	Live	No	None
1474	<1 meter	Live	No	None
1475	<1 meter	Live	No	None
1476	<1 meter	Live	No	None
1477	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1478	>1 meter but <5 meters	Live	No	None
1479	>1 meter but <5 meters	Live	No	None
1480	>1 meter but <5 meters	Live	No	None
1481	>1 meter but <5 meters	Live	No	None
1482	>1 meter but <5 meters	Live	No	None
1483	>1 meter but <5 meters	Dead	No	None
1484	>1 meter but <5 meters	Live	No	None
1485	>1 meter but <5 meters	Live	Yes	None
1486	>1 meter but <5 meters	Live	No	None
1487	<1 meter	Live	Yes	None
1488	>1 meter but <5 meters	Live	No	None
1489	>1 meter but <5 meters	Live	No	None
1490	>1 meter but <5 meters	Live	No	None
1491	<1 meter	Live	No	None
1492	>1 meter but <5 meters	Live	Yes	None
1493	>1 meter but <5 meters	Live	Yes	None
1494	≥ 5 meters	Live	Yes	None
1495	<1 meter	Live	No	None
1496	<1 meter	Live	No	None
1497	>1 meter but <5 meters	Live	Yes	None
1498	>1 meter but <5 meters	Live	Yes	None
1499	>1 meter but <5 meters	Live	No	None
1500	<1 meter	Live	No	None
1501	>1 meter but <5 meters	Live	Yes	None
1502	>1 meter but <5 meters	Live	Yes	None
1503	>1 meter but <5 meters	Live	No	None
1504	<1 meter	Live	No	None
1505	<1 meter	Live	No	None
1506	<1 meter	Live	No	None
1507	>1 meter but <5 meters	Live	Yes	None
1508	<1 meter	Live	No	None
1509	<1 meter	Live	No	None
1510	<1 meter	Live	No	None
1511	<1 meter	Live	No	None
1512	<1 meter	Live	No	None
1513	<1 meter	Live	No	None
1514	<1 meter	Live	No	None
1515	<1 meter	Live	No	None
1516	>1 meter but <5 meters	Live	No	None
1517	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1518	>1 meter but <5 meters	Live	No	None
1519	>1 meter but <5 meters	Dead	No	None
1520	>1 meter but <5 meters	Live	No	None
1521	<1 meter	Live	No	None
1522	<1 meter	Live	No	None
1523	<1 meter	Dead	No	None
1524	<1 meter	Live	No	None
1525	<1 meter	Live	No	None
1526	<1 meter	Live	No	None
1527	<1 meter	Live	No	None
1528	<1 meter	Live	No	None
1529	<1 meter	Live	No	None
1530	<1 meter	Live	No	None
1531	<1 meter	Live	No	None
1532	<1 meter	Live	No	None
1533	<1 meter	Live	No	None
1534	<1 meter	Live	No	None
1535	>1 meter but <5 meters	Live	No	None
1536	<1 meter	Live	No	None
1537	<1 meter	Live	No	None
1538	>1 meter but <5 meters	Live	No	None
1539	<1 meter	Live	No	None
1540	<1 meter	Live	No	None
1541	<1 meter	Live	No	None
1542	>1 meter but <5 meters	Live	No	None
1543	<1 meter	Live	No	None
1544	>1 meter but <5 meters	Live	No	None
1545	<1 meter	Live	No	None
1546	<1 meter	Live	No	None
1547	>1 meter but <5 meters	Live	No	None
1548	>1 meter but <5 meters	Live	No	None
1549	>1 meter but <5 meters	Live	No	None
1550	<1 meter	Live	No	None
1551	>1 meter but <5 meters	Live	No	None
1552	>1 meter but <5 meters	Live	Yes	None
1553	<1 meter	Live	No	None
1554	>1 meter but <5 meters	Live	Yes	None
1555	<1 meter	Live	No	None
1556	<1 meter	Live	No	None
1557	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1558	<1 meter	Dead	No	None
1559	<1 meter	Live	No	None
1560	<1 meter	Live	No	None
1561	<1 meter	Live	No	None
1562	<1 meter	Live	No	None
1563	≥ 5 meters	Live	Yes	None
1564	>1 meter but <5 meters	Live	Yes	None
1565	<1 meter	Dead	No	None
1566	<1 meter	Dead	No	None
1567	>1 meter but <5 meters	Dead	Yes	None
1568	<1 meter	Live	No	None
1569	<1 meter	Live	No	None
1570	<1 meter	Live	No	None
1571	<1 meter	Live	No	None
1572	<1 meter	Live	No	None
1573	<1 meter	Live	No	None
1574	>1 meter but <5 meters	Live	No	None
1575	≥ 5 meters	Live	Yes	None
1576	<1 meter	Live	No	None
1577	<1 meter	Live	Yes	None
1578	<1 meter	Live	No	None
1579	<1 meter	Live	No	None
1580	<1 meter	Live	No	None
1581	≥ 5 meters	Live	Yes	None
1582	>1 meter but <5 meters	Live	No	None
1583	<1 meter	Live	No	None
1584	>1 meter but <5 meters	Live	No	None
1585	<1 meter	Live	No	None
1586	<1 meter	Live	No	None
1587	<1 meter	Dead	No	None
1588	<1 meter	Dead	No	None
1589	>1 meter but <5 meters	Live	Yes	None
1590	>1 meter but <5 meters	Live	No	None
1591	<1 meter	Live	No	None
1592	<1 meter	Live	No	None
1593	>1 meter but <5 meters	Live	No	None
1594	<1 meter	Live	No	None
1595	<1 meter	Live	No	None
1596	<1 meter	Live	No	None
1597	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1598	<1 meter	Live	No	None
1599	>1 meter but <5 meters	Live	Yes	None
1600	<1 meter	Dead	No	None
1601	<1 meter	Live	No	None
1602	<1 meter	Live	No	None
1603	<1 meter	Live	No	None
1604	>1 meter but <5 meters	Live	Yes	None
1605	<1 meter	Live	No	None
1606	<1 meter	Live	No	None
1607	<1 meter	Live	No	None
1608	>1 meter but <5 meters	Dead	No	None
1609	>1 meter but <5 meters	Dead	Yes	None
1610	>1 meter but <5 meters	Live	Yes	None
1611	<1 meter	Live	No	None
1612	>1 meter but <5 meters	Live	No	None
1613	>1 meter but <5 meters	Live	No	None
1614	>1 meter but <5 meters	Live	No	None
1615	>1 meter but <5 meters	Dead	No	None
1616	>1 meter but <5 meters	Dead	Yes	None
1617	>1 meter but <5 meters	Dead	Yes	None
1618	>1 meter but <5 meters	Live	No	None
1619	<1 meter	Live	No	None
1620	<1 meter	Dead	No	None
1621	>1 meter but <5 meters	Live	Yes	None
1622	<1 meter	Live	No	None
1623	>1 meter but <5 meters	Live	No	None
1624	<1 meter	Live	No	None
1625	<1 meter	Live	No	None
1626	>1 meter but <5 meters	Live	No	None
1627	≥ 5 meters	Live	No	None
1628	≥ 5 meters	Live	No	None
1629	<1 meter	Live	No	None
1630	>1 meter but <5 meters	Live	No	None
1631	>1 meter but <5 meters	Live	No	None
1632	>1 meter but <5 meters	Live	No	None
1633	>1 meter but <5 meters	Live	No	None
1634	>1 meter but <5 meters	Live	No	None
1635	>1 meter but <5 meters	Live	No	None
1636	>1 meter but <5 meters	Live	Yes	None
1637	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1638	>1 meter but <5 meters	Dead	No	None
1639	>1 meter but <5 meters	Live	No	None
1640	≥ 5 meters	Live	Yes	None
1641	>1 meter but <5 meters	Live	Yes	None
1642	<1 meter	Live	No	None
1643	>1 meter but <5 meters	Live	Yes	None
1644	>1 meter but <5 meters	Live	Yes	None
1645	>1 meter but <5 meters	Dead	No	None
1646	>1 meter but <5 meters	Live	Yes	None
1647	>1 meter but <5 meters	Live	No	None
1648	>1 meter but <5 meters	Dead	Yes	None
1649	>1 meter but <5 meters	Live	Yes	None
1650	<1 meter	Live	No	None
1651	<1 meter	Live	No	None
1652	<1 meter	Live	No	None
1653	<1 meter	Live	No	None
1654	>1 meter but <5 meters	Live	Yes	None
1655	<1 meter	Live	No	None
1656	<1 meter	Live	No	None
1657	<1 meter	Live	No	None
1658	<1 meter	Live	No	None
1659	<1 meter	Live	No	None
1660	>1 meter but <5 meters	Live	No	None
1661	≥ 5 meters	Live	Yes	None
1662	>1 meter but <5 meters	Live	No	None
1663	>1 meter but <5 meters	Live	No	None
1664	>1 meter but <5 meters	Live	No	None
1665	>1 meter but <5 meters	Dead	Yes	None
1666	<1 meter	Dead	No	None
1667	<1 meter	Live	No	None
1668	>1 meter but <5 meters	Live	Yes	None
1669	>1 meter but <5 meters	Live	No	None
1670	>1 meter but <5 meters	Live	No	None
1671	>1 meter but <5 meters	Live	No	None
1672	>1 meter but <5 meters	Live	No	None
1673	<1 meter	Live	No	None
1674	<1 meter	Dead	No	None
1675	<1 meter	Dead	No	None
1676	<1 meter	Live	No	None
1677	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1678	>1 meter but <5 meters	Live	Yes	None
1679	>1 meter but <5 meters	Live	Yes	None
1680	>1 meter but <5 meters	Live	No	None
1681	<1 meter	Live	No	None
1682	<1 meter	Live	No	None
1683	<1 meter	Live	No	None
1684	<1 meter	Live	No	None
1685	<1 meter	Dead	No	None
1686	>1 meter but <5 meters	Dead	No	None
1687	>1 meter but <5 meters	Live	No	None
1688	<1 meter	Live	No	None
1689	>1 meter but <5 meters	Live	Yes	None
1690	>1 meter but <5 meters	Live	No	None
1691	>1 meter but <5 meters	Dead	Yes	None
1692	>1 meter but <5 meters	Live	Yes	None
1693	<1 meter	Live	No	None
1694	<1 meter	Live	No	None
1695	<1 meter	Live	No	None
1696	<1 meter	Live	No	None
1697	<1 meter	Live	No	None
1698	<1 meter	Live	No	None
1699	>1 meter but <5 meters	Live	No	None
1700	>1 meter but <5 meters	Live	Yes	None
1701	<1 meter	Live	No	None
1702	>1 meter but <5 meters	Dead	No	None
1703	<1 meter	Live	No	None
1704	<1 meter	Live	No	None
1705	<1 meter	Live	No	None
1706	<1 meter	Dead	No	None
1707	>1 meter but <5 meters	Dead	Yes	None
1708	>1 meter but <5 meters	Dead	Yes	None
1709	>1 meter but <5 meters	Dead	Yes	None
1710	>1 meter but <5 meters	Live	No	None
1711	<1 meter	Live	No	None
1712	<1 meter	Live	No	None
1713	>1 meter but <5 meters	Live	No	None
1714	<1 meter	Dead	No	None
1715	>1 meter but <5 meters	Dead	No	None
1716	>1 meter but <5 meters	Live	Yes	None
1717	>1 meter but <5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1718	>1 meter but <5 meters	Live	No	None
1719	>1 meter but <5 meters	Live	No	None
1720	>1 meter but <5 meters	Live	No	None
1721	>1 meter but <5 meters	Live	No	None
1722	>1 meter but <5 meters	Live	No	None
1723	<1 meter	Live	No	None
1724	<1 meter	Live	No	None
1725	<1 meter	Live	No	None
1726	<1 meter	Live	No	None
1727	<1 meter	Live	No	None
1728	<1 meter	Live	No	None
1729	<1 meter	Live	No	None
1730	<1 meter	Live	No	None
1731	<1 meter	Live	No	None
1732	>1 meter but <5 meters	Live	No	None
1733	<1 meter	Live	No	None
1734	<1 meter	Live	No	None
1735	>1 meter but <5 meters	Dead	No	None
1736	>1 meter but <5 meters	Live	No	None
1737	>1 meter but <5 meters	Live	No	None
1738	>1 meter but <5 meters	Live	No	None
1739	<1 meter	Live	No	None
1740	<1 meter	Live	No	None
1741	≥ 5 meters	Live	Yes	None
1742	<1 meter	Live	No	None
1743	<1 meter	Live	No	None
1744	<1 meter	Live	No	None
1745	<1 meter	Live	No	None
1746	>1 meter but <5 meters	Live	No	None
1747	>1 meter but <5 meters	Live	No	None
1748	>1 meter but <5 meters	Live	No	None
1749	<1 meter	Live	No	None
1750	>1 meter but <5 meters	Live	Yes	None
1751	>1 meter but <5 meters	Live	Yes	None
1752	>1 meter but <5 meters	Live	Yes	None
1753	<1 meter	Live	No	None
1754	<1 meter	Live	No	None
1755	<1 meter	Live	No	None
1756	<1 meter	Live	No	None
1757	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1758	<1 meter	Live	No	None
1759	<1 meter	Live	No	None
1760	>1 meter but <5 meters	Live	Yes	None
1761	>1 meter but <5 meters	Live	Yes	None
1762	>1 meter but <5 meters	Live	Yes	None
1763	>1 meter but <5 meters	Live	No	None
1764	>1 meter but <5 meters	Dead	Yes	None
1765	>1 meter but <5 meters	Live	Yes	None
1766	<1 meter	Live	No	None
1767	<1 meter	Live	No	None
1768	<1 meter	Live	No	None
1769	<1 meter	Live	No	None
1770	>1 meter but <5 meters	Dead	No	None
1771	>1 meter but <5 meters	Live	Yes	None
1772	>1 meter but <5 meters	Live	Yes	None
1773	<1 meter	Live	No	None
1774	<1 meter	Live	No	None
1775	<1 meter	Live	No	None
1776	<1 meter	Live	No	None
1777	>1 meter but <5 meters	Dead	No	None
1778	<1 meter	Live	No	None
1779	<1 meter	Live	No	None
1780	<1 meter	Live	No	None
1781	<1 meter	Live	No	None
1782	<1 meter	Live	No	None
1783	<1 meter	Live	No	None
1784	<1 meter	Live	No	None
1785	<1 meter	Live	No	None
1786	<1 meter	Live	No	None
1787	<1 meter	Live	No	None
1788	<1 meter	Live	No	None
1789	<1 meter	Live	No	None
1790	<1 meter	Live	No	None
1791	<1 meter	Live	No	None
1792	<1 meter	Live	No	None
1793	<1 meter	Live	No	None
1794	<1 meter	Live	No	None
1795	<1 meter	Live	No	None
1796	<1 meter	Live	No	None
1797	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1798	<1 meter	Live	No	None
1799	<1 meter	Live	No	None
1800	<1 meter	Live	No	None
1801	<1 meter	Live	No	None
1802	<1 meter	Live	No	None
1803	<1 meter	Live	No	None
1804	<1 meter	Live	No	None
1805	<1 meter	Live	No	None
1806	<1 meter	Live	No	None
1807	<1 meter	Live	No	None
1808	<1 meter	Live	No	None
1809	<1 meter	Live	No	None
1810	<1 meter	Live	No	None
1811	<1 meter	Live	No	None
1812	<1 meter	Live	No	None
1813	<1 meter	Live	No	None
1814	<1 meter	Live	No	None
1815	<1 meter	Live	No	None
1816	<1 meter	Live	No	None
1817	<1 meter	Live	No	None
1818	<1 meter	Live	No	None
1819	<1 meter	Live	No	None
1820	<1 meter	Live	No	None
1821	<1 meter	Live	No	None
1822	<1 meter	Live	No	None
1823	<1 meter	Live	No	None
1824	<1 meter	Live	No	None
1825	<1 meter	Live	No	None
1826	>1 meter but <5 meters	Live	No	None
1827	>1 meter but <5 meters	Live	Yes	None
1828	>1 meter but <5 meters	Live	Yes	None
1829	>1 meter but <5 meters	Live	Yes	None
1830	≥ 5 meters	Live	Yes	None
1831	>1 meter but <5 meters	Live	No	None
1832	<1 meter	Live	No	None
1833	<1 meter	Live	No	None
1834	<1 meter	Live	No	None
1835	<1 meter	Live	No	None
1836	<1 meter	Live	No	None
1837	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1838	<1 meter	Live	No	None
1839	>1 meter but <5 meters	Live	No	None
1840	>1 meter but <5 meters	Live	No	None
1841	<1 meter	Live	No	None
1842	<1 meter	Live	No	None
1843	>1 meter but <5 meters	Live	No	None
1844	>1 meter but <5 meters	Live	No	None
1845	≥ 5 meters	Live	No	None
1846	<1 meter	Live	No	None
1847	<1 meter	Live	No	None
1848	>1 meter but <5 meters	Live	No	None
1849	>1 meter but <5 meters	Live	No	None
1850	>1 meter but <5 meters	Live	No	None
1851	>1 meter but <5 meters	Live	No	None
1852	>1 meter but <5 meters	Live	No	None
1853	>1 meter but <5 meters	Live	No	None
1854	>1 meter but <5 meters	Live	No	None
1855	>1 meter but <5 meters	Live	No	None
1856	>1 meter but <5 meters	Live	No	None
1857	>1 meter but <5 meters	Live	No	None
1858	≥ 5 meters	Live	No	None
1859	≥ 5 meters	Live	No	None
1860	>1 meter but <5 meters	Live	No	None
1861	>1 meter but <5 meters	Dead	Yes	None
1862	>1 meter but <5 meters	Dead	Yes	None
1863	>1 meter but <5 meters	Live	No	None
1864	<1 meter	Live	No	None
1865	<1 meter	Live	No	None
1866	<1 meter	Dead	No	None
1867	>1 meter but <5 meters	Dead	Yes	None
1868	>1 meter but <5 meters	Live	Yes	None
1869	<1 meter	Live	No	None
1870	<1 meter	Live	No	None
1871	<1 meter	Live	No	None
1872	<1 meter	Live	Yes	None
1873	>1 meter but <5 meters	Dead	Yes	None
1874	>1 meter but <5 meters	Dead	Yes	None
1875	>1 meter but <5 meters	Dead	No	None
1876	>1 meter but <5 meters	Dead	Yes	None
1877	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1878	>1 meter but <5 meters	Dead	Yes	None
1879	>1 meter but <5 meters	Dead	Yes	None
1880	>1 meter but <5 meters	Dead	No	None
1881	>1 meter but <5 meters	Dead	No	None
1882	>1 meter but <5 meters	Live	No	None
1883	>1 meter but <5 meters	Dead	Yes	None
1884	>1 meter but <5 meters	Dead	Yes	None
1885	>1 meter but <5 meters	Dead	Yes	None
1886	>1 meter but <5 meters	Dead	Yes	None
1887	>1 meter but <5 meters	Dead	No	None
1888	<1 meter	Live	No	None
1889	<1 meter	Live	No	None
1890	>1 meter but <5 meters	Live	No	None
1891	>1 meter but <5 meters	Live	No	None
1892	<1 meter	Live	No	None
1893	<1 meter	Live	No	None
1894	>1 meter but <5 meters	Live	No	None
1895	>1 meter but <5 meters	Dead	Yes	None
1896	>1 meter but <5 meters	Dead	No	None
1897	>1 meter but <5 meters	Dead	Yes	None
1898	>1 meter but <5 meters	Dead	Yes	None
1899	<1 meter	Live	No	None
1900	<1 meter	Live	No	None
1901	>1 meter but <5 meters	Live	Yes	None
1902	>1 meter but <5 meters	Live	No	None
1903	<1 meter	Live	No	None
1904	>1 meter but <5 meters	Dead	Yes	None
1905	<1 meter	Live	No	None
1906	<1 meter	Live	No	None
1907	<1 meter	Live	No	None
1908	<1 meter	Live	No	None
1909	<1 meter	Live	No	None
1910	>1 meter but <5 meters	Dead	No	None
1911	<1 meter	Live	No	None
1912	<1 meter	Live	No	None
1913	<1 meter	Live	No	None
1914	>1 meter but <5 meters	Dead	No	None
1915	>1 meter but <5 meters	Dead	No	None
1916	≥ 5 meters	Live	Yes	None
1917	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1918	<1 meter	Live	No	None
1919	<1 meter	Live	No	None
1920	<1 meter	Live	No	None
1921	<1 meter	Live	No	None
1922	<1 meter	Live	No	None
1923	<1 meter	Live	No	None
1924	<1 meter	Live	No	None
1925	>1 meter but <5 meters	Live	No	None
1926	>1 meter but <5 meters	Live	No	None
1927	<1 meter	Live	No	None
1928	>1 meter but <5 meters	Dead	Yes	None
1929	<1 meter	Live	No	None
1930	<1 meter	Live	No	None
1931	<1 meter	Live	No	None
1932	>1 meter but <5 meters	Dead	Yes	None
1933	>1 meter but <5 meters	Live	No	None
1934	<1 meter	Live	No	None
1935	>1 meter but <5 meters	Live	No	None
1936	<1 meter	Dead	No	None
1937	<1 meter	Live	No	None
1938	<1 meter	Live	No	None
1939	>1 meter but <5 meters	Live	Yes	None
1940	>1 meter but <5 meters	Live	No	None
1941	>1 meter but <5 meters	Live	No	None
1942	>1 meter but <5 meters	Live	No	None
1943	>1 meter but <5 meters	Live	No	None
1944	>1 meter but <5 meters	Live	No	None
1945	<1 meter	Live	No	None
1946	>1 meter but <5 meters	Live	Yes	None
1947	>1 meter but <5 meters	Dead	No	None
1948	>1 meter but <5 meters	Dead	Yes	None
1949	>1 meter but <5 meters	Dead	No	None
1950	>1 meter but <5 meters	Live	No	None
1951	<1 meter	Live	No	None
1952	<1 meter	Live	No	None
1953	>1 meter but <5 meters	Live	No	None
1954	<1 meter	Live	No	None
1955	<1 meter	Live	No	None
1956	>1 meter but <5 meters	Dead	Yes	None
1957	>1 meter but <5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1958	>1 meter but <5 meters	Live	No	None
1959	≥ 5 meters	Live	Yes	None
1960	<1 meter	Live	No	None
1961	<1 meter	Live	No	None
1962	<1 meter	Live	No	None
1963	<1 meter	Live	No	None
1964	<1 meter	Live	No	None
1965	<1 meter	Live	No	None
1966	<1 meter	Live	No	None
1967	<1 meter	Live	No	None
1968	<1 meter	Live	No	None
1969	>1 meter but <5 meters	Live	No	None
1970	>1 meter but <5 meters	Live	No	None
1971	>1 meter but <5 meters	Live	No	None
1972	>1 meter but <5 meters	Live	Yes	None
1973	<1 meter	Live	No	None
1974	<1 meter	Live	No	None
1975	>1 meter but <5 meters	Live	No	None
1976	<1 meter	Live	No	None
1977	<1 meter	Live	No	None
1978	>1 meter but <5 meters	Live	No	None
1979	<1 meter	Live	No	None
1980	>1 meter but <5 meters	Live	Yes	None
1981	>1 meter but <5 meters	Live	Yes	None
1982	>1 meter but <5 meters	Live	Yes	None
1983	≥ 5 meters	Live	Yes	None
1984	≥ 5 meters	Live	Yes	None
1985	>1 meter but <5 meters	Live	No	None
1986	>1 meter but <5 meters	Live	No	None
1987	>1 meter but <5 meters	Live	No	None
1988	>1 meter but <5 meters	Live	Yes	None
1989	>1 meter but <5 meters	Live	Yes	None
1990	>1 meter but <5 meters	Dead	Yes	None
1991	>1 meter but <5 meters	Dead	Yes	None
1992	<1 meter	Live	No	None
1993	>1 meter but <5 meters	Live	Yes	None
1994	>1 meter but <5 meters	Live	Yes	None
1995	>1 meter but <5 meters	Live	Yes	None
1996	<1 meter	Live	Yes	None
1997	<1 meter	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
1998	>1 meter but <5 meters	Dead	Yes	None
1999	>1 meter but <5 meters	Live	No	None
2000	>1 meter but <5 meters	Dead	No	None
2001	≥ 5 meters	Live	Yes	None
2002	<1 meter	Live	No	None
2003	≥ 5 meters	Live	Yes	None
2004	≥ 5 meters	Live	Yes	None
2005	≥ 5 meters	Live	Yes	None
2006	≥ 5 meters	Live	Yes	None
2007	>1 meter but <5 meters	Live	Yes	None
2008	>1 meter but <5 meters	Dead	No	None
2009	>1 meter but <5 meters	Dead	Yes	None
2010	≥ 5 meters	Live	Yes	None
2011	>1 meter but <5 meters	Live	No	None
2012	>1 meter but <5 meters	Live	No	None
2013	>1 meter but <5 meters	Live	No	None
2014	≥ 5 meters	Live	Yes	None
2015	>1 meter but <5 meters	Live	Yes	None
2016	<1 meter	Live	No	None
2017	>1 meter but <5 meters	Live	No	None
2018	>1 meter but <5 meters	Live	Yes	None
2019	<1 meter	Dead	No	None
2020	<1 meter	Live	No	None
2021	<1 meter	Live	No	None
2022	<1 meter	Live	No	None
2023	<1 meter	Live	No	None
2024	<1 meter	Live	No	None
2025	>1 meter but <5 meters	Live	No	None
2026	<1 meter	Live	No	None
2027	>1 meter but <5 meters	Live	Yes	None
2028	<1 meter	Live	No	None
2029	>1 meter but <5 meters	Live	Yes	None
2030	>1 meter but <5 meters	Live	No	None
2031	<1 meter	Dead	No	None
2032	>1 meter but <5 meters	Live	Yes	None
2033	<1 meter	Live	No	None
2034	<1 meter	Live	No	None
2035	<1 meter	Live	No	None
2036	<1 meter	Live	No	None
2037	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2038	>1 meter but <5 meters	Live	No	None
2039	>1 meter but <5 meters	Live	No	None
2040	>1 meter but <5 meters	Live	Yes	None
2041	>1 meter but <5 meters	Live	Yes	None
2042	>1 meter but <5 meters	Live	No	None
2043	>1 meter but <5 meters	Live	Yes	None
2044	>1 meter but <5 meters	Live	Yes	None
2045	<1 meter	Dead	No	None
2046	>1 meter but <5 meters	Live	Yes	None
2047	<1 meter	Live	No	None
2048	>1 meter but <5 meters	Live	No	None
2049	>1 meter but <5 meters	Live	Yes	None
2050	>1 meter but <5 meters	Live	No	None
2051	<1 meter	Live	No	None
2052	≥ 5 meters	Live	Yes	None
2053	>1 meter but <5 meters	Live	No	None
2054	>1 meter but <5 meters	Live	Yes	None
2055	≥ 5 meters	Live	Yes	None
2056	>1 meter but <5 meters	Live	No	None
2057	<1 meter	Live	No	None
2058	>1 meter but <5 meters	Live	No	None
2059	>1 meter but <5 meters	Live	Yes	None
2060	<1 meter	Live	No	None
2061	<1 meter	Live	No	None
2062	>1 meter but <5 meters	Dead	Yes	None
2063	>1 meter but <5 meters	Live	Yes	None
2064	≥ 5 meters	Live	Yes	None
2065	<1 meter	Live	No	None
2066	>1 meter but <5 meters	Live	No	None
2067	>1 meter but <5 meters	Live	No	None
2068	>1 meter but <5 meters	Live	No	None
2069	>1 meter but <5 meters	Dead	No	None
2070	<1 meter	Live	No	None
2071	<1 meter	Live	No	None
2072	<1 meter	Live	No	None
2073	<1 meter	Live	No	None
2074	>1 meter but <5 meters	Live	No	None
2075	>1 meter but <5 meters	Live	No	None
2076	>1 meter but <5 meters	Live	No	None
2077	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2078	>1 meter but <5 meters	Live	No	None
2079	<1 meter	Live	No	None
2080	>1 meter but <5 meters	Live	Yes	None
2081	>1 meter but <5 meters	Live	Yes	None
2082	<1 meter	Live	No	None
2083	<1 meter	Live	No	None
2084	>1 meter but <5 meters	Live	No	None
2085	>1 meter but <5 meters	Live	Yes	None
2086	>1 meter but <5 meters	Dead	Yes	None
2087	>1 meter but <5 meters	Live	No	None
2088	≥ 5 meters	Live	Yes	None
2089	>1 meter but <5 meters	Live	Yes	None
2090	>1 meter but <5 meters	Live	No	None
2091	>1 meter but <5 meters	Live	No	None
2092	>1 meter but <5 meters	Live	Yes	None
2093	>1 meter but <5 meters	Dead	No	None
2094	<1 meter	Live	No	None
2095	>1 meter but <5 meters	Live	No	None
2096	>1 meter but <5 meters	Dead	Yes	None
2098	>1 meter but <5 meters	Live	No	None
2099	<1 meter	Live	No	None
2100	<1 meter	Live	No	None
2101	<1 meter	Live	No	None
2102	<1 meter	Live	No	None
2103	>1 meter but <5 meters	Live	Yes	None
2104	>1 meter but <5 meters	Live	Yes	None
2105	<1 meter	Live	No	None
2106	>1 meter but <5 meters	Live	Yes	None
2107	>1 meter but <5 meters	Live	Yes	None
2108	<1 meter	Live	No	None
2109	<1 meter	Live	No	None
2110	<1 meter	Live	No	None
2111	>1 meter but <5 meters	Live	No	None
2112	>1 meter but <5 meters	Live	No	None
2113	≥ 5 meters	Live	Yes	None
2114	>1 meter but <5 meters	Live	Yes	None
2115	≥ 5 meters	Dead	Yes	None
2116	<1 meter	Live	No	None
2117	<1 meter	Live	No	None
2118	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2119	>1 meter but <5 meters	Dead	No	None
2120	<1 meter	Live	No	None
2121	<1 meter	Live	No	None
2122	<1 meter	Live	No	None
2123	<1 meter	Live	No	None
2124	<1 meter	Live	No	None
2125	>1 meter but <5 meters	Live	No	None
2126	>1 meter but <5 meters	Live	No	None
2127	>1 meter but <5 meters	Live	No	None
2128	<1 meter	Live	No	None
2129	<1 meter	Live	No	None
2130	<1 meter	Live	No	None
2131	<1 meter	Live	No	None
2132	>1 meter but <5 meters	Live	No	None
2133	>1 meter but <5 meters	Live	Yes	None
2134	>1 meter but <5 meters	Live	No	None
2135	≥ 5 meters	Live	Yes	None
2136	<1 meter	Live	No	None
2137	>1 meter but <5 meters	Live	No	None
2138	<1 meter	Live	No	None
2139	<1 meter	Live	No	None
2140	>1 meter but <5 meters	Live	No	None
2141	<1 meter	Live	No	None
2142	<1 meter	Live	No	None
2143	<1 meter	Live	No	None
2144	>1 meter but <5 meters	Live	No	None
2145	>1 meter but <5 meters	Live	Yes	None
2146	<1 meter	Live	No	None
2147	<1 meter	Live	No	None
2148	>1 meter but <5 meters	Live	Yes	None
2149	<1 meter	Live	No	None
2150	>1 meter but <5 meters	Dead	Yes	None
2151	>1 meter but <5 meters	Live	Yes	None
2152	<1 meter	Dead	No	None
2153	<1 meter	Live	No	None
2154	<1 meter	Live	No	None
2155	<1 meter	Live	No	None
2156	<1 meter	Live	No	None
2157	<1 meter	Live	No	None
2158	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2159	<1 meter	Live	No	None
2160	<1 meter	Live	No	None
2161	<1 meter	Live	No	None
2162	<1 meter	Live	No	None
2163	<1 meter	Live	No	None
2164	<1 meter	Live	No	None
2165	<1 meter	Live	No	None
2166	<1 meter	Live	No	None
2167	<1 meter	Live	No	None
2168	<1 meter	Live	No	None
2169	<1 meter	Live	No	None
2170	<1 meter	Live	No	None
2171	<1 meter	Live	No	None
2172	<1 meter	Live	No	None
2173	<1 meter	Live	No	None
2174	<1 meter	Live	No	None
2175	<1 meter	Live	No	None
2176	<1 meter	Live	No	None
2177	<1 meter	Live	No	None
2178	<1 meter	Live	No	None
2179	<1 meter	Live	No	None
2180	<1 meter	Live	No	None
2181	<1 meter	Live	No	None
2182	<1 meter	Live	No	None
2183	<1 meter	Live	No	None
2184	<1 meter	Live	No	None
2185	<1 meter	Live	No	None
2186	<1 meter	Live	No	None
2187	<1 meter	Live	No	None
2188	<1 meter	Live	No	None
2189	<1 meter	Live	No	None
2190	<1 meter	Live	No	None
2191	<1 meter	Live	No	None
2192	<1 meter	Live	No	None
2193	<1 meter	Live	No	None
2194	<1 meter	Live	No	None
2195	<1 meter	Live	No	None
2196	<1 meter	Live	No	None
2197	<1 meter	Live	No	None
2198	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2199	<1 meter	Live	No	None
2200	≥ 5 meters	Live	Yes	None
2201	<1 meter	Live	No	None
2202	<1 meter	Live	No	None
2203	<1 meter	Live	No	None
2204	<1 meter	Live	No	None
2205	<1 meter	Dead	No	None
2206	>1 meter but <5 meters	Live	Yes	None
2207	>1 meter but <5 meters	Live	No	None
2208	>1 meter but <5 meters	Live	Yes	None
2209	<1 meter	Dead	No	None
2210	<1 meter	Dead	No	None
2211	<1 meter	Live	No	None
2212	<1 meter	Live	No	None
2213	<1 meter	Live	No	None
2214	<1 meter	Live	No	None
2215	<1 meter	Live	No	None
2216	<1 meter	Live	No	None
2217	<1 meter	Live	No	None
2218	<1 meter	Live	No	None
2219	<1 meter	Live	No	None
2220	<1 meter	Live	No	None
2221	<1 meter	Live	No	None
2222	<1 meter	Live	No	None
2223	<1 meter	Live	No	None
2224	<1 meter	Live	No	None
2225	<1 meter	Live	No	None
2226	<1 meter	Live	No	None
2227	<1 meter	Live	No	None
2228	<1 meter	Live	No	None
2229	<1 meter	Live	No	None
2230	<1 meter	Live	No	None
2231	>1 meter but <5 meters	Live	No	None
2232	>1 meter but <5 meters	Live	No	None
2233	<1 meter	Live	No	None
2234	>1 meter but <5 meters	Live	No	None
2235	>1 meter but <5 meters	Live	No	None
2236	>1 meter but <5 meters	Live	No	None
2237	<1 meter	Live	No	None
2238	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2239	<1 meter	Dead	No	None
2240	<1 meter	Dead	No	None
2241	<1 meter	Dead	No	None
2242	>1 meter but <5 meters	Live	No	None
2243	<1 meter	Live	No	None
2244	<1 meter	Live	No	None
2245	<1 meter	Live	No	None
2246	<1 meter	Live	No	None
2247	>1 meter but <5 meters	Live	No	None
2248	<1 meter	Live	No	None
2249	<1 meter	Live	No	None
2250	<1 meter	Dead	No	None
2251	<1 meter	Live	No	None
2252	<1 meter	Dead	No	None
2253	<1 meter	Live	No	None
2254	<1 meter	Live	No	None
2255	<1 meter	Live	No	None
2256	<1 meter	Live	No	None
2257	>1 meter but <5 meters	Live	No	None
2258	>1 meter but <5 meters	Live	No	None
2259	<1 meter	Live	No	None
2260	<1 meter	Live	No	None
2261	<1 meter	Live	No	None
2262	<1 meter	Live	No	None
2263	>1 meter but <5 meters	Live	Yes	None
2264	<1 meter	Live	No	None
2265	<1 meter	Live	No	None
2266	>1 meter but <5 meters	Live	No	None
2267	<1 meter	Live	No	None
2268	<1 meter	Live	No	None
2269	<1 meter	Live	No	None
2270	<1 meter	Live	No	None
2271	<1 meter	Live	No	None
2272	<1 meter	Live	No	None
2273	<1 meter	Live	No	None
2274	<1 meter	Live	No	None
2275	<1 meter	Dead	No	None
2276	<1 meter	Live	No	None
2277	<1 meter	Live	No	None
2278	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2279	<1 meter	Live	No	None
2280	<1 meter	Live	No	None
2281	<1 meter	Live	No	None
2282	<1 meter	Live	No	None
2283	<1 meter	Live	No	None
2284	<1 meter	Live	No	None
2285	<1 meter	Live	No	None
2286	<1 meter	Live	No	None
2287	<1 meter	Live	No	None
2288	<1 meter	Live	No	None
2289	<1 meter	Live	No	None
2290	<1 meter	Dead	No	None
2291	<1 meter	Dead	No	None
2292	<1 meter	Live	No	None
2293	<1 meter	Live	No	None
2294	<1 meter	Live	No	None
2295	<1 meter	Live	No	None
2296	<1 meter	Live	No	None
2297	<1 meter	Live	No	None
2298	<1 meter	Live	No	None
2299	<1 meter	Live	No	None
2300	<1 meter	Live	No	None
2301	<1 meter	Live	No	None
2302	<1 meter	Live	No	None
2303	<1 meter	Live	No	None
2304	<1 meter	Live	No	None
2305	<1 meter	Live	No	None
2306	<1 meter	Live	No	None
2307	<1 meter	Live	No	None
2308	<1 meter	Live	No	None
2309	<1 meter	Live	No	None
2310	<1 meter	Live	No	None
2311	<1 meter	Live	No	None
2312	<1 meter	Dead	No	None
2313	>1 meter but <5 meters	Live	No	None
2314	<1 meter	Live	No	None
2315	<1 meter	Live	No	None
2316	<1 meter	Live	No	None
2317	<1 meter	Live	No	None
2318	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2319	<1 meter	Live	No	None
2320	<1 meter	Live	No	None
2321	<1 meter	Live	No	None
2322	>1 meter but <5 meters	Live	Yes	None
2323	<1 meter	Live	No	None
2324	<1 meter	Live	No	None
2325	<1 meter	Live	No	None
2326	<1 meter	Live	No	None
2327	<1 meter	Live	No	None
2328	<1 meter	Live	No	None
2329	<1 meter	Dead	No	None
2330	>1 meter but <5 meters	Live	Yes	None
2331	>1 meter but <5 meters	Live	No	None
2332	>1 meter but <5 meters	Live	Yes	None
2333	>1 meter but <5 meters	Live	No	None
2334	>1 meter but <5 meters	Live	No	None
2335	>1 meter but <5 meters	Live	Yes	None
2336	<1 meter	Live	No	None
2337	<1 meter	Live	No	None
2338	≥ 5 meters	Live	Yes	None
2339	>1 meter but <5 meters	Live	No	None
2340	>1 meter but <5 meters	Live	No	None
2341	<1 meter	Live	No	None
2342	>1 meter but <5 meters	Live	No	None
2343	<1 meter	Dead	No	None
2344	<1 meter	Live	No	None
2345	<1 meter	Live	No	None
2346	>1 meter but <5 meters	Live	No	None
2347	>1 meter but <5 meters	Live	No	None
2348	>1 meter but <5 meters	Live	No	None
2349	>1 meter but <5 meters	Live	No	None
2350	>1 meter but <5 meters	Live	No	None
2351	<1 meter	Live	No	None
2352	<1 meter	Live	No	None
2353	>1 meter but <5 meters	Live	No	None
2354	>1 meter but <5 meters	Live	No	None
2355	>1 meter but <5 meters	Live	Yes	None
2356	>1 meter but <5 meters	Live	No	None
2357	>1 meter but <5 meters	Live	No	None
2358	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2359	<1 meter	Live	No	None
2360	>1 meter but <5 meters	Live	Yes	None
2361	>1 meter but <5 meters	Live	No	None
2362	<1 meter	Live	No	None
2363	>1 meter but <5 meters	Live	Yes	None
2364	>1 meter but <5 meters	Live	Yes	None
2365	<1 meter	Live	No	None
2366	<1 meter	Live	No	None
2367	≥ 5 meters	Live	Yes	None
2368	≥ 5 meters	Live	Yes	None
2369	>1 meter but <5 meters	Live	Yes	None
2370	<1 meter	Live	No	None
2371	<1 meter	Live	No	None
2372	>1 meter but <5 meters	Live	No	None
2373	<1 meter	Live	No	None
2374	<1 meter	Live	No	None
2375	>1 meter but <5 meters	Live	No	None
2376	<1 meter	Live	No	None
2377	<1 meter	Live	No	None
2378	<1 meter	Live	No	None
2379	<1 meter	Live	No	None
2380	>1 meter but <5 meters	Live	Yes	None
2381	>1 meter but <5 meters	Live	Yes	None
2382	<1 meter	Live	No	None
2383	>1 meter but <5 meters	Live	Yes	None
2384	<1 meter	Live	No	None
2385	>1 meter but <5 meters	Live	Yes	None
2386	>1 meter but <5 meters	Live	Yes	None
2387	<1 meter	Live	No	None
2388	>1 meter but <5 meters	Live	No	None
2389	>1 meter but <5 meters	Live	No	None
2390	>1 meter but <5 meters	Live	Yes	None
2391	>1 meter but <5 meters	Live	No	None
2392	<1 meter	Live	No	None
2393	<1 meter	Live	No	None
2394	>1 meter but <5 meters	Live	No	None
2395	>1 meter but <5 meters	Live	Yes	None
2396	<1 meter	Live	No	None
2397	≥ 5 meters	Live	Yes	None
2398	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2399	>1 meter but <5 meters	Live	No	None
2400	<1 meter	Live	No	None
2401	<1 meter	Live	No	None
2402	<1 meter	Live	No	None
2403	<1 meter	Live	No	None
2404	<1 meter	Live	No	None
2405	<1 meter	Live	No	None
2406	>1 meter but <5 meters	Live	No	None
2407	<1 meter	Live	No	None
2408	<1 meter	Live	No	None
2409	<1 meter	Live	No	None
2410	<1 meter	Live	No	None
2411	<1 meter	Live	No	None
2412	<1 meter	Live	No	None
2413	<1 meter	Live	No	None
2414	<1 meter	Live	No	None
2415	<1 meter	Live	No	None
2416	>1 meter but <5 meters	Live	No	None
2417	>1 meter but <5 meters	Live	No	None
2418	<1 meter	Dead	No	None
2419	≥ 5 meters	Live	Yes	None
2420	>1 meter but <5 meters	Live	Yes	None
2421	≥ 5 meters	Live	Yes	None
2422	>1 meter but <5 meters	Live	No	None
2423	>1 meter but <5 meters	Live	Yes	None
2424	>1 meter but <5 meters	Live	Yes	None
2425	>1 meter but <5 meters	Live	Yes	None
2426	>1 meter but <5 meters	Live	Yes	None
2427	>1 meter but <5 meters	Live	Yes	None
2428	>1 meter but <5 meters	Live	Yes	None
2429	<1 meter	Live	No	None
2430	<1 meter	Live	No	None
2431	<1 meter	Live	No	None
2432	<1 meter	Live	No	None
2433	<1 meter	Live	No	None
2434	<1 meter	Live	No	None
2435	>1 meter but <5 meters	Live	No	None
2436	<1 meter	Live	No	None
2437	<1 meter	Live	No	None
2438	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2439	>1 meter but <5 meters	Live	No	None
2440	<1 meter	Live	No	None
2441	>1 meter but <5 meters	Dead	No	None
2442	>1 meter but <5 meters	Live	No	None
2443	>1 meter but <5 meters	Dead	No	None
2444	>1 meter but <5 meters	Dead	No	None
2445	<1 meter	Dead	No	None
2446	<1 meter	Live	No	None
2447	<1 meter	Live	No	None
2448	>1 meter but <5 meters	Live	No	None
2449	>1 meter but <5 meters	Live	Yes	None
2450	>1 meter but <5 meters	Live	Yes	None
2451	≥ 5 meters	Live	Yes	None
2452	>1 meter but <5 meters	Live	Yes	None
2453	>1 meter but <5 meters	Live	Yes	None
2454	>1 meter but <5 meters	Live	Yes	None
2455	>1 meter but <5 meters	Live	No	None
2456	>1 meter but <5 meters	Live	Yes	None
2457	>1 meter but <5 meters	Live	Yes	None
2458	>1 meter but <5 meters	Live	Yes	None
2459	>1 meter but <5 meters	Live	Yes	None
2460	<1 meter	Live	No	None
2461	>1 meter but <5 meters	Live	No	None
2462	>1 meter but <5 meters	Live	No	None
2463	<1 meter	Live	No	None
2464	<1 meter	Live	No	None
2465	<1 meter	Live	No	None
2466	<1 meter	Live	No	None
2467	>1 meter but <5 meters	Live	Yes	None
2468	>1 meter but <5 meters	Live	Yes	None
2469	>1 meter but <5 meters	Live	Yes	None
2470	>1 meter but <5 meters	Live	Yes	None
2471	>1 meter but <5 meters	Live	Yes	None
2472	>1 meter but <5 meters	Dead	Yes	None
2473	>1 meter but <5 meters	Live	Yes	None
2474	>1 meter but <5 meters	Dead	Yes	None
2475	<1 meter	Live	No	None
2476	<1 meter	Live	No	None
2477	<1 meter	Live	No	None
2478	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2479	<1 meter	Live	No	None
2480	<1 meter	Live	No	None
2481	<1 meter	Live	No	None
2482	>1 meter but <5 meters	Live	No	None
2483	>1 meter but <5 meters	Live	No	None
2484	>1 meter but <5 meters	Live	No	None
2485	<1 meter	Live	No	None
2486	<1 meter	Live	Yes	None
2487	>1 meter but <5 meters	Live	No	None
2488	<1 meter	Live	No	None
2489	>1 meter but <5 meters	Live	Yes	None
2490	<1 meter	Live	No	None
2491	>1 meter but <5 meters	Live	No	None
2492	<1 meter	Live	No	None
2493	>1 meter but <5 meters	Live	No	None
2494	<1 meter	Live	No	None
2495	<1 meter	Live	No	None
2496	>1 meter but <5 meters	Live	No	None
2497	<1 meter	Live	No	None
2498	>1 meter but <5 meters	Live	No	None
2499	>1 meter but <5 meters	Live	Yes	None
2500	<1 meter	Live	No	None
2501	<1 meter	Live	No	None
2502	<1 meter	Live	No	None
2503	<1 meter	Live	No	None
2504	>1 meter but <5 meters	Live	No	None
2505	<1 meter	Live	No	None
2506	<1 meter	Live	No	None
2507	>1 meter but <5 meters	Live	No	None
2508	>1 meter but <5 meters	Live	No	None
2509	<1 meter	Live	No	None
2510	<1 meter	Live	No	None
2511	<1 meter	Live	No	None
2512	<1 meter	Live	No	None
2513	>1 meter but <5 meters	Live	Yes	None
2514	>1 meter but <5 meters	Live	Yes	None
2515	<1 meter	Live	No	None
2516	<1 meter	Live	No	None
2517	>1 meter but <5 meters	Live	Yes	None
2518	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2519	<1 meter	Live	No	None
2520	<1 meter	Live	No	None
2521	>1 meter but <5 meters	Live	Yes	None
2522	≥ 5 meters	Live	Yes	None
2523	≥ 5 meters	Live	Yes	None
2524	<1 meter	Live	No	None
2525	<1 meter	Live	No	None
2526	<1 meter	Live	No	None
2527	>1 meter but <5 meters	Live	No	None
2528	<1 meter	Live	No	None
2529	<1 meter	Live	No	None
2530	<1 meter	Live	No	None
2531	>1 meter but <5 meters	Live	No	None
2532	>1 meter but <5 meters	Live	Yes	None
2533	<1 meter	Live	No	None
2534	<1 meter	Dead	No	None
2535	>1 meter but <5 meters	Dead	No	None
2536	>1 meter but <5 meters	Dead	No	None
2537	<1 meter	Live	No	None
2538	<1 meter	Dead	No	None
2539	<1 meter	Live	No	None
2540	≥ 5 meters	Live	Yes	None
2541	≥ 5 meters	Live	Yes	None
2542	≥ 5 meters	Live	Yes	None
2543	>1 meter but <5 meters	Live	Yes	None
2544	>1 meter but <5 meters	Live	Yes	None
2545	>1 meter but <5 meters	Live	Yes	None
2546	≥ 5 meters	Live	Yes	None
2547	>1 meter but <5 meters	Live	Yes	None
2548	>1 meter but <5 meters	Live	Yes	None
2549	≥ 5 meters	Live	Yes	None
2550	>1 meter but <5 meters	Live	Yes	None
2551	<1 meter	Live	No	None
2552	<1 meter	Live	No	None
2553	>1 meter but <5 meters	Dead	Yes	None
2554	<1 meter	Live	No	None
2555	<1 meter	Live	No	None
2556	>1 meter but <5 meters	Live	Yes	None
2557	>1 meter but <5 meters	Live	Yes	None
2558	>1 meter but <5 meters	Dead	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2559	<1 meter	Live	No	None
2560	<1 meter	Live	No	None
2561	<1 meter	Live	No	None
2562	<1 meter	Live	No	None
2563	<1 meter	Live	No	None
2564	<1 meter	Live	No	None
2565	<1 meter	Live	No	None
2566	<1 meter	Live	No	None
2567	<1 meter	Live	No	None
2568	>1 meter but <5 meters	Live	No	None
2569	>1 meter but <5 meters	Live	No	None
2570	>1 meter but <5 meters	Live	Yes	None
2571	>1 meter but <5 meters	Live	No	None
2572	>1 meter but <5 meters	Live	Yes	None
2573	>1 meter but <5 meters	Dead	Yes	None
2574	>1 meter but <5 meters	Live	Yes	None
2575	<1 meter	Live	No	None
2576	<1 meter	Live	No	None
2577	>1 meter but <5 meters	Live	Yes	None
2578	>1 meter but <5 meters	Live	Yes	None
2579	>1 meter but <5 meters	Live	Yes	None
2580	<1 meter	Dead	Yes	None
2581	<1 meter	Dead	Yes	None
2582	>1 meter but <5 meters	Live	Yes	None
2583	>1 meter but <5 meters	Live	Yes	None
2584	>1 meter but <5 meters	Live	Yes	None
2585	≥ 5 meters	Live	Yes	None
2586	<1 meter	Live	Yes	None
2587	<1 meter	Live	Yes	None
2588	>1 meter but <5 meters	Live	Yes	None
2589	>1 meter but <5 meters	Live	Yes	None
2590	<1 meter	Live	No	None
2591	<1 meter	Live	No	None
2592	<1 meter	Live	No	None
2593	<1 meter	Live	No	None
2594	>1 meter but <5 meters	Live	No	None
2595	>1 meter but <5 meters	Live	Yes	None
2596	>1 meter but <5 meters	Live	Yes	None
2597	>1 meter but <5 meters	Live	Yes	None
2598	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2599	>1 meter but <5 meters	Live	Yes	None
2600	>1 meter but <5 meters	Live	Yes	None
2601	>1 meter but <5 meters	Live	Yes	None
2602	<1 meter	Live	No	None
2603	<1 meter	Live	No	None
2604	<1 meter	Live	No	None
2605	<1 meter	Live	No	None
2606	>1 meter but <5 meters	Live	No	None
2607	>1 meter but <5 meters	Live	Yes	None
2608	>1 meter but <5 meters	Live	Yes	None
2609	<1 meter	Live	No	None
2610	<1 meter	Live	No	None
2611	<1 meter	Live	No	None
2612	>1 meter but <5 meters	Live	No	None
2613	>1 meter but <5 meters	Live	No	None
2614	>1 meter but <5 meters	Live	No	None
2615	>1 meter but <5 meters	Live	Yes	None
2616	>1 meter but <5 meters	Dead	Yes	None
2617	<1 meter	Live	No	None
2618	<1 meter	Live	No	None
2619	<1 meter	Live	No	None
2620	<1 meter	Live	No	None
2621	<1 meter	Live	No	None
2622	<1 meter	Live	No	None
2623	<1 meter	Live	No	None
2624	<1 meter	Live	No	None
2625	<1 meter	Live	No	None
2626	<1 meter	Live	No	None
2627	<1 meter	Live	No	None
2628	<1 meter	Live	No	None
2629	<1 meter	Live	No	None
2630	<1 meter	Live	No	None
2631	<1 meter	Live	No	None
2632	<1 meter	Live	No	None
2633	<1 meter	Live	No	None
2634	>1 meter but <5 meters	Live	No	None
2635	>1 meter but <5 meters	Live	No	None
2636	>1 meter but <5 meters	Live	No	None
2637	>1 meter but <5 meters	Live	No	None
2638	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2639	>1 meter but <5 meters	Live	No	None
2640	>1 meter but <5 meters	Live	No	None
2641	>1 meter but <5 meters	Live	No	None
2642	>1 meter but <5 meters	Live	No	None
2643	>1 meter but <5 meters	Live	No	None
2644	<1 meter	Live	No	None
2645	>1 meter but <5 meters	Live	No	None
2646	>1 meter but <5 meters	Live	Yes	None
2647	>1 meter but <5 meters	Live	Yes	None
2648	>1 meter but <5 meters	Live	Yes	None
2649	≥ 5 meters	Live	Yes	None
2650	>1 meter but <5 meters	Live	Yes	None
2651	>1 meter but <5 meters	Live	Yes	None
2652	>1 meter but <5 meters	Live	Yes	None
2653	<1 meter	Live	No	None
2654	<1 meter	Live	No	None
2655	<1 meter	Live	No	None
2656	<1 meter	Live	No	None
2657	<1 meter	Live	No	None
2658	<1 meter	Live	No	None
2659	<1 meter	Live	No	None
2660	>1 meter but <5 meters	Live	No	None
2661	>1 meter but <5 meters	Live	No	None
2662	>1 meter but <5 meters	Live	No	None
2663	>1 meter but <5 meters	Live	No	None
2664	>1 meter but <5 meters	Live	No	None
2665	≥ 5 meters	Live	No	None
2666	>1 meter but <5 meters	Live	No	None
2667	≥ 5 meters	Live	No	None
2668	<1 meter	Live	No	None
2669	>1 meter but <5 meters	Live	Yes	None
2670	>1 meter but <5 meters	Live	No	None
2671	>1 meter but <5 meters	Live	Yes	None
2672	>1 meter but <5 meters	Live	Yes	None
2673	<1 meter	Live	No	None
2674	<1 meter	Live	No	None
2675	<1 meter	Live	No	None
2676	>1 meter but <5 meters	Live	No	None
2677	<1 meter	Live	No	None
2678	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2679	>1 meter but <5 meters	Live	No	None
2680	<1 meter	Live	No	None
2681	<1 meter	Live	No	None
2682	>1 meter but <5 meters	Live	Yes	None
2683	>1 meter but <5 meters	Live	No	None
2684	<1 meter	Live	No	None
2685	<1 meter	Live	No	None
2686	<1 meter	Live	No	None
2687	<1 meter	Live	No	None
2688	<1 meter	Live	No	None
2689	<1 meter	Live	No	None
2690	<1 meter	Live	No	None
2691	<1 meter	Live	No	None
2692	<1 meter	Live	No	None
2693	<1 meter	Live	No	None
2694	<1 meter	Live	No	None
2695	<1 meter	Live	No	None
2696	>1 meter but <5 meters	Live	No	None
2697	>1 meter but <5 meters	Live	Yes	None
2698	>1 meter but <5 meters	Live	No	None
2699	>1 meter but <5 meters	Live	No	None
2700	>1 meter but <5 meters	Live	No	None
2701	>1 meter but <5 meters	Live	No	None
2702	<1 meter	Live	No	None
2703	<1 meter	Live	No	None
2704	<1 meter	Live	No	None
2705	<1 meter	Live	No	None
2706	<1 meter	Live	No	None
2707	<1 meter	Live	No	None
2708	<1 meter	Live	No	None
2709	>1 meter but <5 meters	Live	No	None
2710	>1 meter but <5 meters	Live	No	None
2711	>1 meter but <5 meters	Dead	No	None
2712	<1 meter	Live	No	None
2713	≥ 5 meters	Live	Yes	None
2714	>1 meter but <5 meters	Live	Yes	None
2715	>1 meter but <5 meters	Live	Yes	None
2716	>1 meter but <5 meters	Live	Yes	None
2717	>1 meter but <5 meters	Live	Yes	None
2718	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2719	>1 meter but <5 meters	Live	Yes	None
2720	>1 meter but <5 meters	Live	Yes	None
2721	<1 meter	Live	No	None
2722	≥ 5 meters	Live	Yes	None
2723	≥ 5 meters	Live	Yes	None
2724	≥ 5 meters	Live	Yes	None
2725	≥ 5 meters	Live	Yes	None
2726	<1 meter	Live	No	None
2727	≥ 5 meters	Live	Yes	None
2728	>1 meter but <5 meters	Live	Yes	None
2729	>1 meter but <5 meters	Live	Yes	None
2730	>1 meter but <5 meters	Live	Yes	None
2731	>1 meter but <5 meters	Live	Yes	None
2732	>1 meter but <5 meters	Live	Yes	None
2733	<1 meter	Live	No	None
2734	<1 meter	Live	No	None
2735	<1 meter	Live	No	None
2736	<1 meter	Live	No	None
2737	<1 meter	Live	No	None
2738	<1 meter	Live	No	None
2739	<1 meter	Live	No	None
2740	<1 meter	Live	No	None
2741	<1 meter	Live	No	None
2742	<1 meter	Live	No	None
2743	<1 meter	Live	No	None
2744	<1 meter	Live	No	None
2745	<1 meter	Live	No	None
2746	<1 meter	Live	No	None
2747	<1 meter	Live	No	None
2748	<1 meter	Live	No	None
2749	<1 meter	Live	No	None
2750	<1 meter	Live	No	None
2751	<1 meter	Live	No	None
2752	<1 meter	Live	No	None
2753	<1 meter	Live	No	None
2754	>1 meter but <5 meters	Live	No	None
2755	>1 meter but <5 meters	Live	No	None
2756	>1 meter but <5 meters	Live	Yes	None
2757	>1 meter but <5 meters	Live	Yes	None
2758	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2759	>1 meter but <5 meters	Dead	Yes	None
2760	>1 meter but <5 meters	Dead	Yes	None
2761	<1 meter	Live	No	None
2762	<1 meter	Live	No	None
2763	<1 meter	Live	No	None
2764	<1 meter	Live	No	None
2765	>1 meter but <5 meters	Live	Yes	None
2766	>1 meter but <5 meters	Live	Yes	None
2767	<1 meter	Live	No	None
2768	>1 meter but <5 meters	Live	No	None
2769	<1 meter	Live	No	None
2770	<1 meter	Live	No	None
2771	<1 meter	Live	No	None
2772	<1 meter	Live	No	None
2773	<1 meter	Live	No	None
2774	<1 meter	Live	No	None
2775	<1 meter	Live	No	None
2776	<1 meter	Live	No	None
2777	<1 meter	Live	No	None
2778	<1 meter	Live	No	None
2779	<1 meter	Live	No	None
2780	<1 meter	Live	No	None
2781	<1 meter	Live	No	None
2782	<1 meter	Live	No	None
2783	<1 meter	Live	No	None
2784	<1 meter	Live	No	None
2785	<1 meter	Live	No	None
2786	<1 meter	Live	No	None
2787	>1 meter but <5 meters	Live	No	None
2788	>1 meter but <5 meters	Live	No	None
2789	>1 meter but <5 meters	Live	No	None
2790	>1 meter but <5 meters	Live	Yes	None
2791	>1 meter but <5 meters	Live	No	None
2792	>1 meter but <5 meters	Live	Yes	None
2793	>1 meter but <5 meters	Live	Yes	None
2794	>1 meter but <5 meters	Live	No	None
2795	>1 meter but <5 meters	Live	No	None
2796	>1 meter but <5 meters	Live	Yes	None
2797	>1 meter but <5 meters	Live	Yes	None
2798	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2799	<1 meter	Live	No	None
2800	<1 meter	Live	No	None
2801	>1 meter but <5 meters	Live	No	None
2802	>1 meter but <5 meters	Live	No	None
2803	>1 meter but <5 meters	Live	Yes	None
2804	>1 meter but <5 meters	Live	Yes	None
2805	>1 meter but <5 meters	Live	No	None
2806	<1 meter	Live	No	None
2807	<1 meter	Live	No	None
2808	<1 meter	Live	No	None
2809	<1 meter	Live	No	None
2810	<1 meter	Live	No	None
2811	<1 meter	Live	No	None
2812	<1 meter	Live	No	None
2813	<1 meter	Live	No	None
2814	<1 meter	Live	No	None
2815	>1 meter but <5 meters	Live	No	None
2816	>1 meter but <5 meters	Live	No	None
2817	<1 meter	Live	No	None
2818	<1 meter	Live	No	None
2819	<1 meter	Live	No	None
2820	<1 meter	Live	No	None
2821	>1 meter but <5 meters	Live	Yes	None
2822	<1 meter	Live	No	None
2823	<1 meter	Live	No	None
2824	<1 meter	Live	No	None
2825	<1 meter	Live	No	None
2826	<1 meter	Live	No	None
2827	<1 meter	Live	No	None
2828	<1 meter	Live	No	None
2829	<1 meter	Live	No	None
2830	<1 meter	Live	No	None
2831	<1 meter	Live	No	None
2832	<1 meter	Live	No	None
2833	<1 meter	Live	No	None
2834	<1 meter	Live	No	None
2835	≥ 5 meters	Live	Yes	None
2836	>1 meter but <5 meters	Dead	Yes	None
2837	>1 meter but <5 meters	Live	No	None
2838	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2839	>1 meter but <5 meters	Live	No	None
2840	>1 meter but <5 meters	Live	No	None
2841	>1 meter but <5 meters	Live	No	None
2842	≥ 5 meters	Live	Yes	None
2843	>1 meter but <5 meters	Dead	Yes	None
2844	<1 meter	Live	No	None
2845	<1 meter	Live	No	None
2846	<1 meter	Live	No	None
2847	<1 meter	Live	No	None
2848	<1 meter	Live	No	None
2849	<1 meter	Live	No	None
2850	<1 meter	Live	No	None
2851	<1 meter	Live	No	None
2852	<1 meter	Live	No	None
2853	<1 meter	Live	No	None
2854	<1 meter	Live	No	None
2855	<1 meter	Live	No	None
2856	<1 meter	Live	No	None
2857	<1 meter	Live	No	None
2858	<1 meter	Live	No	None
2859	<1 meter	Live	No	None
2860	<1 meter	Live	No	None
2861	<1 meter	Dead	No	None
2862	<1 meter	Dead	No	None
2863	<1 meter	Live	No	None
2864	>1 meter but <5 meters	Live	Yes	None
2865	>1 meter but <5 meters	Live	Yes	None
2866	<1 meter	Live	No	None
2867	<1 meter	Live	No	None
2868	>1 meter but <5 meters	Live	No	None
2869	>1 meter but <5 meters	Live	No	None
2870	<1 meter	Live	No	None
2871	<1 meter	Live	No	None
2872	>1 meter but <5 meters	Live	Yes	None
2873	<1 meter	Live	No	None
2874	<1 meter	Live	No	None
2875	<1 meter	Live	No	None
2876	<1 meter	Live	No	None
2877	<1 meter	Live	No	None
2878	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2879	<1 meter	Live	No	None
2880	<1 meter	Live	No	None
2881	>1 meter but <5 meters	Live	No	None
2882	>1 meter but <5 meters	Live	No	None
2883	>1 meter but <5 meters	Dead	No	None
2884	>1 meter but <5 meters	Live	No	None
2885	<1 meter	Dead	No	None
2886	>1 meter but <5 meters	Live	Yes	None
2887	<1 meter	Live	No	None
2888	<1 meter	Live	No	None
2889	<1 meter	Live	No	None
2890	<1 meter	Live	No	None
2891	<1 meter	Live	No	None
2892	<1 meter	Live	No	None
2893	<1 meter	Live	No	None
2894	<1 meter	Live	No	None
2895	<1 meter	Live	No	None
2896	<1 meter	Live	No	None
2897	<1 meter	Live	No	None
2898	<1 meter	Live	No	None
2899	<1 meter	Live	No	None
2900	<1 meter	Live	No	None
2901	<1 meter	Live	No	None
2902	<1 meter	Live	No	None
2903	<1 meter	Live	No	None
2904	<1 meter	Live	No	None
2905	<1 meter	Live	No	None
2906	<1 meter	Live	No	None
2907	<1 meter	Live	No	None
2908	<1 meter	Live	No	None
2909	>1 meter but <5 meters	Live	Yes	None
2910	>1 meter but <5 meters	Live	Yes	None
2911	>1 meter but <5 meters	Live	Yes	None
2912	>1 meter but <5 meters	Live	Yes	None
2913	>1 meter but <5 meters	Live	Yes	None
2914	>1 meter but <5 meters	Live	No	None
2915	<1 meter	Live	Yes	None
2916	>1 meter but <5 meters	Live	Yes	None
2917	<1 meter	Live	Yes	None
2918	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2919	<1 meter	Live	No	None
2920	<1 meter	Live	No	None
2921	<1 meter	Live	No	None
2922	<1 meter	Live	No	None
2923	<1 meter	Live	No	None
2924	<1 meter	Live	No	None
2925	<1 meter	Live	No	None
2926	<1 meter	Live	No	None
2927	<1 meter	Live	No	None
2928	<1 meter	Live	No	None
2929	<1 meter	Live	No	None
2930	<1 meter	Live	No	None
2931	<1 meter	Live	No	None
2932	<1 meter	Live	No	None
2933	<1 meter	Live	No	None
2934	<1 meter	Live	No	None
2935	>1 meter but <5 meters	Dead	No	None
2936	<1 meter	Live	No	None
2937	<1 meter	Live	No	None
2938	>1 meter but <5 meters	Live	Yes	None
2939	<1 meter	Live	No	None
2940	<1 meter	Live	No	None
2941	<1 meter	Live	No	None
2942	<1 meter	Live	No	None
2943	<1 meter	Live	No	None
2944	<1 meter	Live	No	None
2945	<1 meter	Live	No	None
2946	<1 meter	Live	No	None
2947	<1 meter	Live	No	None
2948	<1 meter	Dead	No	None
2949	<1 meter	Live	No	None
2950	>1 meter but <5 meters	Live	Yes	None
2951	<1 meter	Live	No	None
2952	<1 meter	Live	No	None
2953	<1 meter	Live	No	None
2954	<1 meter	Live	No	None
2955	<1 meter	Live	No	None
2956	<1 meter	Live	No	None
2957	<1 meter	Live	No	None
2958	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2959	<1 meter	Live	No	None
2960	<1 meter	Live	No	None
2961	<1 meter	Live	No	None
2962	>1 meter but <5 meters	Live	No	None
2963	>1 meter but <5 meters	Live	No	None
2964	>1 meter but <5 meters	Live	No	None
2965	>1 meter but <5 meters	Live	No	None
2966	>1 meter but <5 meters	Dead	No	None
2967	>1 meter but <5 meters	Live	No	None
2968	<1 meter	Live	No	None
2969	<1 meter	Live	No	None
2970	<1 meter	Live	No	None
2971	<1 meter	Live	No	None
2972	<1 meter	Live	No	None
2973	<1 meter	Live	No	None
2974	<1 meter	Live	No	None
2975	<1 meter	Live	No	None
2976	<1 meter	Live	No	None
2977	<1 meter	Live	No	None
2978	<1 meter	Live	No	None
2979	<1 meter	Live	No	None
2980	<1 meter	Live	No	None
2981	<1 meter	Live	No	None
2982	<1 meter	Live	No	None
2983	<1 meter	Dead	No	None
2984	<1 meter	Dead	No	None
2985	>1 meter but <5 meters	Live	No	None
2986	>1 meter but <5 meters	Live	No	None
2987	<1 meter	Live	No	None
2988	<1 meter	Live	No	None
2989	<1 meter	Live	No	None
2990	>1 meter but <5 meters	Live	No	None
2991	<1 meter	Live	No	None
2992	>1 meter but <5 meters	Live	No	None
2993	<1 meter	Dead	No	None
2994	<1 meter	Live	No	None
2995	<1 meter	Live	No	None
2996	<1 meter	Live	No	None
2997	<1 meter	Live	No	None
2998	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
2999	<1 meter	Live	No	None
3000	>1 meter but <5 meters	Live	No	None
3001	<1 meter	Live	No	None
3002	<1 meter	Live	No	None
3003	>1 meter but <5 meters	Live	No	None
3004	>1 meter but <5 meters	Live	No	None
3005	<1 meter	Live	No	None
3006	<1 meter	Live	No	None
3007	>1 meter but <5 meters	Live	No	None
3008	>1 meter but <5 meters	Live	No	None
3009	<1 meter	Live	No	None
3010	<1 meter	Live	No	None
3011	<1 meter	Live	No	None
3012	<1 meter	Live	No	None
3013	<1 meter	Live	No	None
3014	<1 meter	Live	No	None
3015	<1 meter	Live	No	None
3016	<1 meter	Live	No	None
3017	<1 meter	Live	No	None
3018	<1 meter	Live	No	None
3019	<1 meter	Live	No	None
3020	<1 meter	Live	No	None
3021	<1 meter	Live	No	None
3022	<1 meter	Live	No	None
3023	>1 meter but <5 meters	Live	Yes	None
3024	>1 meter but <5 meters	Live	Yes	None
3025	>1 meter but <5 meters	Live	No	None
3026	>1 meter but <5 meters	Dead	Yes	None
3027	>1 meter but <5 meters	Live	No	None
3028	≥ 5 meters	Live	Yes	None
3029	<1 meter	Live	No	None
3030	>1 meter but <5 meters	Live	Yes	None
3031	>1 meter but <5 meters	Live	No	None
3032	>1 meter but <5 meters	Live	No	None
3033	>1 meter but <5 meters	Live	Yes	None
3034	>1 meter but <5 meters	Live	Yes	None
3035	<1 meter	Live	No	None
3036	<1 meter	Live	No	None
3037	<1 meter	Live	No	None
3038	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3039	<1 meter	Live	No	None
3040	>1 meter but <5 meters	Live	No	None
3041	>1 meter but <5 meters	Live	No	None
3042	<1 meter	Dead	No	None
3043	>1 meter but <5 meters	Live	No	None
3044	>1 meter but <5 meters	Live	No	None
3045	>1 meter but <5 meters	Live	No	None
3046	>1 meter but <5 meters	Live	No	None
3047	>1 meter but <5 meters	Live	Yes	None
3048	>1 meter but <5 meters	Live	Yes	None
3049	<1 meter	Live	No	None
3050	<1 meter	Live	No	None
3051	<1 meter	Live	No	None
3052	<1 meter	Live	No	None
3053	<1 meter	Live	No	None
3054	>1 meter but <5 meters	Live	Yes	None
3055	<1 meter	Live	No	None
3056	<1 meter	Live	No	None
3057	>1 meter but <5 meters	Live	No	None
3058	>1 meter but <5 meters	Live	No	None
3059	<1 meter	Live	No	None
3060	>1 meter but <5 meters	Dead	No	None
3061	<1 meter	Live	No	None
3062	<1 meter	Live	No	None
3063	<1 meter	Live	No	None
3064	>1 meter but <5 meters	Dead	Yes	None
3065	<1 meter	Live	No	None
3066	<1 meter	Live	No	None
3067	<1 meter	Dead	No	None
3068	<1 meter	Live	No	None
3069	<1 meter	Dead	No	None
3070	<1 meter	Live	No	None
3071	<1 meter	Live	No	None
3072	>1 meter but <5 meters	Live	No	None
3073	<1 meter	Live	No	None
3074	<1 meter	Live	No	None
3075	>1 meter but <5 meters	Live	No	None
3076	<1 meter	Live	No	None
3077	<1 meter	Live	No	None
3078	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3079	<1 meter	Live	No	None
3080	>1 meter but <5 meters	Live	Yes	None
3081	>1 meter but <5 meters	Dead	Yes	None
3082	>1 meter but <5 meters	Live	Yes	None
3083	>1 meter but <5 meters	Live	No	None
3084	>1 meter but <5 meters	Live	Yes	None
3085	>1 meter but <5 meters	Live	No	None
3086	<1 meter	Live	No	None
3087	<1 meter	Live	No	None
3088	>1 meter but <5 meters	Live	No	None
3089	>1 meter but <5 meters	Dead	No	None
3090	<1 meter	Live	No	None
3091	<1 meter	Live	No	None
3092	>1 meter but <5 meters	Live	No	None
3093	<1 meter	Live	No	None
3094	<1 meter	Live	No	None
3095	<1 meter	Live	No	None
3096	<1 meter	Live	No	None
3097	<1 meter	Live	No	None
3098	<1 meter	Live	No	None
3099	<1 meter	Live	No	None
3100	<1 meter	Dead	No	None
3101	<1 meter	Dead	No	None
3102	<1 meter	Dead	No	None
3103	<1 meter	Dead	No	None
3104	<1 meter	Live	No	None
3105	>1 meter but <5 meters	Live	No	None
3106	<1 meter	Live	No	None
3107	<1 meter	Live	No	None
3108	<1 meter	Live	No	None
3109	<1 meter	Live	No	None
3110	<1 meter	Live	No	None
3111	<1 meter	Live	No	None
3112	<1 meter	Live	No	None
3113	<1 meter	Live	No	None
3114	<1 meter	Live	No	None
3115	>1 meter but <5 meters	Live	No	None
3116	>1 meter but <5 meters	Live	No	None
3117	>1 meter but <5 meters	Live	Yes	None
3118	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3119	<1 meter	Live	No	None
3120	<1 meter	Live	No	None
3121	<1 meter	Live	No	None
3122	<1 meter	Live	No	None
3123	<1 meter	Live	No	None
3124	<1 meter	Dead	No	None
3125	>1 meter but <5 meters	Live	Yes	None
3126	<1 meter	Live	No	None
3127	<1 meter	Live	No	None
3128	>1 meter but <5 meters	Live	No	None
3129	>1 meter but <5 meters	Live	No	None
3130	<1 meter	Live	No	None
3131	>1 meter but <5 meters	Live	Yes	None
3132	>1 meter but <5 meters	Live	No	None
3133	>1 meter but <5 meters	Live	No	None
3134	>1 meter but <5 meters	Live	No	None
3135	<1 meter	Live	No	None
3136	<1 meter	Live	No	None
3137	<1 meter	Live	No	None
3138	<1 meter	Live	No	None
3139	<1 meter	Live	No	None
3140	>1 meter but <5 meters	Live	Yes	None
3141	<1 meter	Dead	No	None
3142	>1 meter but <5 meters	Live	Yes	None
3143	<1 meter	Live	No	None
3144	<1 meter	Live	No	None
3145	<1 meter	Live	No	None
3146	<1 meter	Live	No	None
3147	<1 meter	Live	No	None
3148	<1 meter	Live	No	None
3149	<1 meter	Live	No	None
3150	<1 meter	Live	No	None
3151	<1 meter	Live	No	None
3152	<1 meter	Live	No	None
3153	<1 meter	Live	No	None
3154	<1 meter	Live	No	None
3155	<1 meter	Live	No	None
3156	<1 meter	Live	No	None
3157	<1 meter	Live	No	None
3158	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3159	<1 meter	Live	No	None
3160	<1 meter	Live	No	None
3161	<1 meter	Live	No	None
3162	<1 meter	Live	No	None
3163	<1 meter	Live	No	None
3164	<1 meter	Live	No	None
3165	<1 meter	Live	No	None
3166	<1 meter	Live	No	None
3167	<1 meter	Live	No	None
3168	<1 meter	Live	No	None
3169	<1 meter	Live	No	None
3170	<1 meter	Live	No	None
3171	<1 meter	Live	No	None
3172	<1 meter	Live	No	None
3173	<1 meter	Live	No	None
3174	<1 meter	Live	No	None
3175	<1 meter	Live	No	None
3176	<1 meter	Live	No	None
3177	<1 meter	Live	No	None
3178	<1 meter	Live	No	None
3179	<1 meter	Live	No	None
3180	<1 meter	Live	No	None
3181	<1 meter	Live	No	None
3182	>1 meter but <5 meters	Live	No	None
3183	>1 meter but <5 meters	Live	Yes	None
3184	>1 meter but <5 meters	Live	Yes	None
3185	>1 meter but <5 meters	Live	Yes	None
3186	>1 meter but <5 meters	Live	Yes	None
3187	>1 meter but <5 meters	Live	Yes	None
3188	>1 meter but <5 meters	Live	No	None
3189	<1 meter	Dead	No	None
3190	<1 meter	Live	No	None
3191	<1 meter	Live	No	None
3192	<1 meter	Live	No	None
3193	<1 meter	Live	No	None
3194	<1 meter	Live	No	None
3195	<1 meter	Live	No	None
3196	<1 meter	Live	No	None
3197	<1 meter	Live	No	None
3198	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3199	<1 meter	Live	No	None
3200	<1 meter	Live	Yes	None
3201	>1 meter but <5 meters	Live	Yes	None
3202	>1 meter but <5 meters	Live	Yes	None
3203	<1 meter	Live	No	None
3204	>1 meter but <5 meters	Live	Yes	None
3205	<1 meter	Live	No	None
3206	<1 meter	Live	No	None
3207	<1 meter	Live	No	None
3208	<1 meter	Live	No	None
3209	<1 meter	Live	No	None
3210	<1 meter	Live	No	None
3211	<1 meter	Live	No	None
3212	<1 meter	Live	No	None
3213	>1 meter but <5 meters	Live	No	None
3214	>1 meter but <5 meters	Live	No	None
3215	<1 meter	Live	No	None
3216	<1 meter	Live	No	None
3217	<1 meter	Live	No	None
3218	<1 meter	Live	No	None
3219	<1 meter	Live	No	None
3220	>1 meter but <5 meters	Live	Yes	None
3221	>1 meter but <5 meters	Live	No	None
3222	>1 meter but <5 meters	Live	No	None
3223	<1 meter	Live	No	None
3224	<1 meter	Live	No	None
3225	<1 meter	Live	No	None
3226	<1 meter	Live	No	None
3227	<1 meter	Live	No	None
3228	<1 meter	Live	No	None
3229	<1 meter	Live	No	None
3230	>1 meter but <5 meters	Live	No	None
3231	>1 meter but <5 meters	Dead	No	None
3232	>1 meter but <5 meters	Live	Yes	None
3233	>1 meter but <5 meters	Live	No	None
3234	>1 meter but <5 meters	Live	Yes	None
3235	<1 meter	Live	No	None
3236	>1 meter but <5 meters	Live	No	None
3237	>1 meter but <5 meters	Live	No	None
3238	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3239	<1 meter	Dead	No	None
3240	>1 meter but <5 meters	Live	Yes	None
3241	<1 meter	Live	No	None
3242	>1 meter but <5 meters	Dead	No	None
3243	<1 meter	Live	No	None
3244	<1 meter	Live	No	None
3245	<1 meter	Live	No	None
3246	>1 meter but <5 meters	Live	Yes	None
3247	<1 meter	Live	No	None
3248	<1 meter	Live	No	None
3249	>1 meter but <5 meters	Live	No	None
3250	>1 meter but <5 meters	Live	Yes	None
3251	>1 meter but <5 meters	Live	No	None
3252	>1 meter but <5 meters	Live	Yes	None
3253	>1 meter but <5 meters	Live	No	None
3254	>1 meter but <5 meters	Live	Yes	None
3255	>1 meter but <5 meters	Live	No	None
3256	<1 meter	Live	No	None
3257	>1 meter but <5 meters	Live	No	None
3258	>1 meter but <5 meters	Dead	No	None
3259	<1 meter	Live	No	None
3260	>1 meter but <5 meters	Live	No	None
3261	<1 meter	Live	No	None
3262	<1 meter	Live	No	None
3263	<1 meter	Live	No	None
3264	<1 meter	Live	No	None
3265	<1 meter	Live	No	None
3266	<1 meter	Live	No	None
3267	<1 meter	Live	No	None
3268	>1 meter but <5 meters	Live	No	None
3269	>1 meter but <5 meters	Live	No	None
3270	>1 meter but <5 meters	Live	Yes	None
3271	<1 meter	Live	No	None
3272	<1 meter	Live	No	None
3273	<1 meter	Live	No	None
3274	<1 meter	Live	No	None
3275	<1 meter	Live	No	None
3276	<1 meter	Live	No	None
3277	>1 meter but <5 meters	Live	No	None
3278	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3279	>1 meter but <5 meters	Live	Yes	None
3280	>1 meter but <5 meters	Live	Yes	None
3281	>1 meter but <5 meters	Dead	No	None
3282	>1 meter but <5 meters	Dead	No	None
3283	>1 meter but <5 meters	Live	Yes	None
3284	>1 meter but <5 meters	Live	Yes	None
3285	>1 meter but <5 meters	Live	No	None
3286	<1 meter	Live	No	None
3287	<1 meter	Live	No	None
3288	<1 meter	Live	No	None
3289	<1 meter	Live	No	None
3290	<1 meter	Live	No	None
3291	≥ 5 meters	Live	Yes	None
3292	<1 meter	Live	No	None
3293	<1 meter	Live	No	None
3294	<1 meter	Live	No	None
3295	>1 meter but <5 meters	Live	No	None
3296	<1 meter	Live	No	None
3297	>1 meter but <5 meters	Live	Yes	None
3298	<1 meter	Live	No	None
3299	>1 meter but <5 meters	Live	No	None
3300	<1 meter	Live	No	None
3301	>1 meter but <5 meters	Live	No	None
3302	>1 meter but <5 meters	Live	No	None
3303	<1 meter	Live	No	None
3304	>1 meter but <5 meters	Live	Yes	None
3305	<1 meter	Live	No	None
3306	>1 meter but <5 meters	Live	Yes	None
3307	>1 meter but <5 meters	Live	No	None
3308	>1 meter but <5 meters	Live	No	None
3309	>1 meter but <5 meters	Live	No	None
3310	>1 meter but <5 meters	Live	Yes	None
3311	>1 meter but <5 meters	Live	No	None
3312	<1 meter	Live	No	None
3313	>1 meter but <5 meters	Live	No	None
3314	<1 meter	Live	No	None
3315	<1 meter	Live	No	None
3316	<1 meter	Live	No	None
3317	<1 meter	Live	No	None
3318	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3319	>1 meter but <5 meters	Live	Yes	None
3320	<1 meter	Live	No	None
3321	>1 meter but <5 meters	Live	No	None
3322	>1 meter but <5 meters	Live	No	None
3323	>1 meter but <5 meters	Live	Yes	None
3324	>1 meter but <5 meters	Live	No	None
3325	>1 meter but <5 meters	Dead	Yes	None
3326	>1 meter but <5 meters	Live	No	None
3327	>1 meter but <5 meters	Live	No	None
3328	<1 meter	Live	No	None
3329	<1 meter	Live	No	None
3330	<1 meter	Live	No	None
3331	<1 meter	Live	No	None
3332	>1 meter but <5 meters	Live	No	None
3333	>1 meter but <5 meters	Live	No	None
3334	>1 meter but <5 meters	Live	Yes	None
3335	>1 meter but <5 meters	Live	Yes	None
3336	>1 meter but <5 meters	Live	Yes	None
3337	>1 meter but <5 meters	Live	No	None
3338	<1 meter	Live	No	None
3339	<1 meter	Live	No	None
3340	<1 meter	Live	No	None
3341	>1 meter but <5 meters	Live	No	None
3342	<1 meter	Live	No	None
3343	<1 meter	Live	No	None
3344	<1 meter	Live	No	None
3345	>1 meter but <5 meters	Live	No	None
3346	<1 meter	Live	No	None
3347	<1 meter	Live	No	None
3348	<1 meter	Live	No	None
3349	<1 meter	Live	No	None
3350	<1 meter	Live	No	None
3351	<1 meter	Live	No	None
3352	>1 meter but <5 meters	Live	No	None
3353	>1 meter but <5 meters	Live	No	None
3354	<1 meter	Live	No	None
3355	>1 meter but <5 meters	Live	No	None
3356	<1 meter	Live	No	None
3357	>1 meter but <5 meters	Live	Yes	None
3358	>1 meter but <5 meters	Live	Yes	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3359	>1 meter but <5 meters	Live	No	None
3360	>1 meter but <5 meters	Live	No	None
3361	≥ 5 meters	Live	Yes	None
3362	>1 meter but <5 meters	Live	Yes	None
3363	>1 meter but <5 meters	Live	Yes	None
3364	<1 meter	Live	No	None
3365	>1 meter but <5 meters	Live	Yes	None
3366	>1 meter but <5 meters	Live	Yes	None
3367	≥ 5 meters	Live	Yes	None
3368	>1 meter but <5 meters	Live	Yes	None
3369	>1 meter but <5 meters	Live	Yes	None
3370	<1 meter	Live	No	None
3371	>1 meter but <5 meters	Dead	Yes	None
3372	<1 meter	Live	No	None
3373	<1 meter	Live	No	None
3374	<1 meter	Live	No	None
3375	<1 meter	Live	No	None
3376	>1 meter but <5 meters	Dead	Yes	None
3377	<1 meter	Live	No	None
3378	<1 meter	Dead	No	None
3379	>1 meter but <5 meters	Live	Yes	None
3380	≥ 5 meters	Live	Yes	None
3381	<1 meter	Live	No	None
3382	<1 meter	Live	No	None
3383	<1 meter	Live	No	None
3384	<1 meter	Live	No	None
3385	<1 meter	Live	No	None
3386	<1 meter	Live	No	None
3387	>1 meter but <5 meters	Live	No	None
3388	>1 meter but <5 meters	Live	No	None
3389	>1 meter but <5 meters	Live	Yes	None
3390	<1 meter	Live	No	None
3391	<1 meter	Live	No	None
3392	<1 meter	Live	No	None
3393	>1 meter but <5 meters	Live	No	None
3394	>1 meter but <5 meters	Live	No	None
3395	<1 meter	Dead	No	None
3396	>1 meter but <5 meters	Live	Yes	None
3397	>1 meter but <5 meters	Live	Yes	None
3398	>1 meter but <5 meters	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3399	<1 meter	Live	No	None
3400	<1 meter	Live	No	None
3401	<1 meter	Live	No	None
3402	<1 meter	Live	No	None
3403	<1 meter	Live	No	None
3404	>1 meter but <5 meters	Live	No	None
3405	<1 meter	Live	No	None
3406	<1 meter	Live	No	None
3407	>1 meter but <5 meters	Live	Yes	None
3408	>1 meter but <5 meters	Live	Yes	None
3409	<1 meter	Live	No	None
3410	>1 meter but <5 meters	Live	No	None
3411	<1 meter	Live	No	None
3412	<1 meter	Live	No	None
3413	>1 meter but <5 meters	Live	No	None
3414	<1 meter	Dead	No	None
3415	>1 meter but <5 meters	Dead	No	None
3416	>1 meter but <5 meters	Live	No	None
3417	<1 meter	Live	No	None
3418	<1 meter	Live	No	None
3419	<1 meter	Live	No	None
3420	<1 meter	Live	No	None
3421	<1 meter	Live	No	None
3422	<1 meter	Live	No	None
3423	<1 meter	Live	No	None
3424	>1 meter but <5 meters	Live	No	None
3425	<1 meter	Live	No	None
3426	<1 meter	Live	No	None
3427	<1 meter	Live	No	None
3428	<1 meter	Live	No	None
3429	<1 meter	Live	No	None
3430	<1 meter	Live	No	None
3431	<1 meter	Live	No	None
3432	<1 meter	Live	No	None
3433	<1 meter	Live	No	None
3434	<1 meter	Live	No	None
3435	<1 meter	Live	No	None
3436	<1 meter	Live	No	None
3437	<1 meter	Live	No	None
3438	<1 meter	Live	No	None

WJT ID	Size Class	Condition	Mature (Branched?)	Phenophase
3439	<1 meter	Live	No	None
3440	<1 meter	Live	No	None
3441	<1 meter	Live	No	None
3442	<1 meter	Live	No	None
3443	<1 meter	Live	No	None
3444	<1 meter	Live	No	None
3445	<1 meter	Live	No	None
3446	<1 meter	Live	No	None
3447	<1 meter	Live	No	None
3448	<1 meter	Live	No	None
3449	<1 meter	Live	No	None
3450	<1 meter	Live	No	None
3451	<1 meter	Live	No	None
3452	<1 meter	Live	No	None
3453	<1 meter	Live	No	None
3454	<1 meter	Live	No	None
3455	<1 meter	Live	No	None
3456	>1 meter but <5 meters	Live	No	None
3457	<1 meter	Live	No	None
3458	<1 meter	Live	No	None
3459	<1 meter	Live	No	None
3460	<1 meter	Live	No	None
3461	<1 meter	Live	No	None
3462	<1 meter	Live	No	None
3463	<1 meter	Live	No	None
3464	<1 meter	Live	No	None
3465	<1 meter	Live	No	None
3466	<1 meter	Live	No	None
3467	<1 meter	Live	No	None
3468	>1 meter but <5 meters	Live	No	None
3469	<1 meter	Live	No	None
3470	>1 meter but <5 meters	Live	Yes	None
3471	<1 meter	Live	No	None

Attachment 3

Representative Site Photographs

Photograph 1. Representative photo of western Joshua trees within low-growing scrub vegetation at the foothills of the San Gabriel Mountains, upslope of the Palmdale Ditch, facing southeast.

Photograph 2. Rincon Biologist collecting data for a small stand of western Joshua trees below the Palmdale Ditch, northwest of the Angeles National Forest access gate, facing southwest.

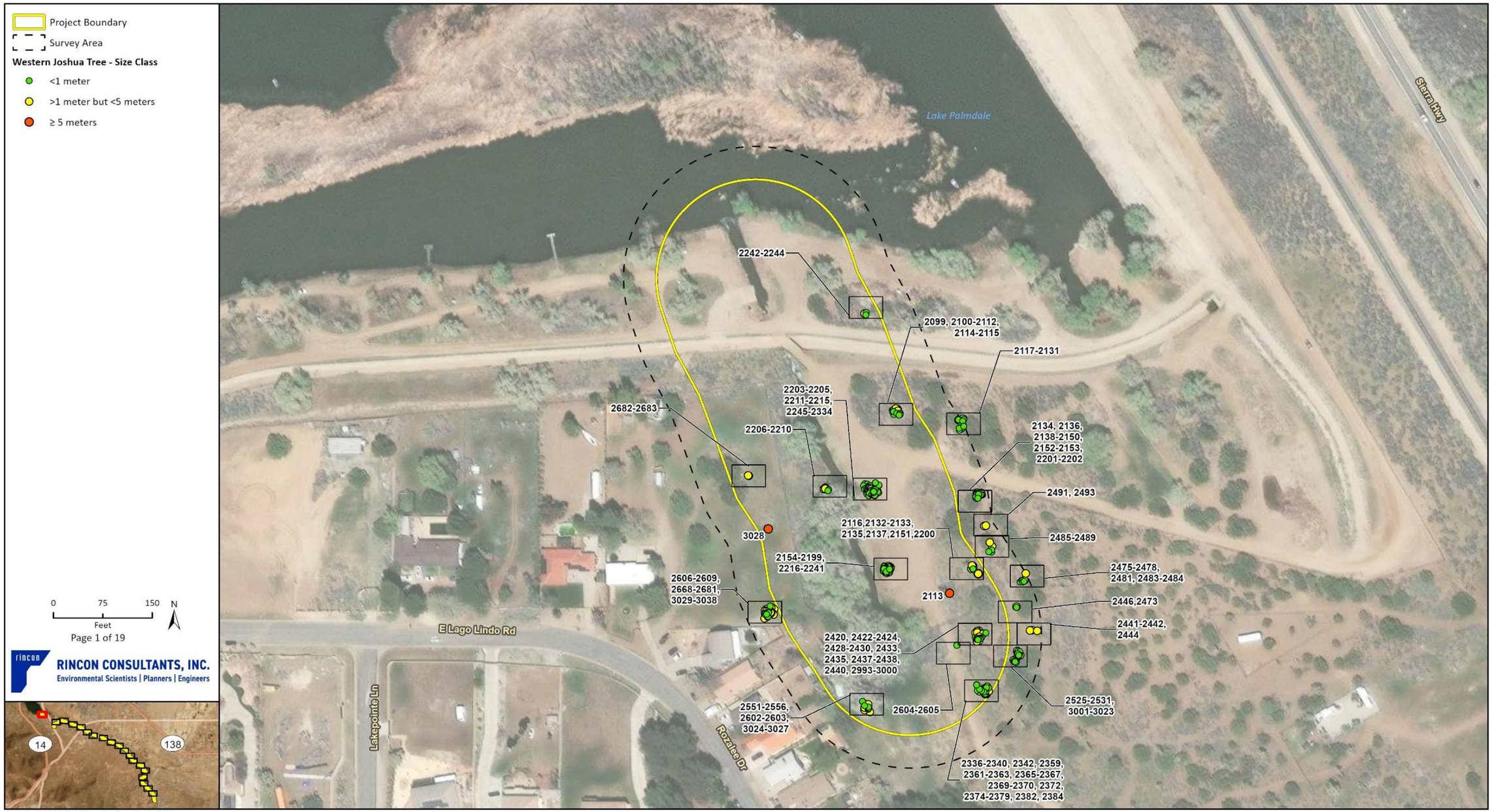
Photograph 3. Western Joshua trees and Palmdale Ditch, just west of Angeles National Forest boundary, facing west.

Photograph 4. Western Joshua tree and Palmdale Ditch, facing west.

Photograph 5. Western Joshua trees along the Palmdale Ditch within big sagebrush scrub and California junipers, facing east.

Attachment 4

Western Joshua Tree Location Map



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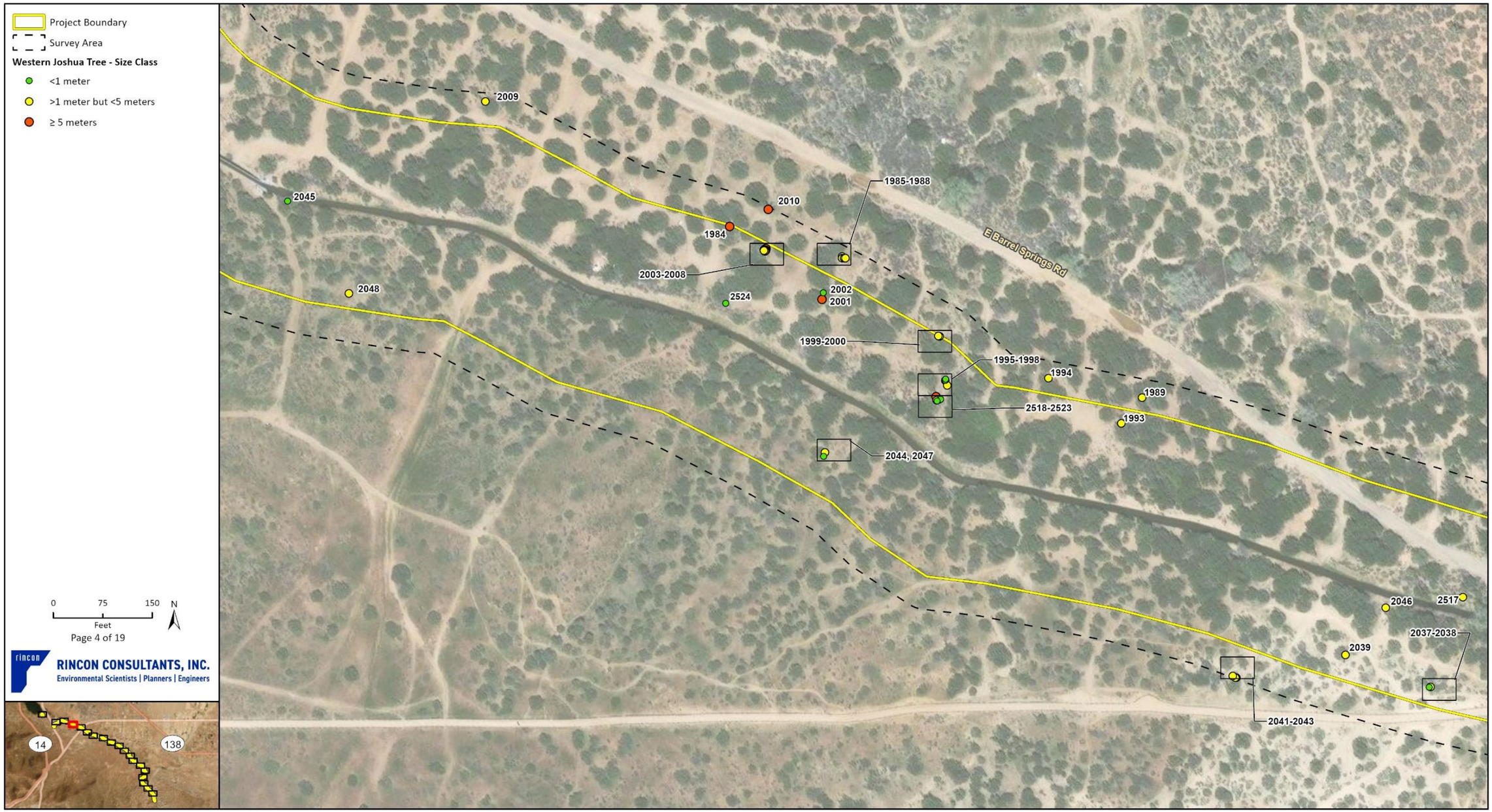

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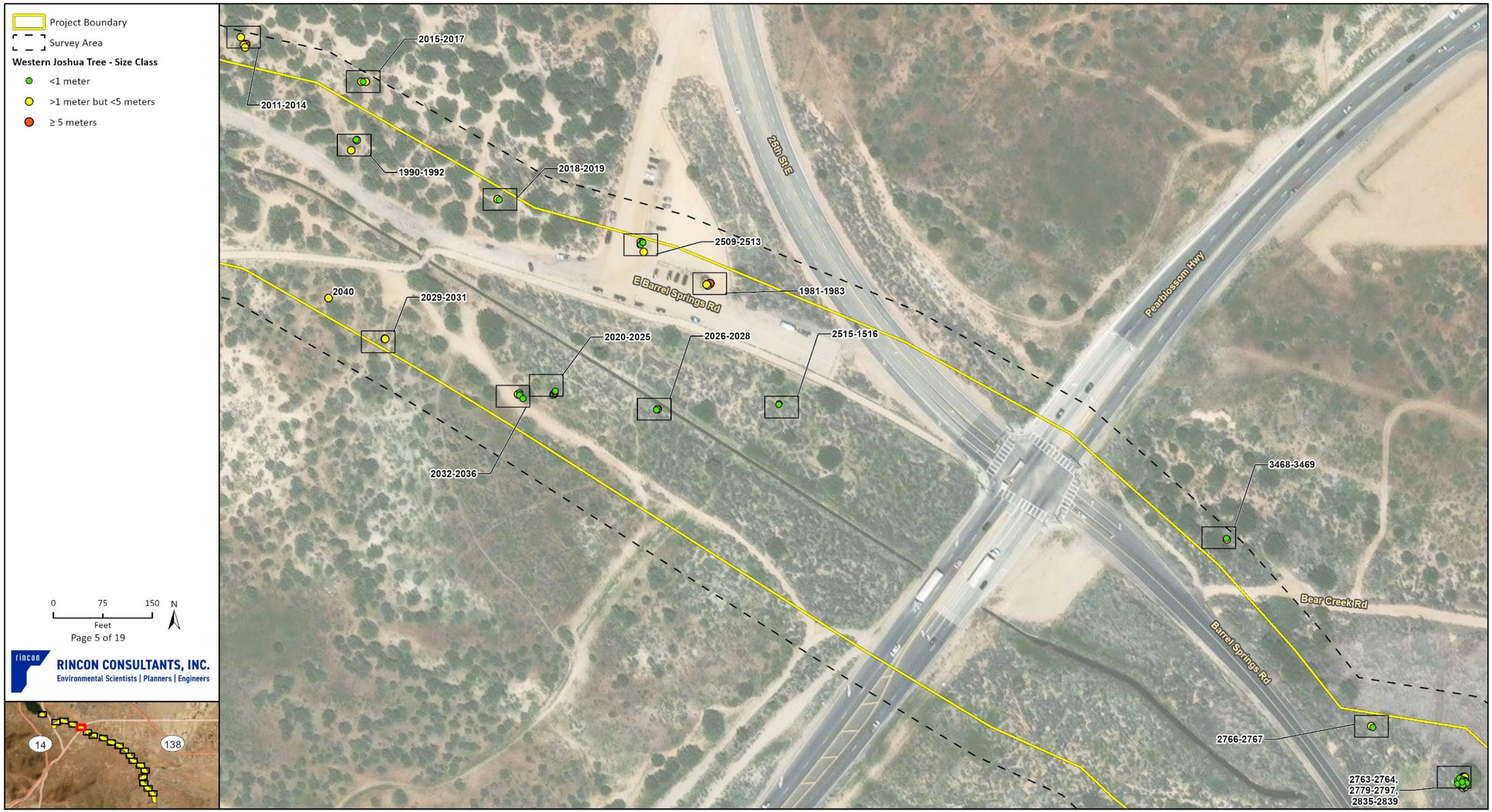

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Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

2763-2764, 2779-2797, 2835-2839
2768
2992
2769-2770, 2810-2820
2840-2841
2684-2701
2867-2871
2660-2667
2644-2645
2646-2659
2842
2727-2734
2821, 2864-2866
2713-2721
2957-2975
2873-2886
2872
2725
2843
2726
2616
2722-2724
2537-2538, 2711-2712
2338, 2341, 2344-2358, 2360, 2364, 2368, 2371, 2373, 2385-2396
2490, 2492, 2702-2710
2343
2617-2643
2610-2615
2735-2762
2567, 2580-2600
2541-2550, 2557-2558, 2601
2539-2540, 2559-2566, 2568-2579
2335
2410-2418, 2447-2453
2380-2381, 2383, 2409, 2419, 2421, 2425-2427, 2431-2432, 2434, 2436, 2439, 2443, 2445, 2474
2397-2408
2409
2532-2536
2479-2480
2455-2472
2454, 2482
2073-2081, 2082-2086
2087-2089
2058
2064-2065
2066
2067-2072
2053-2057
2090-2093
2052

Bear Creek Rd
California Aqueduct
Barrel Springs Rd

0 75 150 N
Feet

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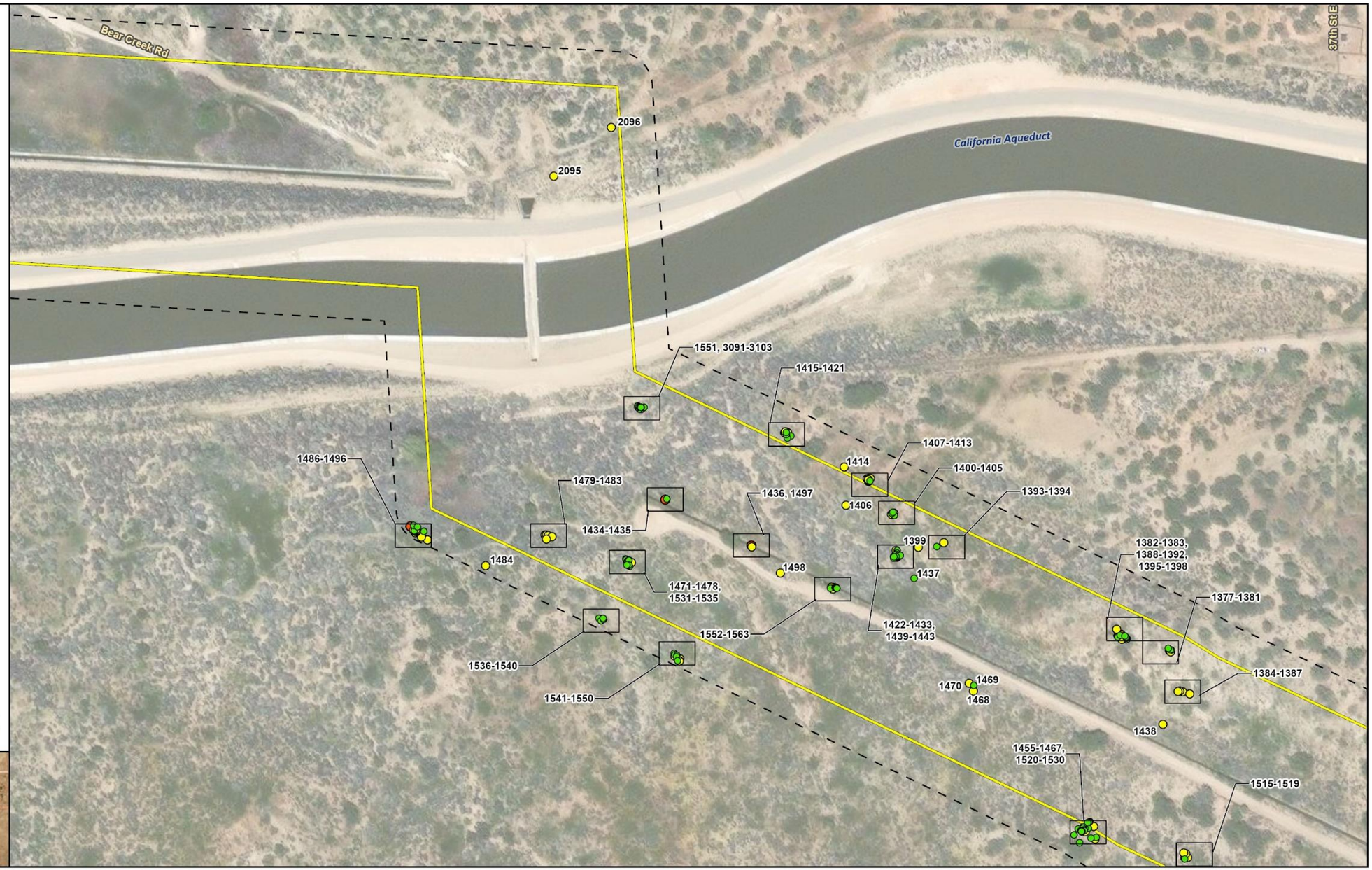
Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters



0 75 150 N
Feet

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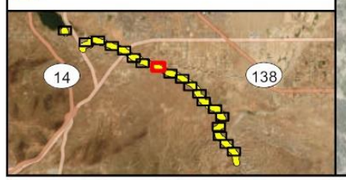

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Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

1499
1454
1453
1506-1514
1452, 1564
1565-1567
1448-1451
1445-1447, 1500-1505
1444
1376
1373-1375
1370
1349-1361
1371-1372
1362-1369
2508
Barrel Springs Rd
1574-1580
1568-1573, 1581, 1604-1605
1582-1583
1692-1699
1606-1608
1584-1589
1590-1598
1609
1610
1611
40th St E
67th St E

0 75 150 N
Feet
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Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

0 75 150 N
Feet
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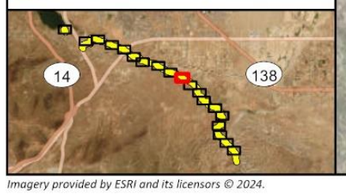

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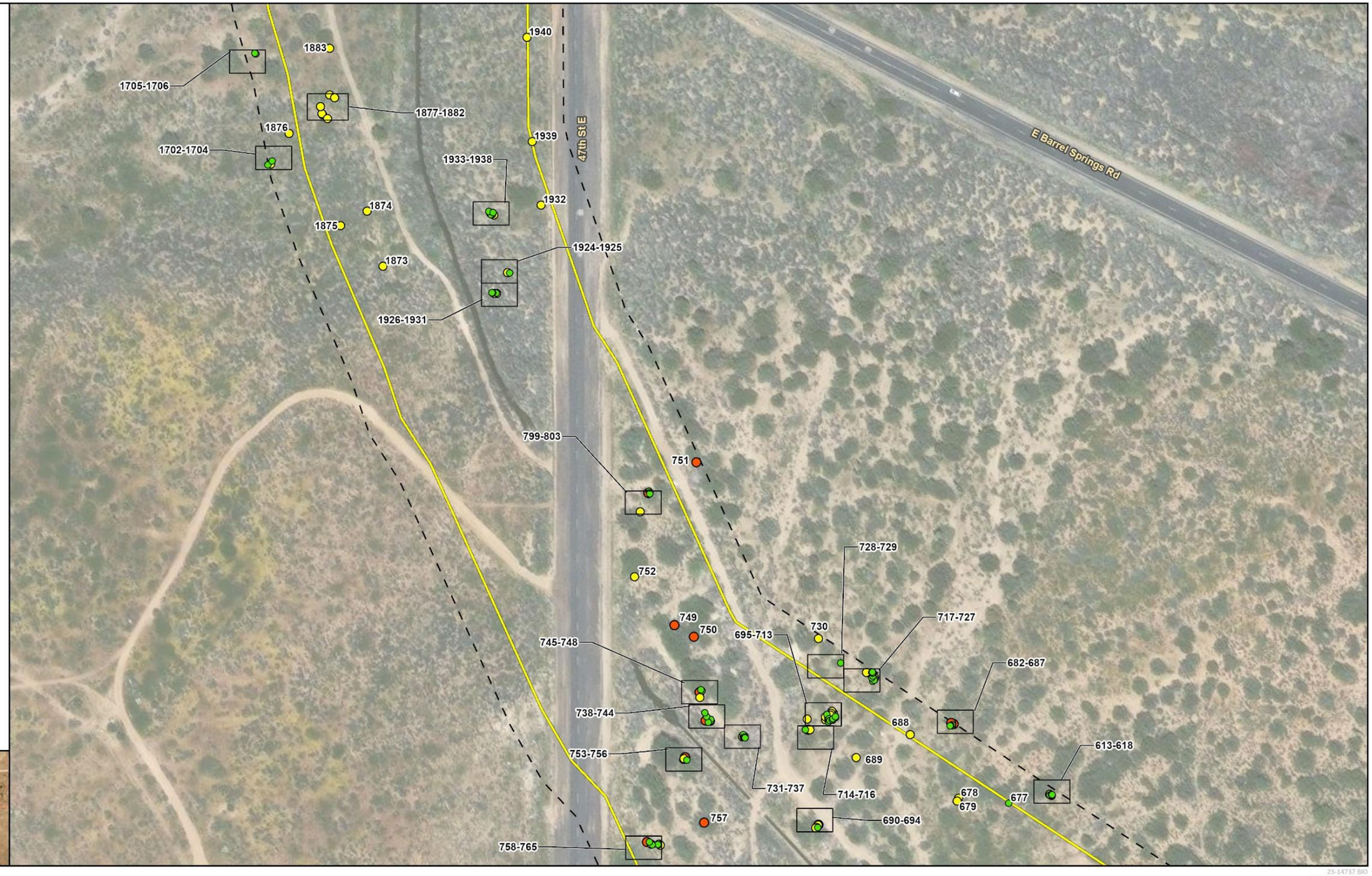
Fig X WJT Locations

Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters



0 75 150 N
Feet
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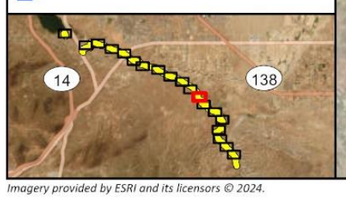

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Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

0 75 150 N
Feet

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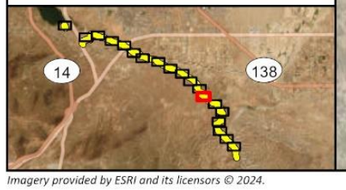

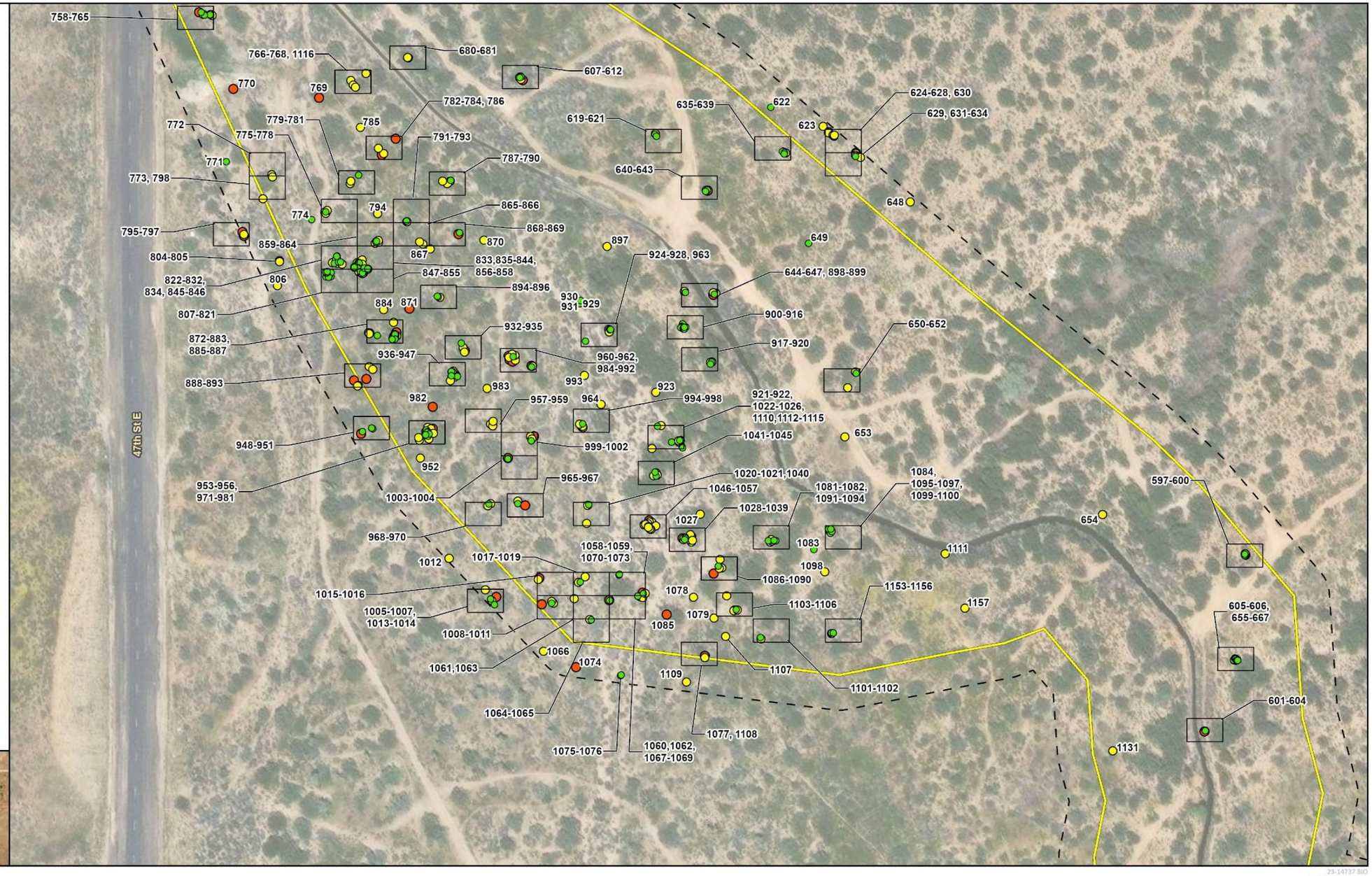

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Fig X WJT Locations

Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

0 75 150 N
Feet

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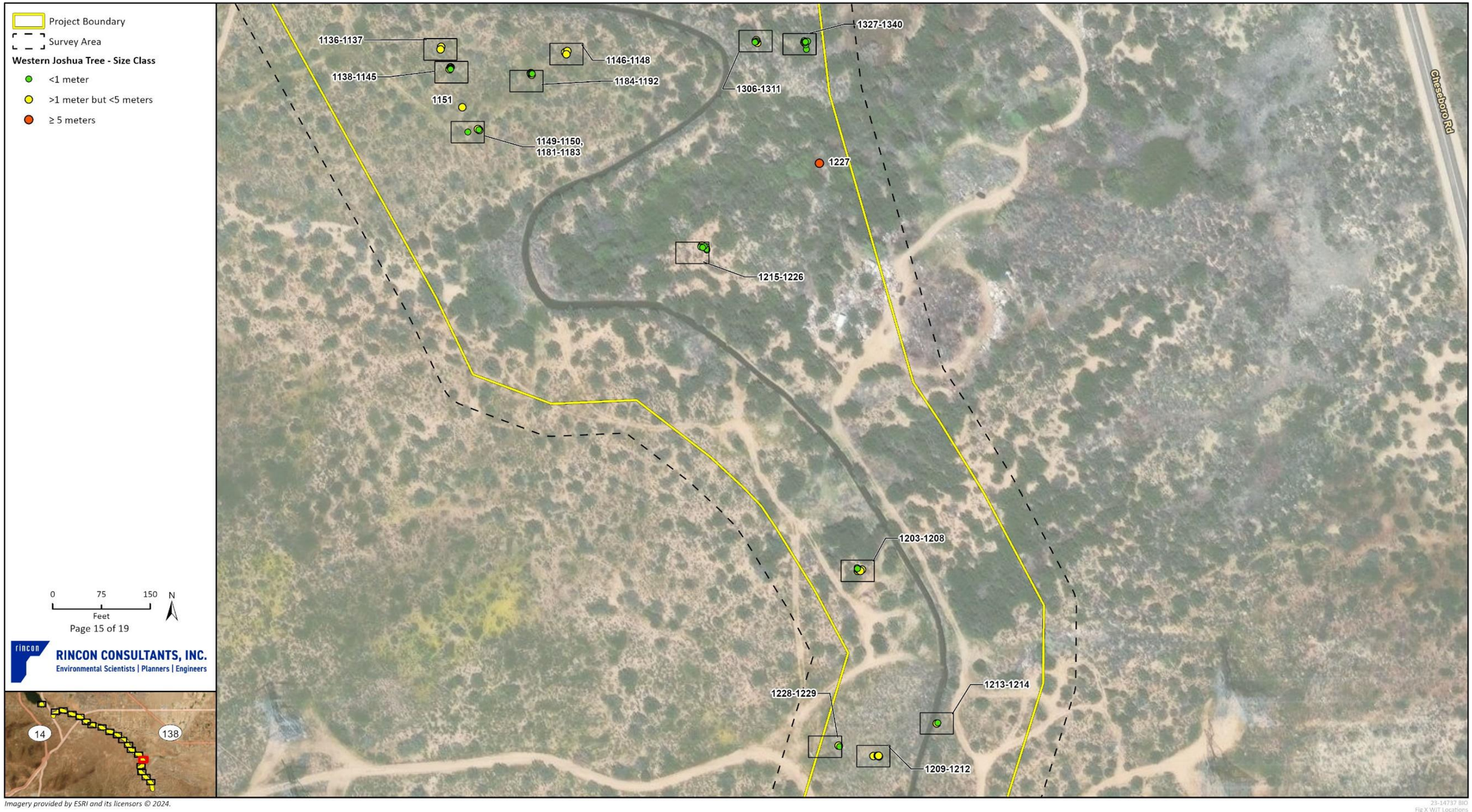
Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters
1136-1137
1138-1145
1146-1148
1184-1192
1151
1149-1150, 1181-1183
1306-1311
1327-1340
1227
1215-1226
1203-1208
1228-1229
1213-1214
1209-1212
Cisco Rd
0
75
150
Feet
N
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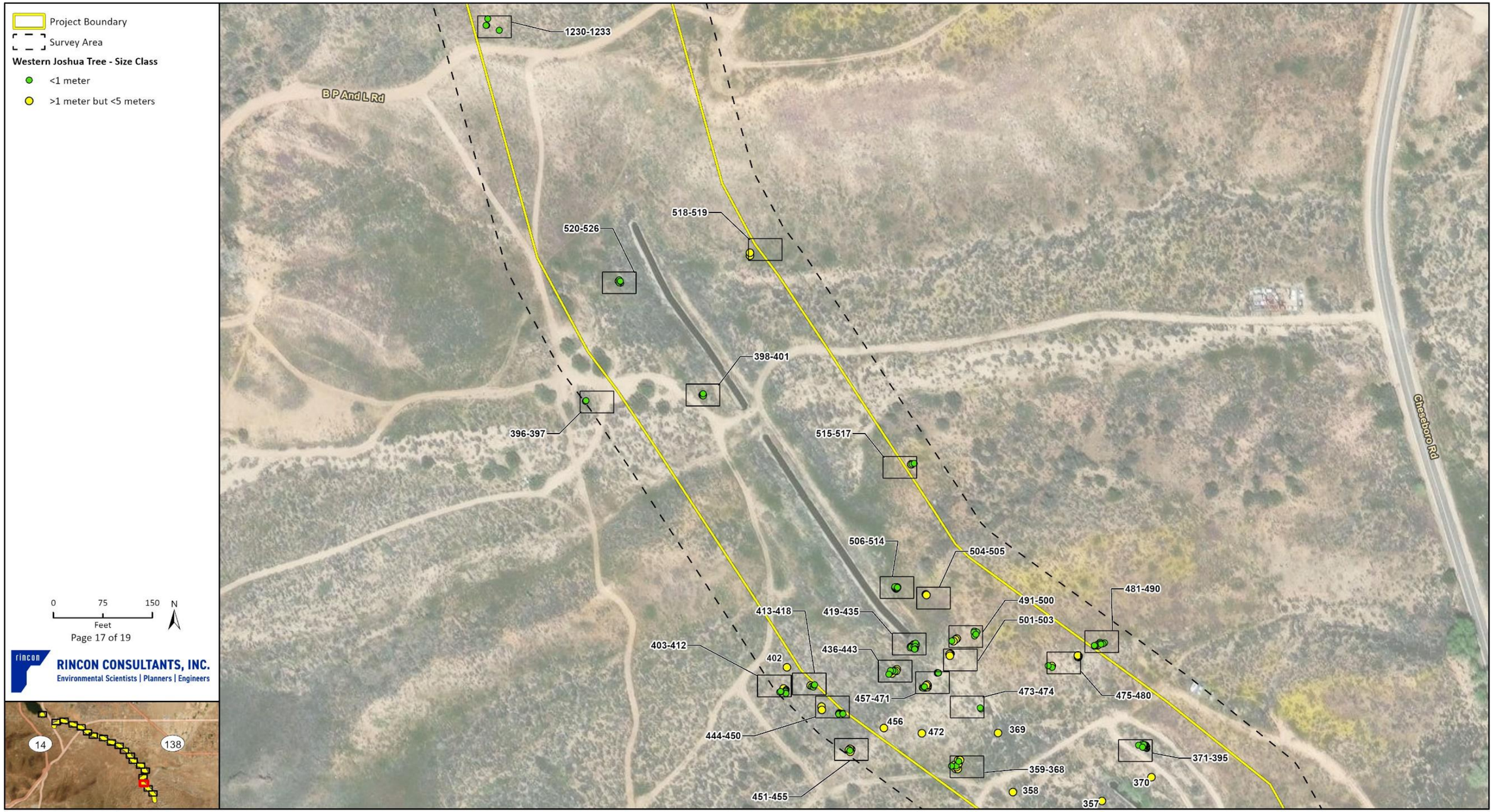

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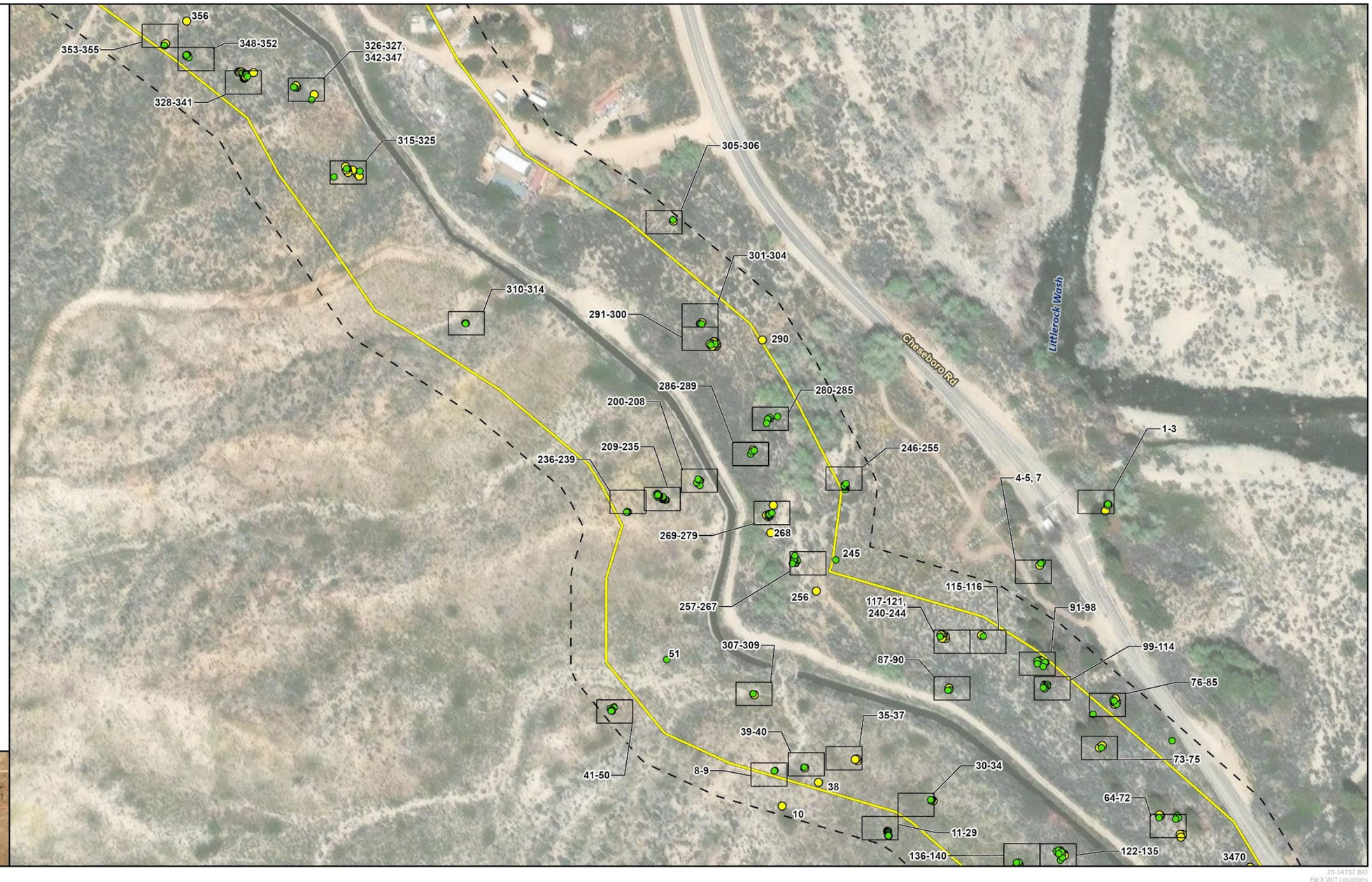
Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters



0 75 150 N
Feet

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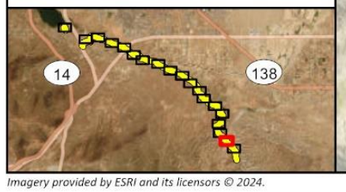

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Project Boundary
Survey Area
Western Joshua Tree - Size Class
<1 meter
>1 meter but <5 meters
≥ 5 meters

0 75 150 N
Feet
Page 19 of 19

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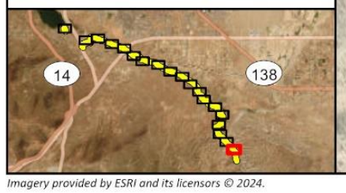

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Fig X WJT Locations