Appendix E. Aquatic Resources Delineation Report and Preliminary Jurisdictional Wetland Delineation

State Route 1 Multi-Asset Roadway Rehabilitation Project

Aquatic Resource Delineation

SAN MATEO COUNTY, CALIFORNIA

04-01-SM-PM 27.5/34.8

EA 04-0Q130 / Project ID 04-1800-0053

November 2021

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

State Route 1 Multi-Asset Roadway Rehabilitation Project

Aquatic Resource Delineation

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04-01-SM-PM 27.5/34.8
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November 2021

STATE OF CALIFORNIA
Department of Transportation, District 4

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Acronyms List

BSA	Biological Study Area
Caltrans	California Department of Transportation
CCA	Coastal Commission Act
CCC	California Coastal Commission
CCW	Coastal Commission Wetland
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWUS	Culverted Waters of the United States
CWOS	culverted waters of the State
DWR	California Department of Water Resources
EPA	Environmental Protection Agency
°F	Fahrenheit
FAC	facultative plants
FACU	facultative upland plants
FACW	facultative wetland plants
FGC	Fish and Game Code
HUC	Hydrologic Unit Code
in/hr	inches per hour
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWPR	Navigable Waters Protection Rule
OBL	obligate wetland plants
OWOS	other waters of the State
OWUS	other waters of the United States
PCA	Porter-Cologne Act
PM	post mile
Project	State Route 1 Multi-Asset Road Rehabilitation Project
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SR	State Route
UPL	upland plants
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

USGS	United States Geological Survey
VMS	variable message sign
WOS	waters of the State
WOTUS	waters of the United States
WRCC	Western Regional Climate Center
WWUS	wetland waters of the United States

Summary

This aquatic resource delineation report presents the results of a survey for wetlands and other waters of the United States (OWUS) and waters of the State performed in the biological study area (BSA) for the State Route 1 Multi-Asset Roadway Rehabilitation Project in San Mateo County, California. AECOM biologists formally delineated potential wetlands and OWUS using the routine, onsite methodology described in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and guidance from the Regional Supplement to the USACE Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0) (USACE 2010). Potential State waters subject to the jurisdiction of the Regional Water Quality Control Board, California Coastal Commission (CCC) and California Department of Fish and Wildlife were also documented in accordance with the jurisdiction of those agencies, pursuant to state laws and regulations.

Within the 155.75-acre BSA, 0.448 acre of potential jurisdictional waters of the United States (WOTUS) was identified. Of the total acreage of potential WOTUS identified in the BSA, 0.439 acre is potential OWUS, and 0.009 acre is potential jurisdictional wetlands. Also, 576 linear feet of culverted waters of the U.S. were delineated. In the BSA, 4.30 acres of potential wetlands and riparian habitat were delineated that are subject to CCC jurisdiction.

The California Department of Transportation (Caltrans) is requesting a Preliminary Jurisdictional Determination from USACE based on the information in this report. Caltrans is also requesting a Coastal Development Permit through San Mateo's Local Coastal Program and the City of Half Moon Bay's Local Coastal Program, as applicable.

Chapter 1: Introduction

This report presents the methods and results of an aquatic resource delineation of the State Route (SR) 1 Multi-Asset Roadway Rehabilitation Project (Project). The delineation will be performed on SR 1 and SR 92 in and just to the north of Half Moon Bay, San Mateo County, California (Figure 1).

1.1 Project Description

1.1.1 Project Purpose and Need

Purpose

The purpose of the Project is to preserve and extend the life of the roadway in a condition that requires only minimal maintenance expenditures. The Project will improve ride quality, upgrade the drainage system, improve roadway safety, enhance pedestrian and bicycle access, and upgrade the traffic system infrastructures.

Need

The overall condition of the pavement is rated as poor. In accordance with the California Department of Transportation's (Caltrans') Pavement Condition Report of 2016, the International Roughness Index for this stretch of highway ranges from 100 to 226, exhibiting poor ride quality that, if left untreated, will continue deteriorating and require frequent and costly maintenance. In addition, highway appurtenances and facilities within the limits are worn out or functionally obsolete. The current traffic systems (e.g., guard rails, crash cushions, and drainage) are approaching their end of life and need to be upgraded. The complete street elements, including curb ramps, sidewalk, and crosswalks, need to be upgraded.

1.1.2 Project Description

The Project proposes to:

- rehabilitate the existing pavement;
- replace existing drainage inlets, culverts, and dikes;
- replace existing guardrails with Midwest guardrail systems;
- replacing existing crash cushions;
- upgrade curb ramps;
- implement complete street elements;
- upgrade signal poles;

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FIGURE 1

Project Vicinity

- install conduits;
- install traffic operation system elements (intersection cameras, closed-circuit television cameras, variable message signs [VMS], vehicle maintenance pullouts, and traffic monitoring stations);
- relocate and/or replace utility cabinets; and
- install complete streets elements (e.g., bicycle and pedestrian lanes, intersection improvements, and paved transit stops).

1.2 Project Location

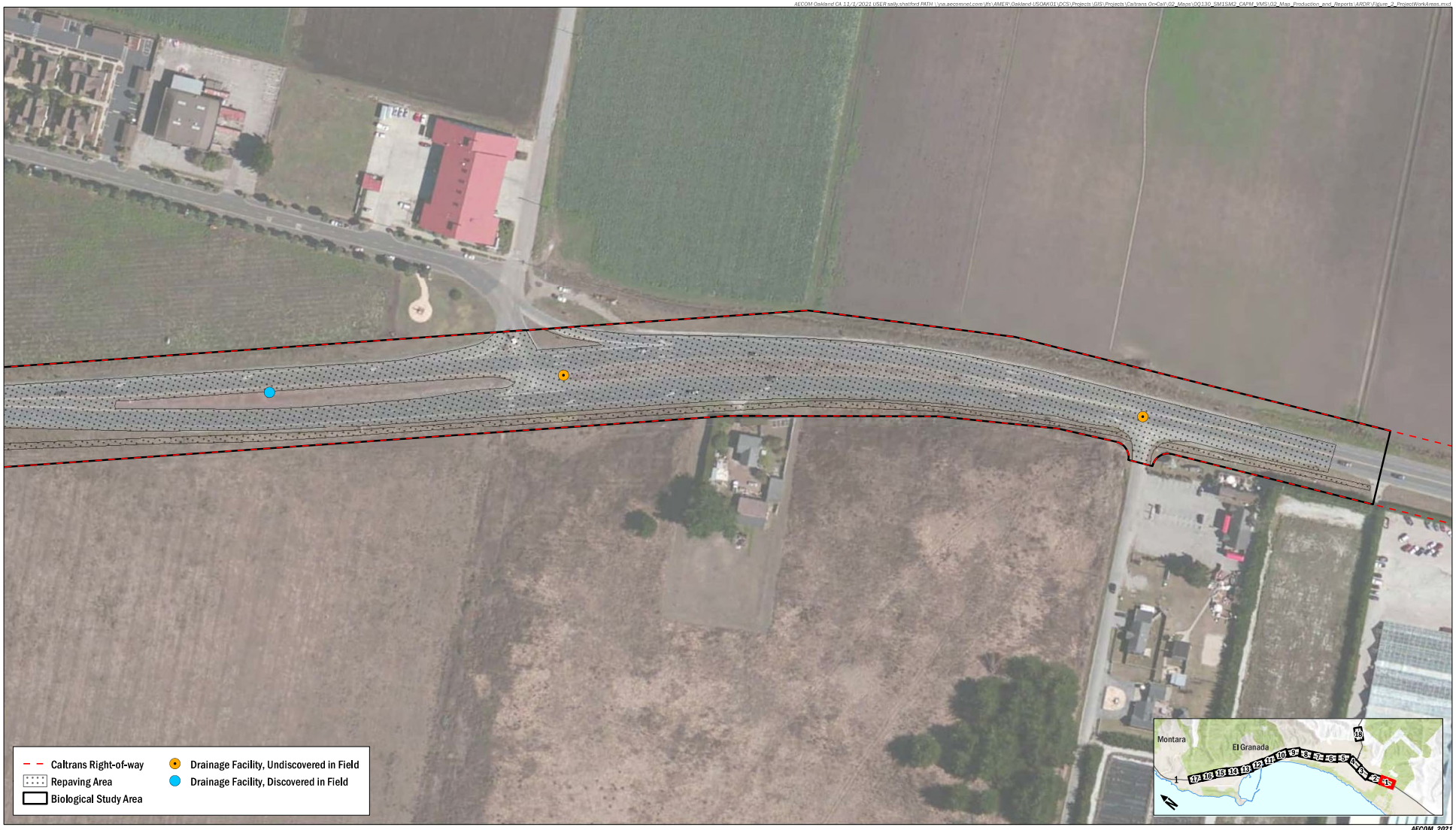
The Project location is on SR 1 in Half Moon Bay, San Mateo County, California (Figure 1), along the coast of the Pacific Ocean.

1.2.1 Biological Study Area

The 155.75-acre biological study area (BSA) for this aquatic resource delineation includes the portion of SR 1 from the Marine Boulevard interchange in Moss Beach (at post mile [PM] 34.8) to just south of Wavecrest Road in Half Moon Bay (at PM 27.5), 7.29 miles. The BSA also includes one discrete location on SR 92, at PM 1.05, where a VMS sign and associated infrastructure is proposed. The BSA generally encompasses the area surrounding SR 1 to the Caltrans right-of-way (ROW) limits on either side; at limited specific locations, the BSA extends beyond the ROW limits to cover proposed upgrades. The ROW line generally provides a buffer around the work activities. An approximate 10-foot buffer was assumed for work that would occur outside the ROW. The Project consists of work activities that will result in some ground disturbance and direct impacts. However, these activities are limited to small, discrete footprints along the corridor; they are anticipated to be completed in relatively short time frames and would not necessitate a large buffer. This aquatic resource delineation was conducted in the BSA to assess potentially jurisdictional features that occur in the Project area (Figure 2).

1.3 Environmental Setting

The delineation will be performed on SR 1 in suburban Half Moon Bay, along the coast of the Pacific Ocean in the western side of San Mateo County, California. In the BSA, SR 1 runs north/south, parallel to the Pacific coast on the coastal plain west of the Santa Cruz mountains that form the spine of the San Francisco Peninsula. Creeks flow west and southwest from the Santa Cruz mountains to the Pacific Ocean across the coastal plain and through the BSA. The northern portion of the BSA is surrounded by the Half Moon Bay Airport to the west and agricultural fields to the east. Farther south, the BSA is surrounded by Pillar Point Harbor, suburban residential development, and commercial developments. There are pockets and corridors of undeveloped vegetated areas adjacent to SR 1, between other land uses. The entire stretch of the BSA is within sight of the Pacific Ocean, but is too far upslope from the ocean to have any tidal influence.



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Project Work Areas in the Biological Study Area

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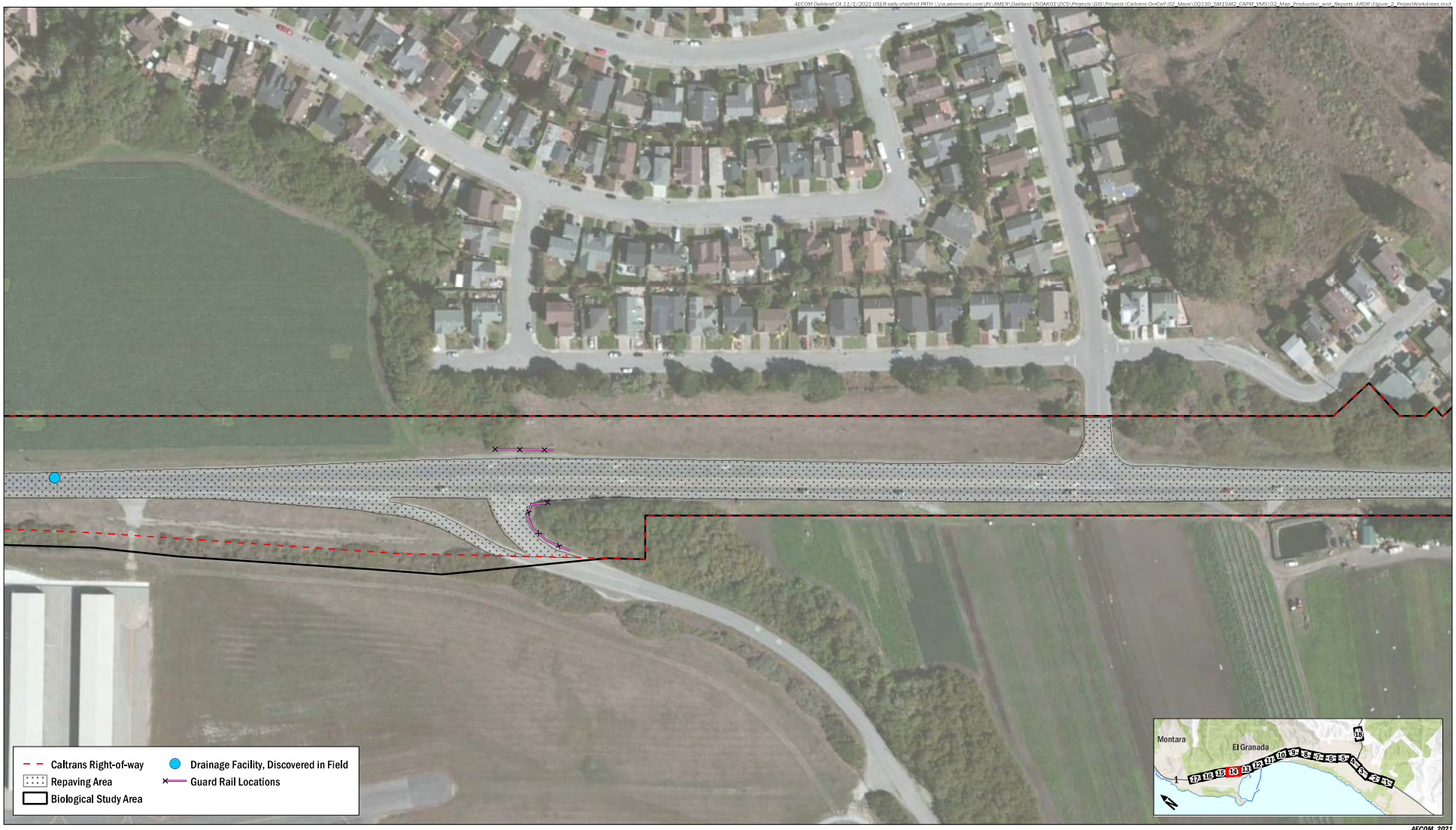

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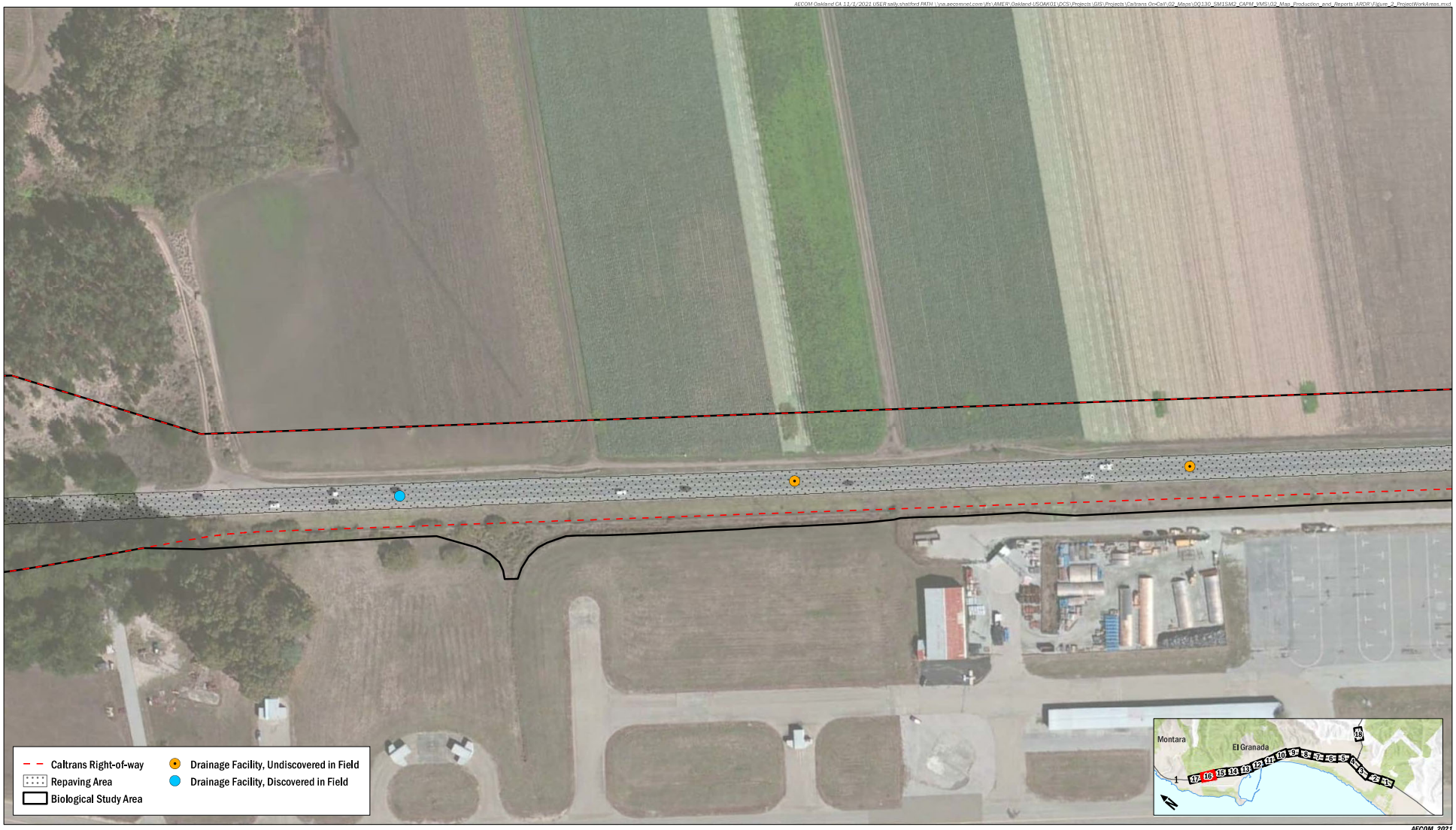

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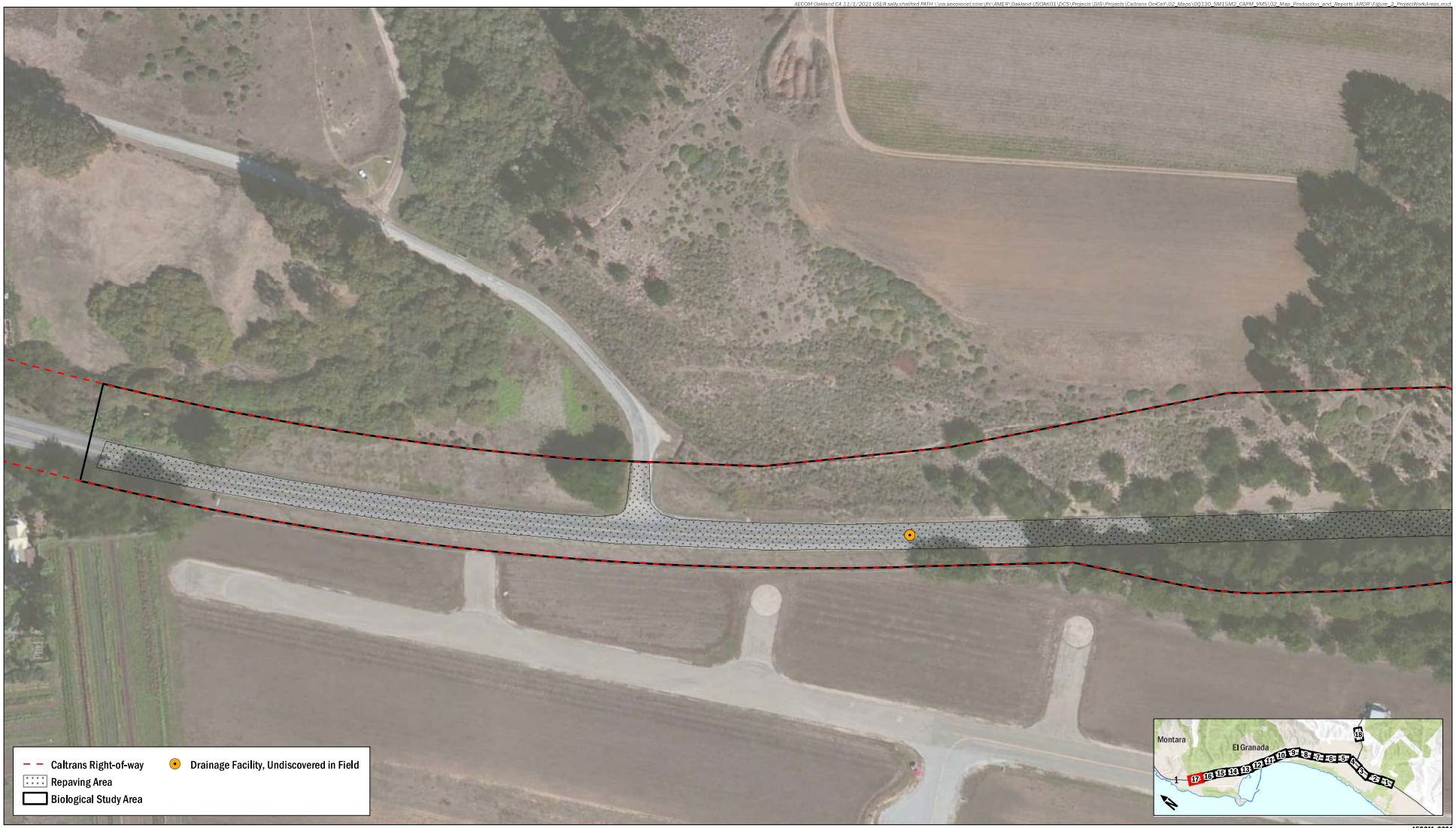

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1.3.1 Climate

The BSA has a Mediterranean climate characterized by wet winters and dry summers. Because of Half Moon Bay's proximity to the coast and marine layer influence, the area's high temperatures average much lower than areas a short distance inland; the low temperatures are moderated by the marine influence as well. Average temperatures range from a low of 47 degrees Fahrenheit (°F) to a high of 62°F. The average annual precipitation in Half Moon Bay is approximately 26.17 inches (WRCC 2021). The aquatic resource delineation was conducted at the end of summer of 2021, near the end of the dry season for the area. Precipitation for the 2020/2021 rainy season was well below normal, and was measured at 7.17 inches in San Francisco (32 percent of average precipitation). Normal average precipitation in San Francisco is 22.58 inches. Precipitation the year before (the 2019/2020 rainy season) was also well below normal, at 9.40 inches in San Francisco (42 percent of average precipitation) (DWR 2021).[1] As of September 28, 2021, all of San Mateo County is experiencing extreme drought (D3), according to the United States Drought Monitor (Fuchs 2021). D3 is characterized as "Water is inadequate for agriculture, wildlife, and urban needs; reservoirs are extremely low; hydropower is restricted," among other descriptions.

Overall, the climate conditions were considered to be drier than normal in the BSA during the 2021 field surveys. A dry pattern may continue until sufficient precipitation comes to alleviate drier than normal areas. The current drought may also be part of a longer-term trend toward a drier climate in the Western United States due to global climate change (Columbia University 2020). Nonetheless, wetland indicators for the parameters of hydrology, soil, and hydrophytes could have been affected by the drier than normal conditions during the field survey. Aquatic features were mapped based on conditions as they appeared during field surveys, despite the drier than normal conditions.

1.3.2 Hydrology

Situated on the most western portion of the San Francisco Peninsula, the BSA is in the San Francisco Coastal South Hydrologic Unit Code (HUC) 8 Watershed and the San Gregorio Creek-Frontal Pacific Ocean HUC 10 Watershed (Figure 3). The BSA spans three HUC 12 watersheds, Denniston Creek-Frontal Pacific Ocean, Arroyo Leon, and Purisima Creek-Frontal Ocean. All the creeks in the area drain in a west-southwest direction, coming from the western slope of the Santa Cruz Mountains. The main drainages that cross the BSA are San Vicente Creek, Denniston Creek, Arroyo de en Medio, Frenchman's Creek, and Pilarcitos Creek.

[1] Reliable precipitation data for the 2020/2021 and 2019/2020 water years were not available for the Half Moon Bay weather station; consequently, data from nearby San Francisco (approximately 17 miles away) were used for analysis.

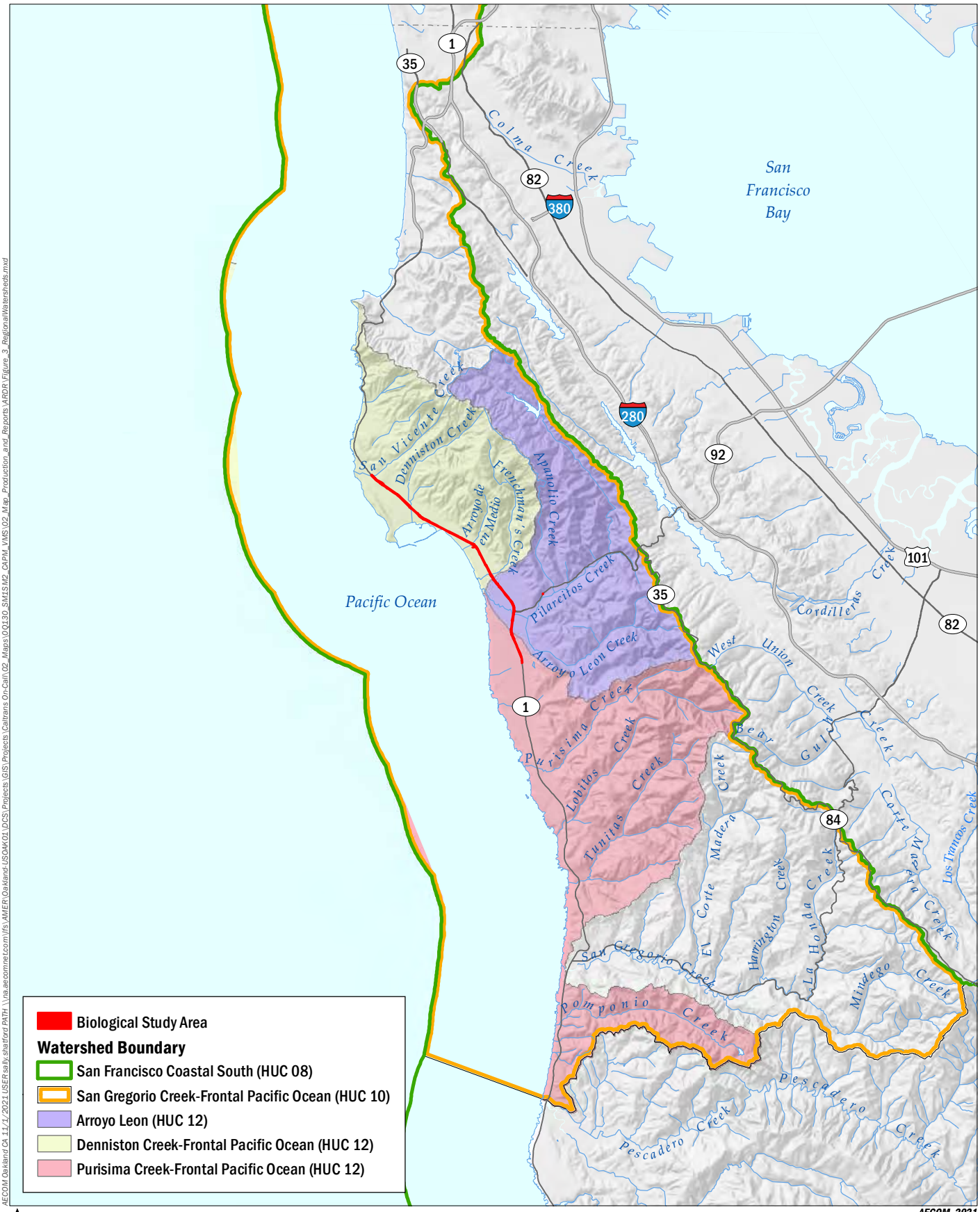

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FIGURE 3

Watersheds & Streams in the Biological Study Area

Pilarcitos Creek originates on the eastern side of Montara Mountain and flows about 12 miles to the Pacific Ocean at Half Moon Bay. It drains a watershed of approximately 17,900 acres (28 square miles) in San Mateo County. The creek, a source of drinking water for residents of the central coast and San Francisco Bay Area, is diverted at the Pilarcitos Reservoir and Stone Dam complex in the upper watershed. San Vicente Creek, Denniston Creek, Arroyo de en Medio, and Frenchman's Creek are similar to Pilarcitos Creek in that they all originate from the slopes of Montara Mountain and eventually flow west to the Pacific Ocean, but are not sources of drinking water.

1.3.3 Geology and Soils

The online soil survey for Santa Mateo County (NRCS 2021) was used to identify soil series in the BSA. Twenty soil series and/or complexes occur in the BSA. Six of these are listed as hydric soils in California (NRCS 1995b). The soils are from alluvium derived from granite and sedimentary rock. Table 1 lists the soil series and selected characteristics in the BSA. The soil series in the BSA are shown on Figure 4.

1.3.4 Plant Communities and Habitat Types

The majority of the BSA contains highly developed and disturbed habitat types, including pavement, gravel/dirt, various kinds of urban development, landscaped vegetation, agricultural cropland, and ruderal disturbed vegetation. The remaining portions of the BSA include forested plant communities, shrub-dominated plant communities, a herbaceous wetland community, and grassland plant communities. The forested communities include acacia woodland, Monterey cypress stands, Monterey pine woodland, Eucalyptus groves, arroyo willow thickets, and red willow riparian woodland. The shrub-dominated communities include coastal scrub and coyote brush scrub. The grasslands in the BSA were California annual grassland or other ruderal patches of iceplant mats, poison hemlock, fennel, or upland mustards. The identified plant communities come from the List of California Vegetation Alliances (CDFW 2021). These plant communities and habitat types are described in further detail in the following sections.

Acacia Woodland

Blackwood acacia (*Acacia melanoxylon*) is a nonnative tree that dominates these woodlands. Other dominants include red elderberry (*Sambucus racemosa*), panic veldtgrass (*Ehrharta erecta*), cape ivy (*Delairea odorata*), and garden nasturtium (*Tropaeolum majus*).

Monterey Cypress Stands

This plant community is dominated by Monterey cypress (*Hesperocyparis macrocarpa*). Other dominant plant species found in this community are cape ivy, California coffeeberry (*Frangula californica*), and California bee plant (*Scrophularia californica*).

Table 1 Soil Series and Selected Characteristics

Symbol	Soil Type	Drainage	Permeability	Landscape Position	Principal Soil Textures	Hydric Soil
BcA	Botella clay loam, nearly level, cool	Well Drained	Moderately high (0.20 to 0.60 in/hr)	Alluvial fans	Clay loam, silty clay loam	No
DcA	Denison clay loam, nearly level	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Flood plains, alluvial fans	Clay, clay loam, loam	No
DdA	Denison clay loam, nearly level, imperfectly drained	Somewhat poorly drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Terraces	Clay, clay loam, loam	Yes, in depressions
DeA	Denison coarse sandy loam, nearly level	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Terraces	coarse sandy loam, clay loam, clay	No
DmA	Denison loam, nearly level	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Terraces	Clay loam, clay, loam	No
DmB	Denison loam, gently sloping	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Terraces	Clay loam, clay, loam	No
DmC	Denison loam, sloping	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Terraces	Clay loam, clay, loam	No
EhB2	Elkhorn sandy loam, gently sloping, eroded	Well drained	Moderately high (0.20 to 0.57 in/hr)	Terraces	sandy clay loam, sandy loam	No
EhE3	Elkhorn sandy loam, moderately steep and steep, severely eroded	Well drained	Moderately high (0.20 to 0.57 in/hr)	Terraces	sandy clay loam, sandy loam	No
FaA	Farallone loam, nearly level	Well drained	Moderately high to high (0.60 to 2.00 in/hr)	Flood plains, alluvial fans	Sandy loam, loam, stratified coarse sandy loam	Yes, in depressions
FcA	Farallone loam, gently sloping	Well drained	Moderately high to high (0.60 to 2.00 in/hr)	Flood plains, alluvial fans	Sandy loam, loam, stratified coarse sandy loam	No
FcB	Farallone coarse sandy loam, gently sloping	Well drained	Moderately high to high (0.60 to 2.00 in/hr)	Flood plains, alluvial fans	Sandy loam, coarse sandy loam, stratified coarse sandy loam	No

Symbol	Soil Type	Drainage	Permeability	Landscape Position	Principal Soil Textures	Hydric Soil
FcC2	Farallone coarse sandy loam, sloping, eroded	Well drained	Moderately high to high (0.60 to 2.00 in/hr)	Flood plains, alluvial fans	Sandy loam, coarse sandy loam, stratified coarse sandy loam	Yes, in depressions
FsB	Farallone coarse sandy loam, over coarse sands, gently sloping, seeped	Well drained	Moderately high to high (0.60 to 2.00 in/hr)	Flood plains, alluvial fans	Coarse sandy loam, sandy loam, gravelly coarse sand	Yes, in alluvial fans
GlE2	Gazos-Lobitos silt loams, steep, eroded	Well drained	Moderately high (0.20 to 0.57 in/hr)	Mountain slopes	Silt loam, bedrock	No
Gu	Gullied land (alluvial soil material)	ND	ND	Flood plains	ND	Yes, in draws
SkB	Soquel loam, gently sloping	Moderately well drained	Moderately high (0.20 to 0.57 in/hr)	Flood plains	Loam, silt loam	No
WmA	Watsonville loam, nearly level	Moderately well drained	Low to moderately low (0.01 to 0.06 in/hr)	Terraces	Loam, clay, sandy clay loam	Yes, in depressions
WmC2	Watsonville loam, sloping, eroded	Moderately well drained	Low to moderately low (0.01 to 0.06 in/hr)	Terraces	Loam, clay, sandy clay loam	No
130	Typic Argiustolls, loamy-Urban land association	Moderately well drained	Moderately low to moderately high (0.06 to 0.20 in/hr)	Fluviomarine terraces	Sandy clay loam	No

Notes:

in/hr = inches per hour
ND = no data available

Source: NRCS 2021

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FIGURE 4

Soils in the Biological Study Area

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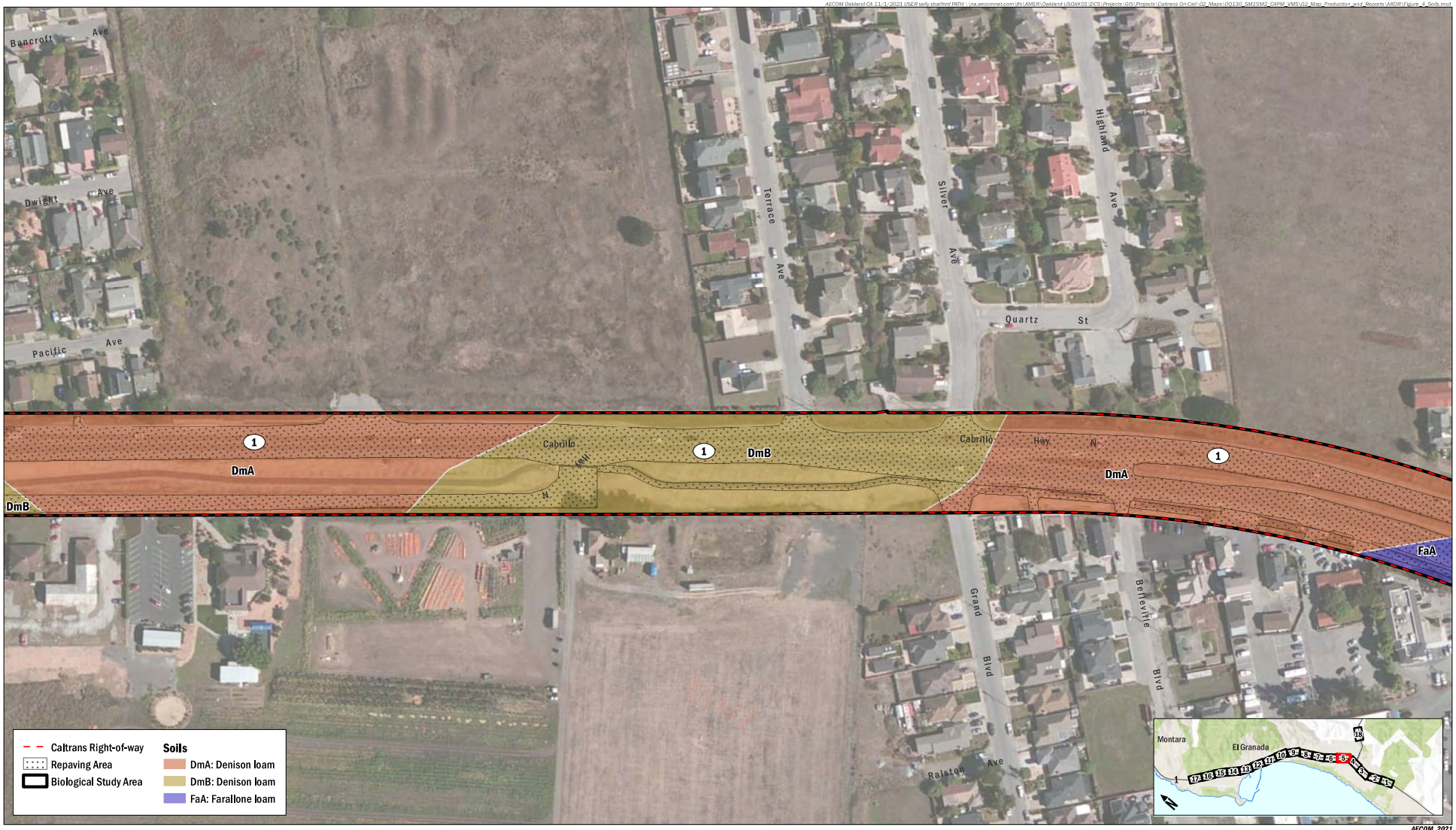

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FIGURE 4

Soils in the Biological Study Area

AECOM, 2021
Caltrans, 2021
USDA, 1998
ESRI Basemap/Imagery, 2016/2021

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FIGURE 4

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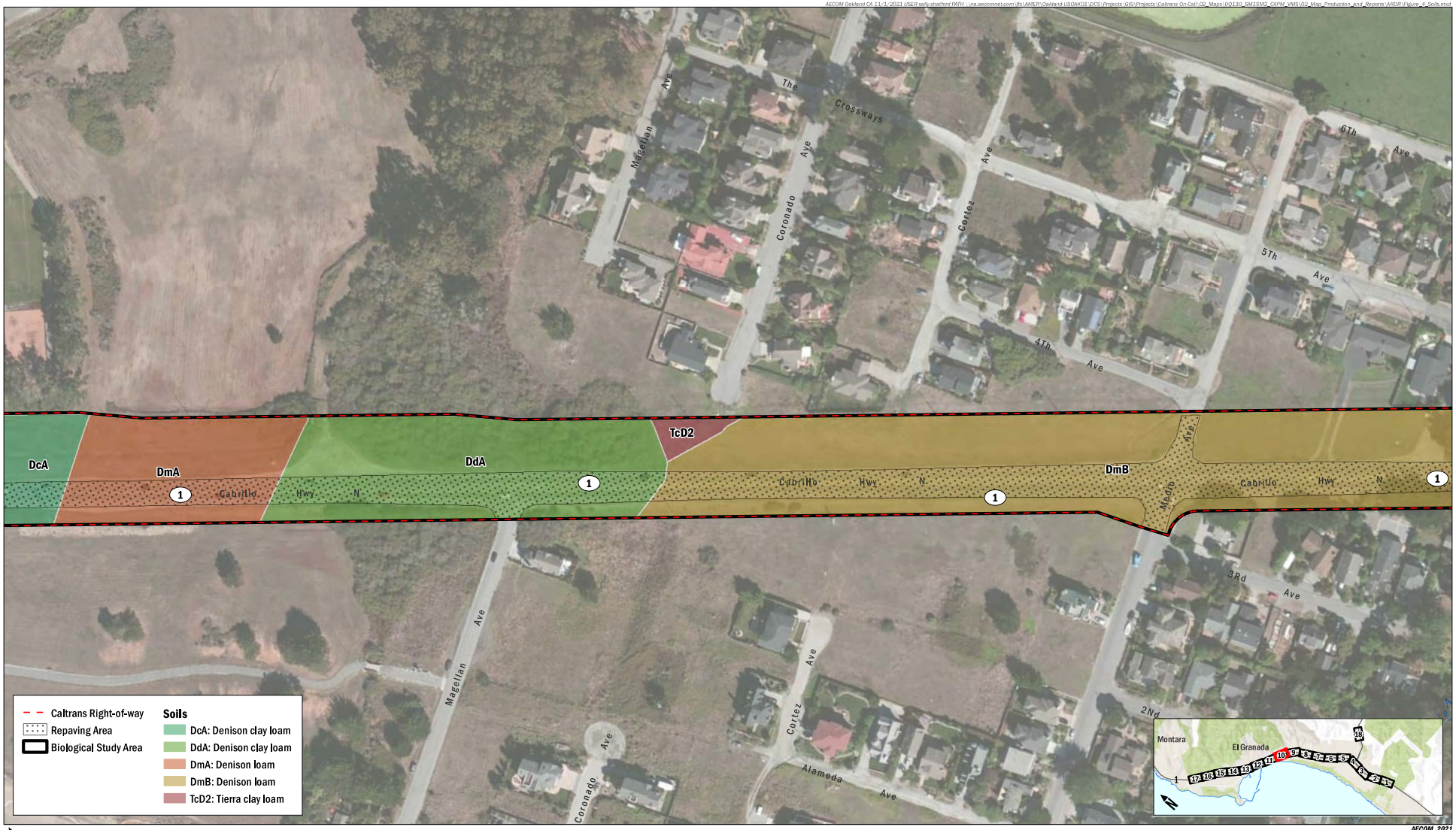

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FIGURE 4

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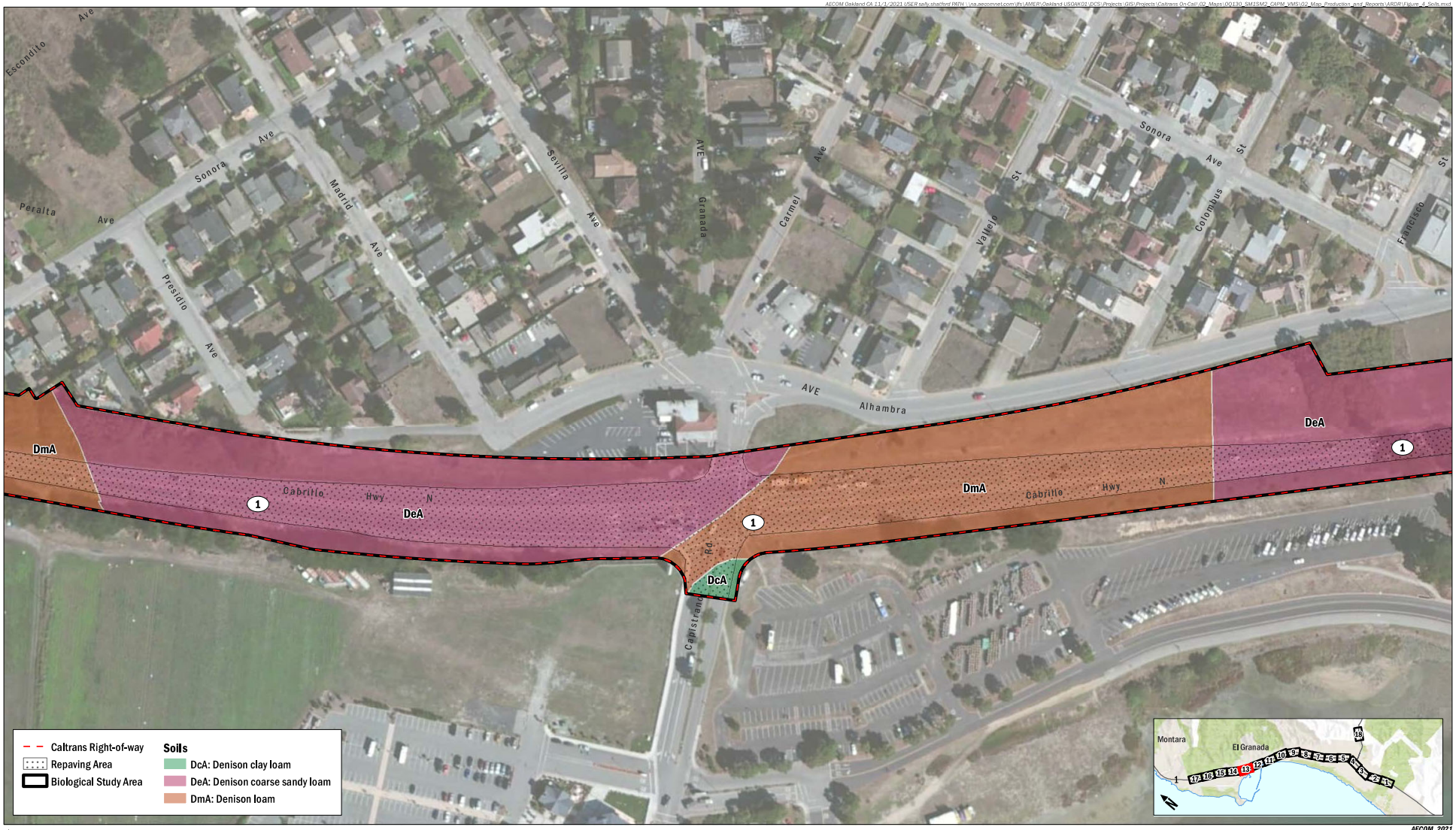

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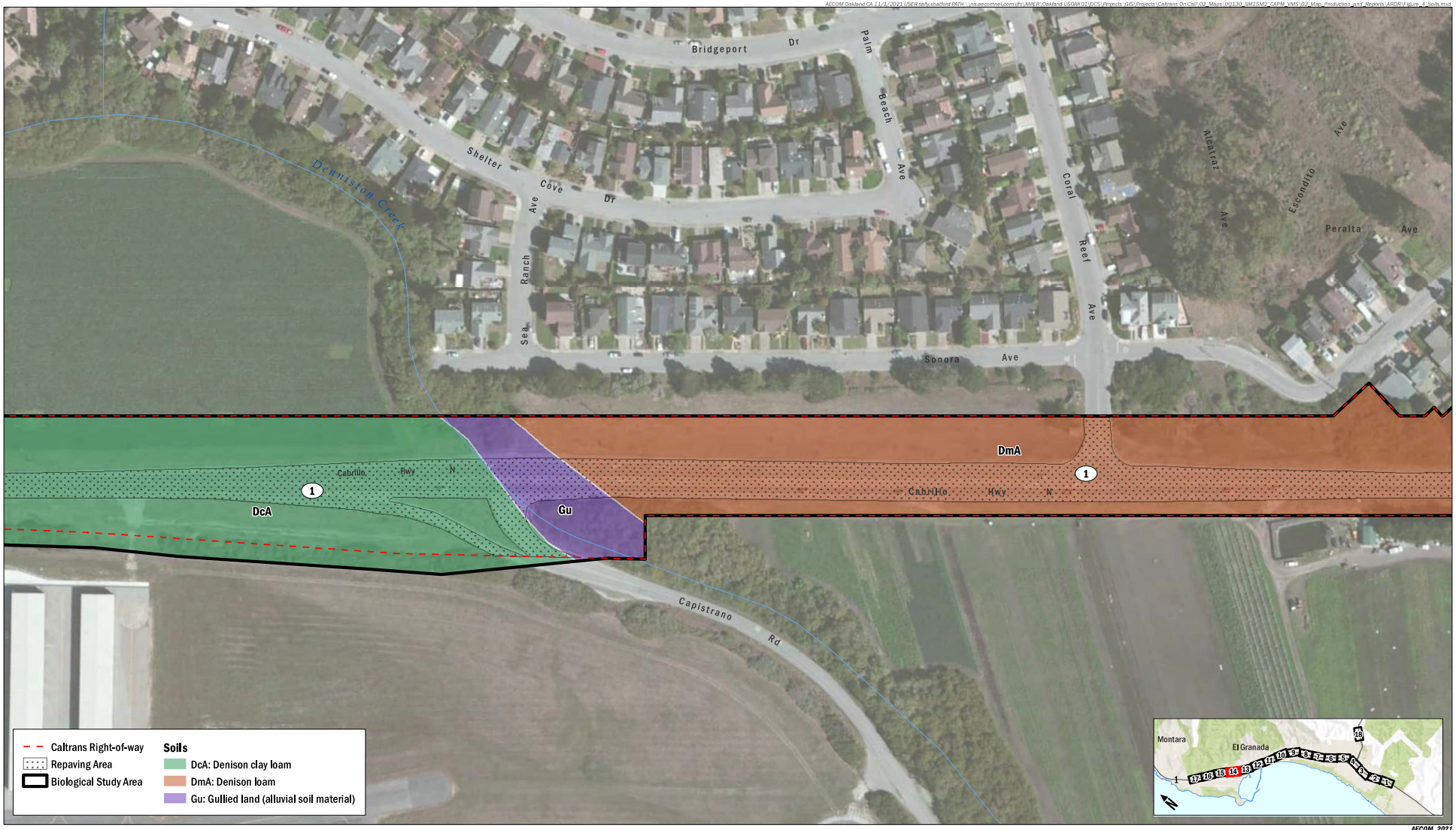

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FIGURE 4

Soils in the Biological Study Area

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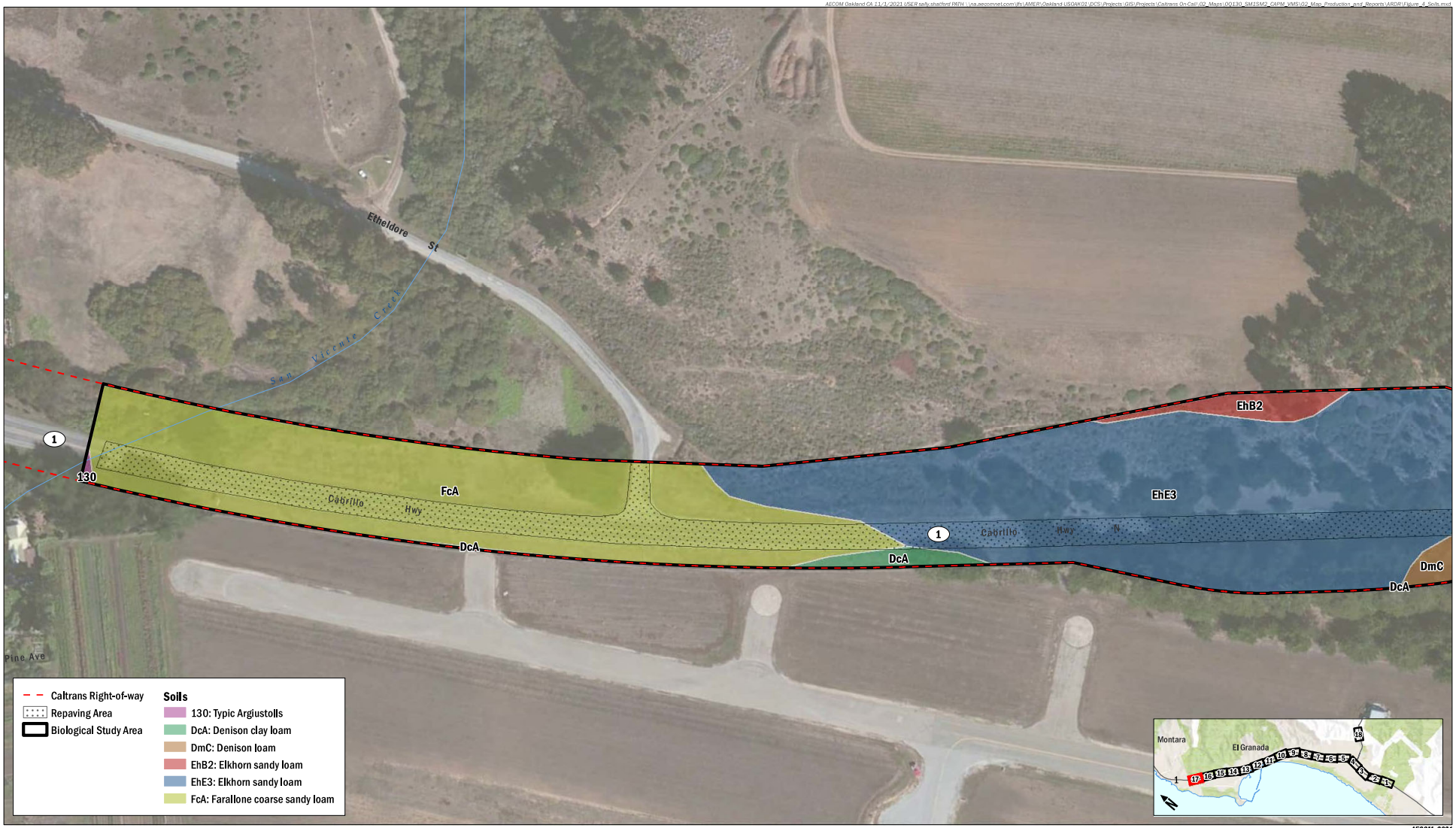

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FIGURE 4

Soils in the Biological Study Area

Monterey Pine Woodlands

This plant community is almost entirely composed of Monterey pine (*Pinus radiata*) and usually has an understory of annual grasses.

Eucalyptus Groves

This stand is dominated by blue gum (*Eucalyptus globulus*), which grow to be very large trees and dominate the landscape. Other dominant plants species in this community include cape ivy, California blackberry (*Rubus ursinus*), and red elderberry.

Arroyo Willow Thicket

This plant community is dominated by a dense thicket of arroyo willows (*Salix lasiolepsis*) and occurs in riparian areas near waterways, in depressions or in swales where the ground is wetter. Other dominant plant species include red elderberry, creek dogwood (*Cornus sericea*), Pacific willow (*Salix lasiandra*), California blackberry, California coffeeberry, coyote brush (*Baccharis pilularis*), and California aster (*Symphyotrichum chilense*).

Red Willow Riparian Woodland

Red willows (*Salix laevigata*) dominate these riparian woodlands adjacent to waterways. Other plant species co-dominant in this plant community are red elderberry and California blackberry.

Coastal Scrub

This plant community is dominated by shrub species, including coyote brush, California coffeeberry, and poison oak (*Toxicodendron diversilobum*). Other dominant plant species include California blackberry, California aster, and California bee plant.

Coyote Brush Scrub

Coyote brush dominates this plant community. Other dominant plant species include California coffeeberry, California blackberry, and California aster.

California Annual Grassland

This plant community consists of annual grasses and other herbaceous plants, including slender oat (*Avena barbata*), rescue grass (*Bromus catharticus*), brome fescue (*Festuca bromoides*), Italian rye grass (*Festuca perennis*), Bristly ox-tongue (*Helminthotheca echioides*), willow dock (*Rumex transitorius*), coast tarweed (*Madia sativa*), and the pincushion plant (*Scabiosa atropurpurea*).

Ruderal Iceplant Mats, Poison Hemlock, Fennel, and Mustard

These plant communities are ruderal and are dominated by weedy nonnative invasive plant species, including poison hemlock (*Conium maculatum*), fennel (*Foeniculum vulgare*), Mediterranean hoary mustard (*Hirschfeldia incana*), wild radish (*Raphanus sativus*), and iceplant (*Carpobrotus edulis*).

1.4 Regulatory Setting

This section describes the regulatory framework for and definitions of waters of the United States (WOTUS), of which wetland waters of the United States (WWUS) and other waters of the United States (OWUS) are a subset. This section also addresses the regulation of wetlands and other waters by California state agencies, including the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC).

1.4.1 Federal Regulation

United States Army Corps of Engineers

The United States Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations WWUS in federal waters under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in “navigable waters”; and the Clean Water Act (CWA) (Section 404), which regulates the discharge of dredged and fill materials into WOTUS.

USACE and the United States Environmental Protection Agency (EPA) define wetlands as “Those areas that are saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for the life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (Environmental Laboratory 1987).

Jurisdictional WOTUS include “intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, and wetlands adjacent to any water of the United States” (33 Code of Federal Regulations [CFR] Section 328). Certain WOTUS are considered “special aquatic sites” because they generally are recognized as having particular ecological value. Such sites include sanctuaries and refuges, mudflats, wetlands, vegetated shallows, and riffle and pool complexes. Special aquatic sites are defined by EPA and may be afforded additional consideration in a project’s permitting process.

USACE typically issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with EPA's Section 404(b)(1) Guidelines (40 CFR 230), and on whether permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (i.e., WOTUS) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" to the proposed discharge that would have lesser effects on WOTUS, and not have any other significant adverse environmental consequences. WWUS

Navigable Waters Protection Rule

EPA and the Department of the Army published the 2020 Navigable Waters Protection Rule (NWPR) in the Federal Register on April 21, 2020, to finalize a revised definition of "waters of the United States," as regulated under Section 404 of the CWA (USACE and EPA 2020). The rule aimed to streamline the definition so that it includes simple categories of jurisdictional waters, provides clear exclusions for water features that traditionally have not been regulated, and defines terms in the regulatory text that previously were undefined in statute.

However, on June 9, 2021, EPA and USACE under the Biden administration announced their intent to revise the definition WOTUS used by the previous administration (USACE and EPA 2021). The agencies reviewed the NWPR and determined that the rule significantly reduces clean water protections. In response to a U.S. court order on August 31, 2021, the agencies have halted implementation of the NWPR and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice (EPA 2021). For purposes of this aquatic resource delineation report, ephemeral drainages and culverted waters are delineated according to the delineation methods that were established prior to the publication of the NWPR.

1.4.2 State Regulation

Due to the complex regulatory framework in coastal California, aquatic resources are regulated by several agencies, including RWQCB, CDFW, and CCC.

Regional Water Quality Control Board

EPA has deferred water quality certification authority to RWQCB under Section 401 of the CWA. A water quality certification or waiver is required for all Nationwide, Regionwide, or Individual permits issued by USACE under Section 404 of the CWA. In California, issuance of water quality certification (or a waiver) is considered a discretionary action, requiring review under the California Environmental Quality Act. RWQCB would be expected to consider impacts on all WWUS and OWUS identified in this report, following submittal of the 401 Certification Permit application.

RWQCB also is authorized to protect and regulate waters of the State (WOS), including wetlands and riparian areas. RWQCB protects the beneficial uses of surface water and groundwater in California under the Porter-Cologne Water Quality Control Act and may exercise jurisdiction over discharges into WOS in cases where the waters are excluded from regulation under the federal CWA. Waste Discharge Requirements may be issued by RWQCB for impacts on WOS that are not also WOTUS. WOS are broadly defined and include isolated wetlands. In Section 13050(e), the act defines WOS to mean any surface water or groundwater, including saline waters, within the boundaries of California. Riparian areas are protected because they are integral to the chemical, physical, and biological characteristics of WOS.

California Coastal Commission

Wetlands in the coastal zone are regulated by CCC under the Coastal Zone Management Act of 1972 (16 United States Code 1451, et seq.) and the California Coastal Commission Act (Public Resources Code 30000, et seq.). CCC has planning, regulatory, and permitting responsibilities, in partnership with local governments, over all “development” taking place in the coastal zone, a 1.5-million-acre area stretching 1,100 miles along California’s coastline, between the borders with Oregon and Mexico (and around nine offshore islands). The coastal zone extends seaward 3 miles, and its landward boundary varies from several miles inland in places such as the Eel River and the Elkhorn Slough, to as close as a few hundred feet from the shore in other areas. The Project is entirely within the coastal zone and subject to the jurisdiction of the CCC (CCC 2021).

When defining a wetland, USACE and RWQCB use a three-parameter definition to determine whether an area is a potential jurisdictional wetland subject to regulation under the CWA. The three parameters are presence of hydric soil, wetland hydrology, and hydrophytic vegetation. Under normal circumstances (undisturbed conditions), a potentially jurisdictional wetland must have positive wetland indicators of hydric soils, wetland hydrology, and a dominance of hydrophytic vegetation. Positive wetland indicators for these parameters include field indicators and published data (e.g., United States Department of Agriculture (USDA) Natural Resources Conservation Service [NRCS] lists of hydric soils).

CCC’s definition of a wetland is different in that only one parameter with positive wetland indicators is required to define a wetland area. For example, an area that expresses a dominance of hydrophytic vegetation but lacks field indicators for wetland hydrology or soils would constitute a CCC jurisdictional wetland, but would not be subject to USACE or RWQCB jurisdiction under the CWA.

California Department of Fish and Wildlife

Under California Fish and Game Code Section 1602, CDFW requires notification prior to beginning any work activity in a river, stream, or lake that may divert or obstruct natural water flow; substantially change the bed, channel or bank; or remove or deposit material into or out of the feature. Any river, stream, or lake includes those that are dry

for periods of time and those that flow year-round. Riparian woodlands adjacent to wetlands, streams, and stormwater features that are not regulated under the CWA may be regulated by CDFW.

Riparian habitat that contains a dominance of hydrophytic plant species but does not meet the USACE hydrology or soils criteria to be considered a WOTUS may still be subject to CDFW regulation. Some willow scrub or other tree-dominated habitats with wetland species could qualify as riparian woodland subject to CDFW 1602 jurisdiction. Where riparian habitat along streams extends beyond the active floodplain to terraces, the outermost limits of the habitat on the terrace is mapped to the canopy edge, or drip line.

1.4.3 Aquatic Resources Definitions

This section provides definitions for the terms that are used in this aquatic resource delineation report to describe the aquatic resources in the Project BSA.

WOTUS: This includes all wetlands and other waters potentially jurisdictional to USACE under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act.

WWUS: WWUS is a subset of WOTUS; it includes all wetlands potentially jurisdictional to USACE, using the three-parameter approach.

OWUS: OWUS is a subset of WOTUS; it includes all other (nonwetland) waters potentially jurisdictional to USACE.

Culverted Waters of the United States (CWUS): CWUS is a subset of WOTUS; it includes all nonwetland waters potentially jurisdictional to USACE that occur in enclosed drainage culverts.

WOS: This category includes all WOTUS, riparian woodlands, Coastal Commission Wetland (CCW), and other state waters that are potentially jurisdictional to RWQCB, CCC, and CDFW.

CCW: CCW is a subset of WOS; it includes all WWUS, as well as areas that meet the one-parameter definition of a wetland and are therefore jurisdictional to CCC under the California Coastal Commission Act.

Riparian Woodlands: A riparian woodland is a subset of WOS; it is a unique plant community consisting of woody plant species growing near a river, stream, lake, or other body of water. Riparian refers to the transition area between a body of water (pond, lake, creek, or river) and the uplands. Characteristic species include black cottonwood, red alder, sycamore, white alder, box elder, creek dogwood, and willow. The riparian woodland is often differentiated from upland areas by its species composition, typically containing plants adapted to (or able to tolerate) occasional or permanent flooding or saturated soils. Riparian woodlands are jurisdictional to RWQCB and CDFW. In general, riparian woodlands are most often CCW as well; the riparian

tree species are usually considered hydrophytic and would therefore satisfy the one-parameter for a CCW.

Other Waters of the State (OWOS): OWOS is a subset of WOS; it includes all OWUS, and other nonwetland waters that are potentially jurisdictional to RWQCB.

Culverted Waters of the State (CWOS): CWOS is a subset of WOS; it includes all CWUS, and other nonwetland waters enclosed in a drainage culvert.

Chapter 2: Study Methods

This section describes the methods used to delineate potential aquatic resources in the BSA subject to federal or state jurisdiction. The AECOM biologists conducting the delineation of aquatic resources performed a desktop review of the BSA, followed by a field investigation. The biologists were knowledgeable of the latest definitions, clarifications, and guidance at that time regarding jurisdictional WOTUS, as provided by the NWPR.

2.1 Desktop Review

Prior to the field investigation, a desktop review was conducted to compile information on the existing and historical physical and biological conditions of the BSA. The following database and mapping resources were reviewed:

- NRCS Soil Survey Mapping (NRCS 2021)
- National Wetlands Inventory (USFWS 2021)
- National Hydrography Dataset (NHD) accessed via WATERS GeoViewer (USGS 2021)
- Field Indicators of Hydric Soils in the United States, version 8.2 (USDA-NRCS 2018)
- Precipitation data from the California Data Exchange Center (DWR 2021)
- Western Regional Climate Center Monthly Precipitation Data (WRCC 2021)

These resources were used to inform field studies and provide background information for the delineation.

2.2 Field Assessment and Verification

AECOM biologists formally delineated the potential wetlands and other waters in the Project BSA on September 7, 8, and 15, 2021 (Table 2).

Table 2 Aquatic Resource Delineation Survey Dates and Personnel

Survey Type and Date	Personnel
September 7, 2021	Joe Bandel, Danny Slakey
September 8, 2021	Joe Bandel, Danny Slakey
September 15, 2021	Joe Bandel, Danny Slakey

2.2.1 Delineation of Wetlands

Wetlands were delineated in accordance with the routine onsite methodology described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and using guidance from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual (Version 2.0): Western Mountains, Valleys and Coast Region* (USACE 2010). The USACE methodology for delineating wetlands relies on a three-parameter approach to determine whether an area is a potential jurisdictional wetland. The three parameters are hydric soil, wetland hydrology, and hydrophytic vegetation. Under normal circumstances (undisturbed conditions), a potential wetland must have positive wetland indicators of hydric soils, wetland hydrology, and a dominance of hydrophytic vegetation to be subject to jurisdiction under the CWA. Positive wetland indicators for these parameters include field indicators and published data (e.g., USDA-NRCS lists of hydric soils).

As noted in Chapter 1, CCC wetlands only require one parameter to be positive for wetland indicators. Accordingly, water features displaying only one positive wetland parameter were delineated as CCW. The following sections describe the general diagnostic characteristics and some of the typical positive wetland indicators for each parameter.

Hydric Soils

Soils are considered hydric if the soil is classified as hydric by NRCS or if field indicators associated with reducing soil conditions are present. NRCS defines a hydric soil as a soil that formed where conditions of saturation, flooding, or ponding occurred long enough during the growing season to develop anaerobic conditions in the upper portion of the soil profile. Local and national soil surveys published by NRCS are used to determine the types of soil present in an area. National and local hydric soil lists provide a checklist of soil types that are classified as hydric. Field indicators of hydric soils are identified in the Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils (USDA-NRCS 2018). Field indicators may also include organic hydric soils (or histisols); histic epipedons; sulfidic material; aquic or peraquic moisture regimes; reduced soil conditions, as indicated by oxidized rhizospheres; soil color, including gleyed soils, soils with mottles, and/or low-matrix chroma; and iron and manganese concretions.

Wetland Hydrology

Wetland hydrology is defined as inundation or saturation in the upper 12 inches of the soil for at least 5 percent of the growing season in most years (Environmental Laboratory 1987). The growing season in the BSA is approximately 254 days, based on “frost-free days” (NRCS 1995a); 5 percent of the growing season is therefore approximately 13 days. Factors that influence hydrology include precipitation, topography, soil permeability, and plant cover. Primary indicators of wetland hydrology include inundation or saturation in the upper 12 inches, drift lines, sediment deposits, and drainage patterns. Secondary indicators include oxidized rhizospheres, water-

stained leaves, local soil survey data, and the facultative (FAC)-neutral test of vegetation.

Hydrophytic Vegetation

Jurisdictional wetlands are typically dominated by hydrophytic plant species; more than 50 percent of the dominant plant species have an indicator status of FAC, facultative wetland (FACW), or obligate (OBL) (Reed 1988). As defined by USACE (Environmental Laboratory 1987), hydrophytic vegetation is "the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present." Definitions for each of the plant indicator statuses are included in Table 3.

Table 3 Plant Indicator Status Categories

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	These plants almost always occur in wetlands. With few exceptions, the plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface.
Facultative Wetland Plants	FACW	These plants usually occur in wetlands, but may occur in nonwetlands. They predominantly occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.
Facultative Plants	FAC	These plants occur in wetlands and nonwetlands. They can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
Facultative Upland Plants	FACU	These plants usually occur in nonwetlands, but may occur in wetlands. They predominantly occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.
Obligate Upland Plants	UPL	These plants almost never occur in wetlands. They occupy mesic to xeric nonwetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

Source: USACE 2012

2.2.2 Delineating Other Waters of the United States

The locations and positions of potential OWUS in the BSA were determined during field surveys and informed by features in the NHD (USGS 2021) and the topography on the United States Geological Survey topographic quadrangle maps of the BSA. Potential OWUS were delineated based on the visible presence of an ordinary high-water mark, indicated by signs such as wrack lines, scour, debris build-up, and changes in the plant community.

2.2.3 Delineating Other State Waters and Riparian Woodlands

The WOS boundaries extend to the top of bank or to the outer dripline of the adjacent riparian woodland as a function of CDFW, RWQCB, and CCC jurisdiction (see Chapter 1). The extent of the top of bank or riparian woodland were mapped in the field, supplemented by aerial photography, topography, and vegetation mapping. All potential WOS that may be impacted by the Project were evaluated and mapped.

Stormwater features (e.g., ditches) in the BSA adjacent to proposed work areas were evaluated and mapped in the field as potential OWOS. Surveys focused on those stormwater features adjacent to drainage culverts that will be replaced or cleaned out as part of the Project.

Aquatic resources were evaluated for the presence of riparian woodlands. Riparian woodlands were determined by examining the tree species composition near aquatic resources and evaluating whether the species are locally adapted to occasional or permanent flooding or saturated soils. Trees such as willows, cottonwoods, sycamores, red alder, white alder, box elder, and creek dogwood are all characteristic of riparian corridors and were indicators used in the field. The dripline of these trees often depicted the outer edge of the riparian woodland.

2.2.4 Field Data Collection

The boundaries of all waters, including all wetlands and other waters potentially subject to federal or state jurisdiction, were mapped in the field using a sub-meter accuracy Global Positioning System unit. Data points were recorded at the locations where wetland and upland datasheets were completed in each of the wetlands in the BSA. Wetland boundaries were extrapolated and mapped in the field based on similar variations in vegetation, hydrology, and topography. Maps depicting the wetlands and waters in the BSA and wetland sample points are provided in Figure 5 and Figure 6. Photographs of jurisdictional features are provided in Appendix A. Copies of the Western Mountains, Valleys and Coast delineation data forms are provided in Appendix B. A complete list of the vascular plants identified in the Project is provided in Appendix C.

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FIGURE 5

Wetlands and Waters of the United States

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FIGURE 5

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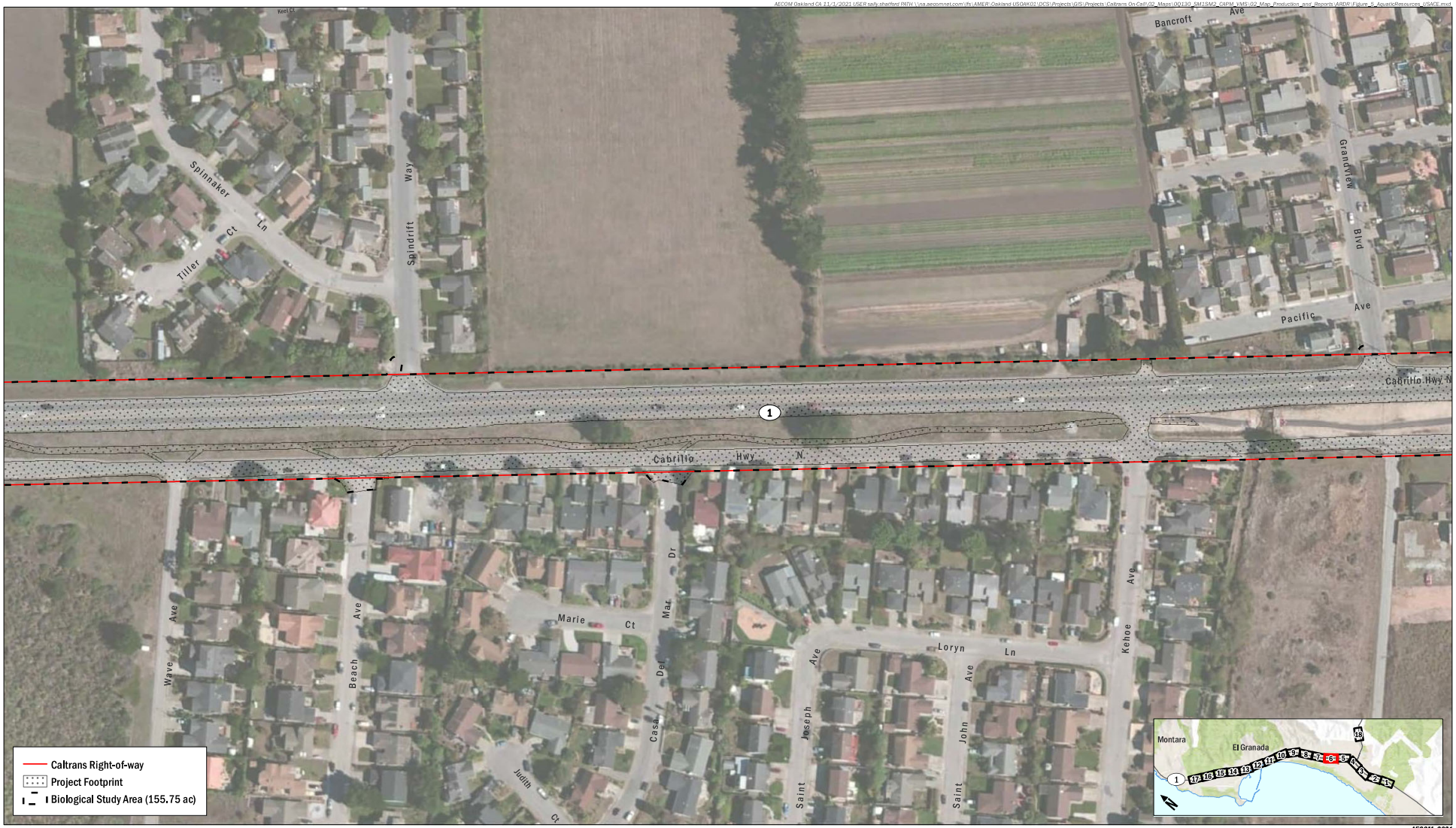

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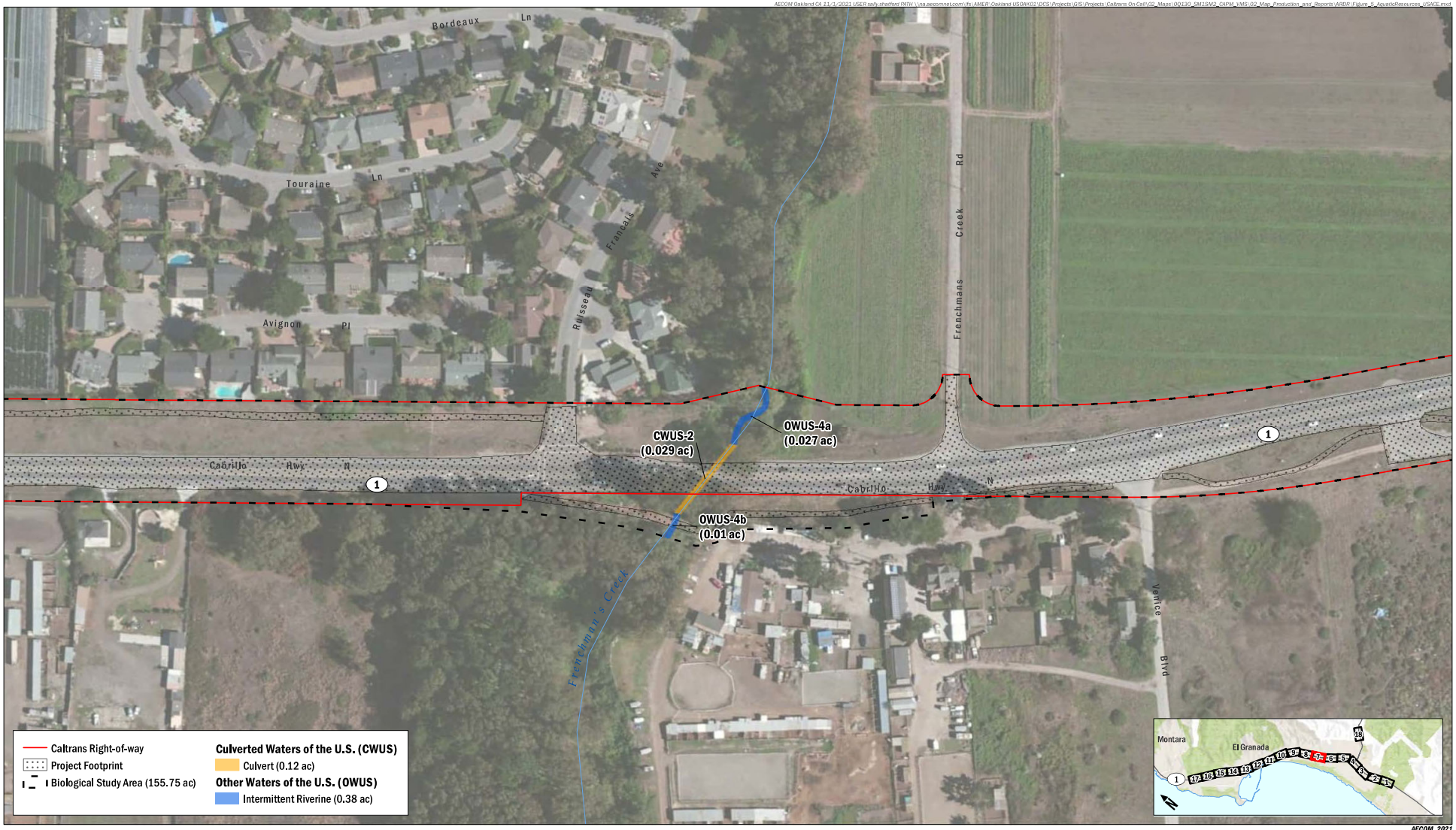

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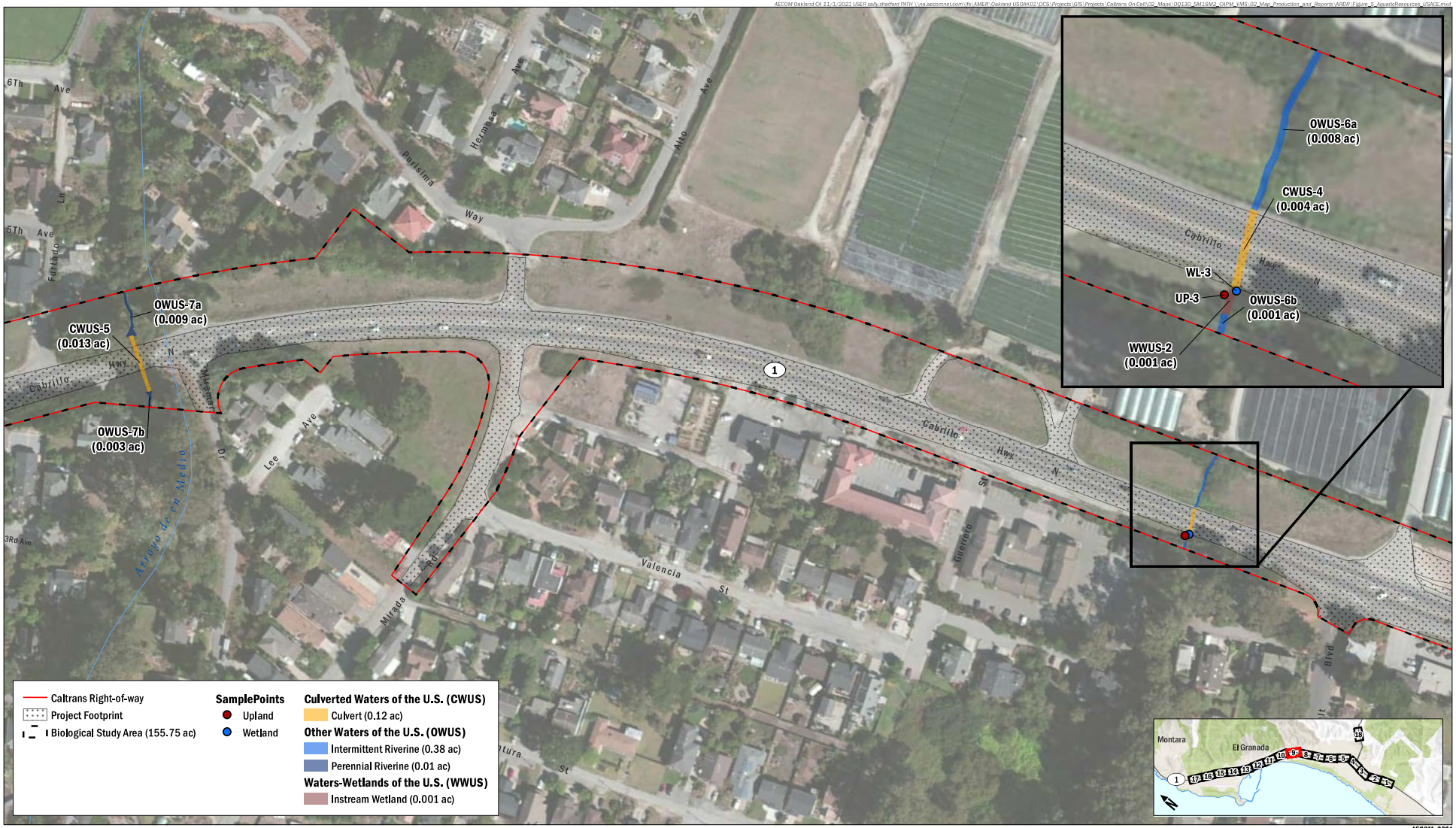

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FIGURE 5

Wetlands and Waters of the United States

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FIGURE 5

Wetlands and Waters of the United States

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FIGURE 5

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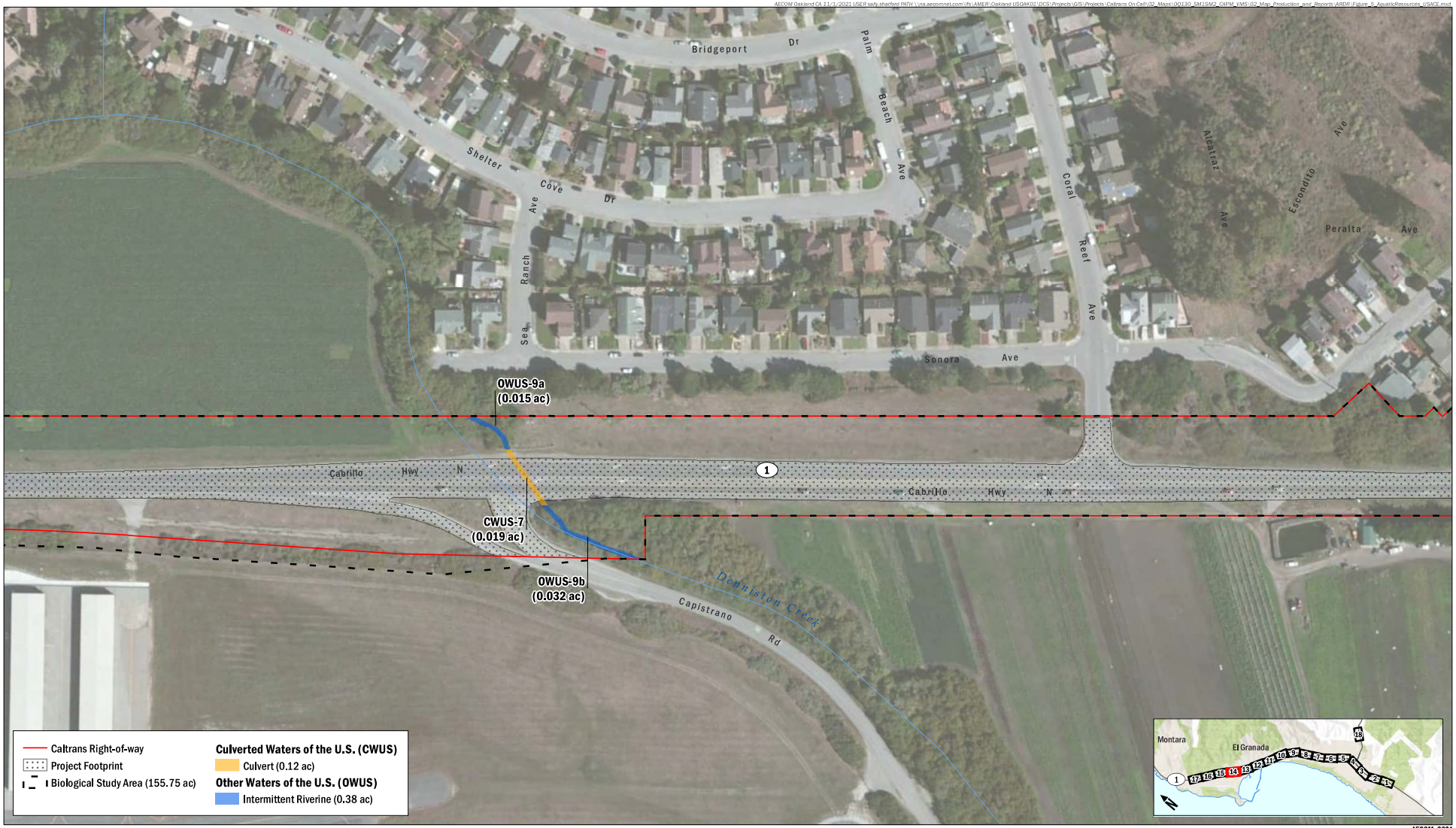

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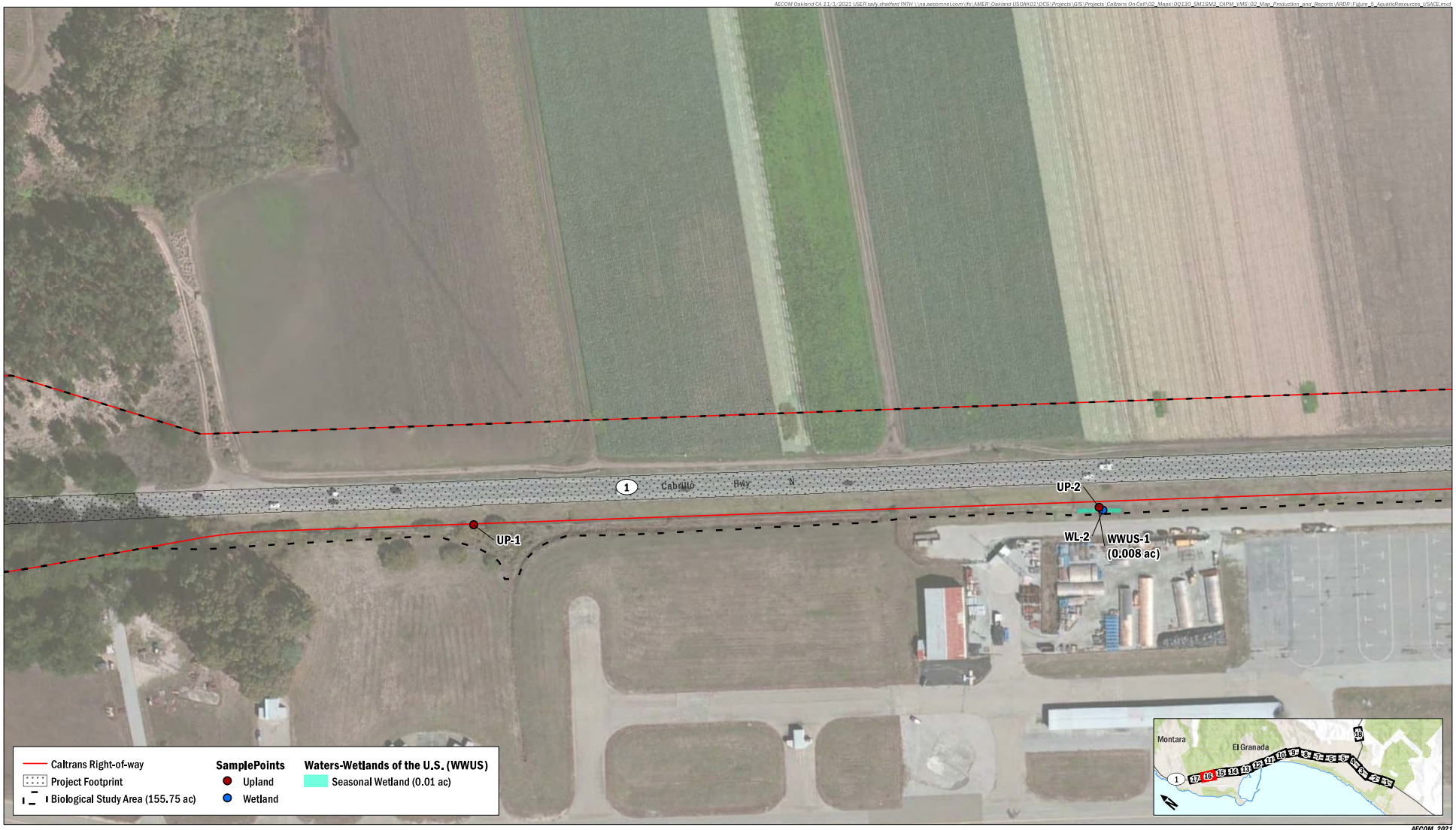

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FIGURE 6

Wetlands and Waters of the United States, Waters of the State, and Coastal Commission Wetlands

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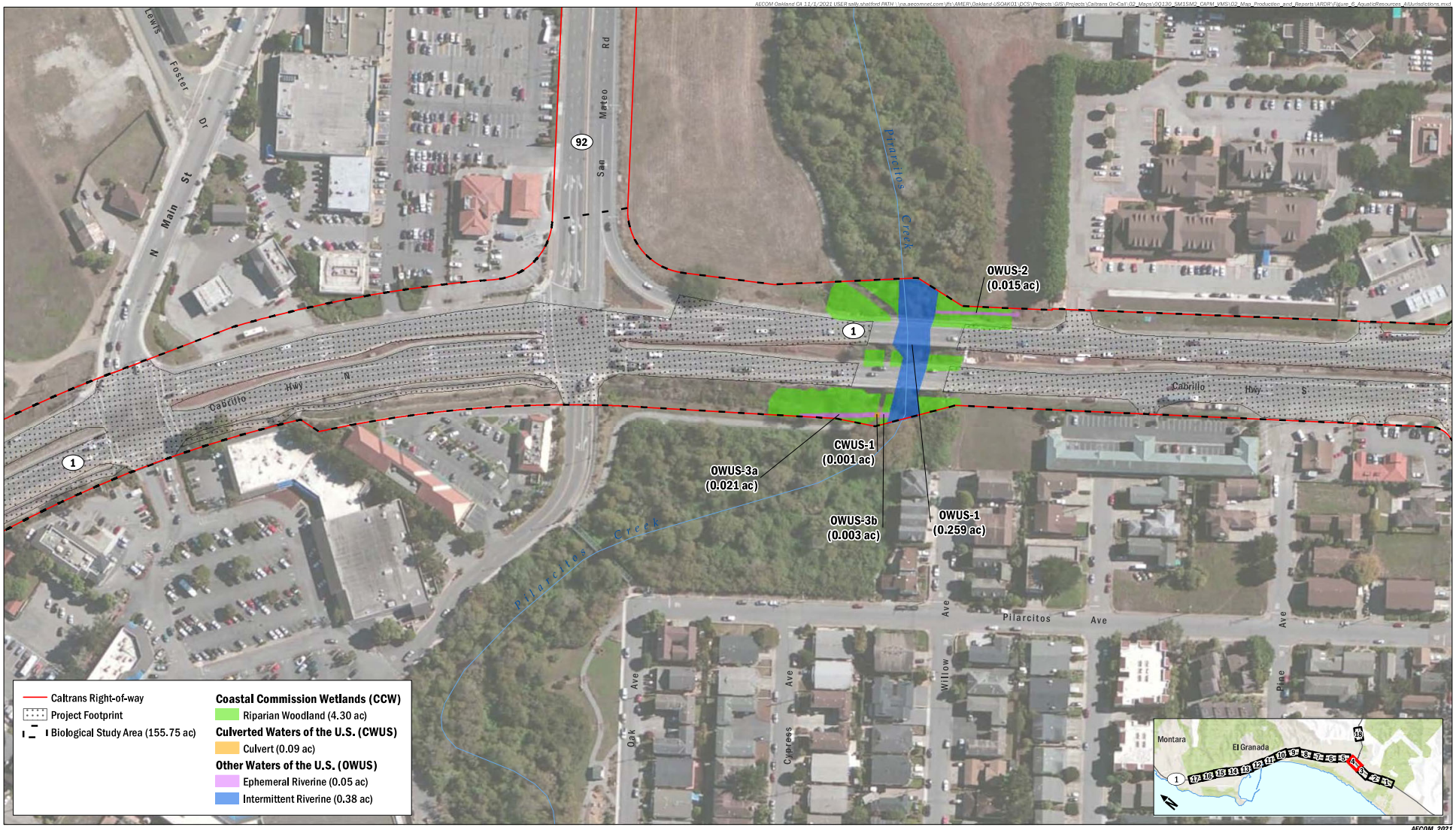

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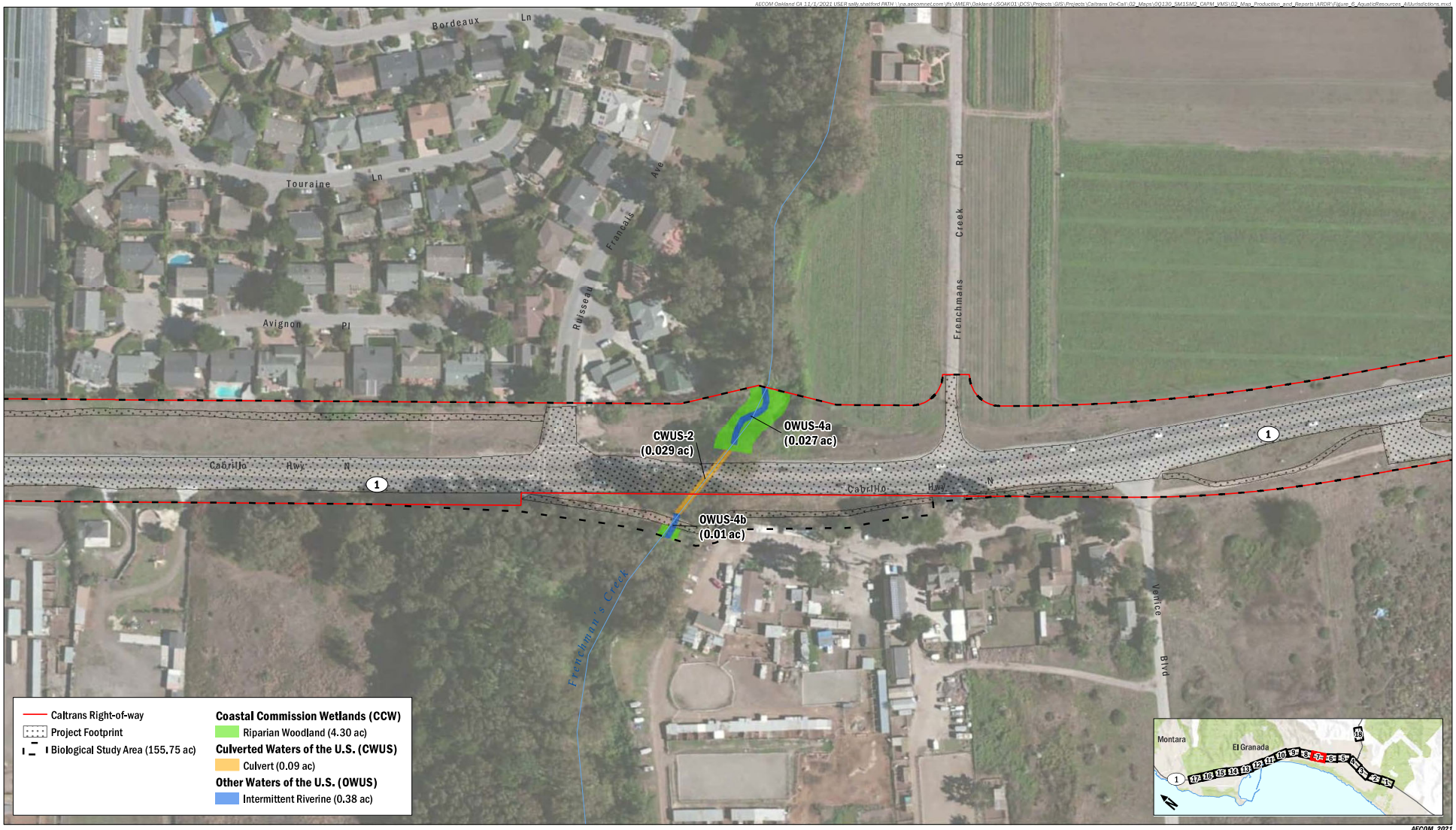

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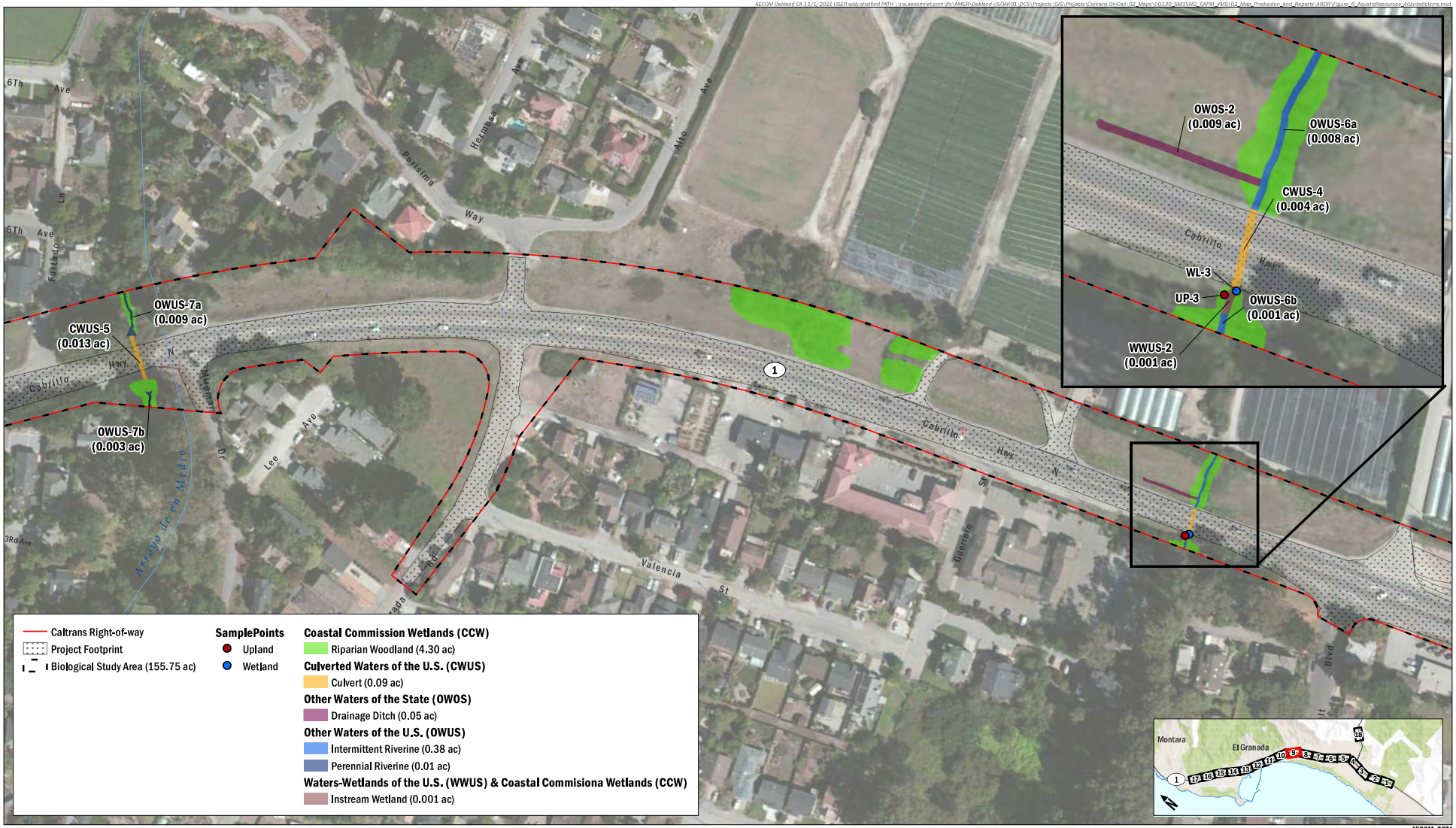

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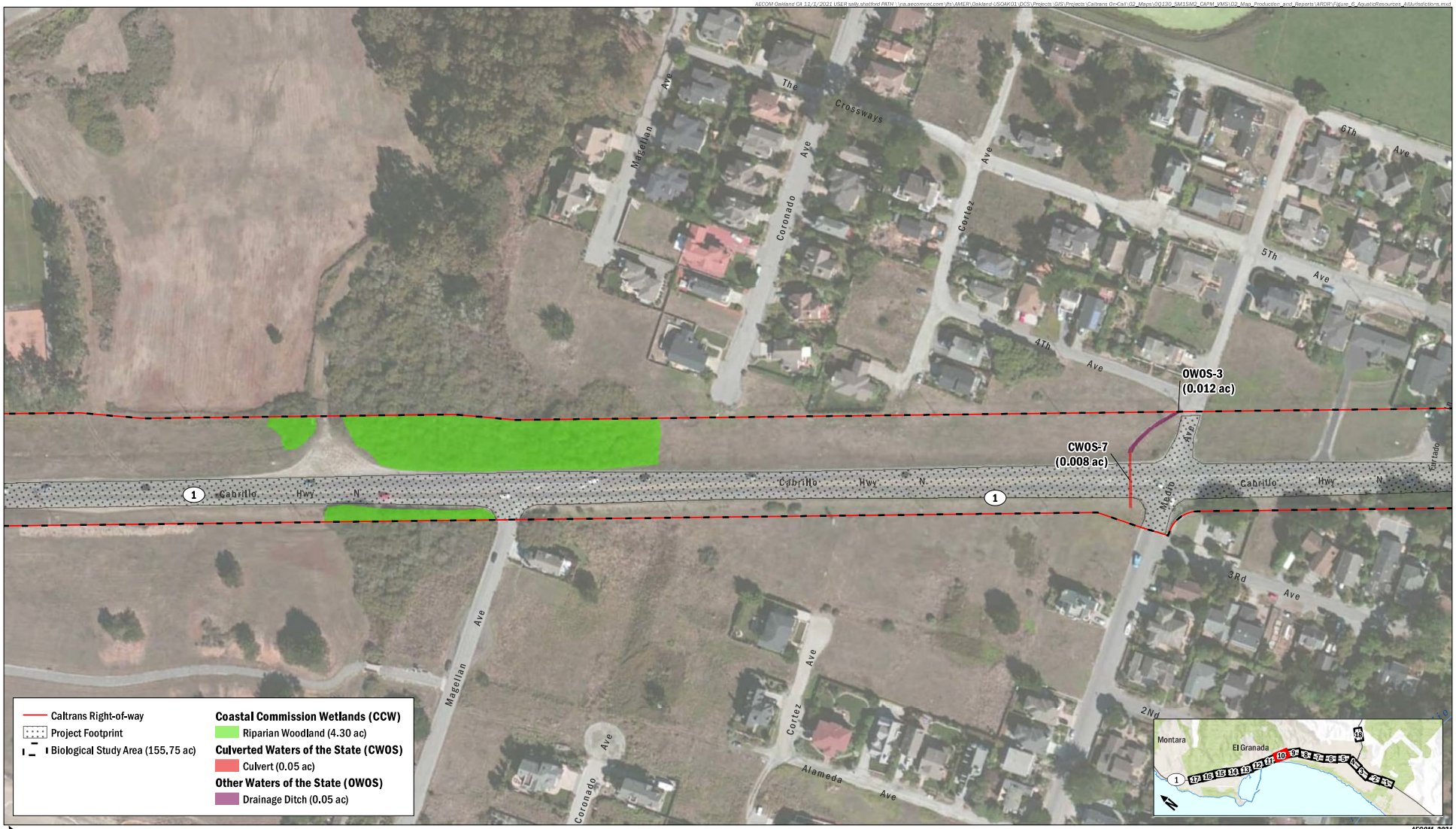

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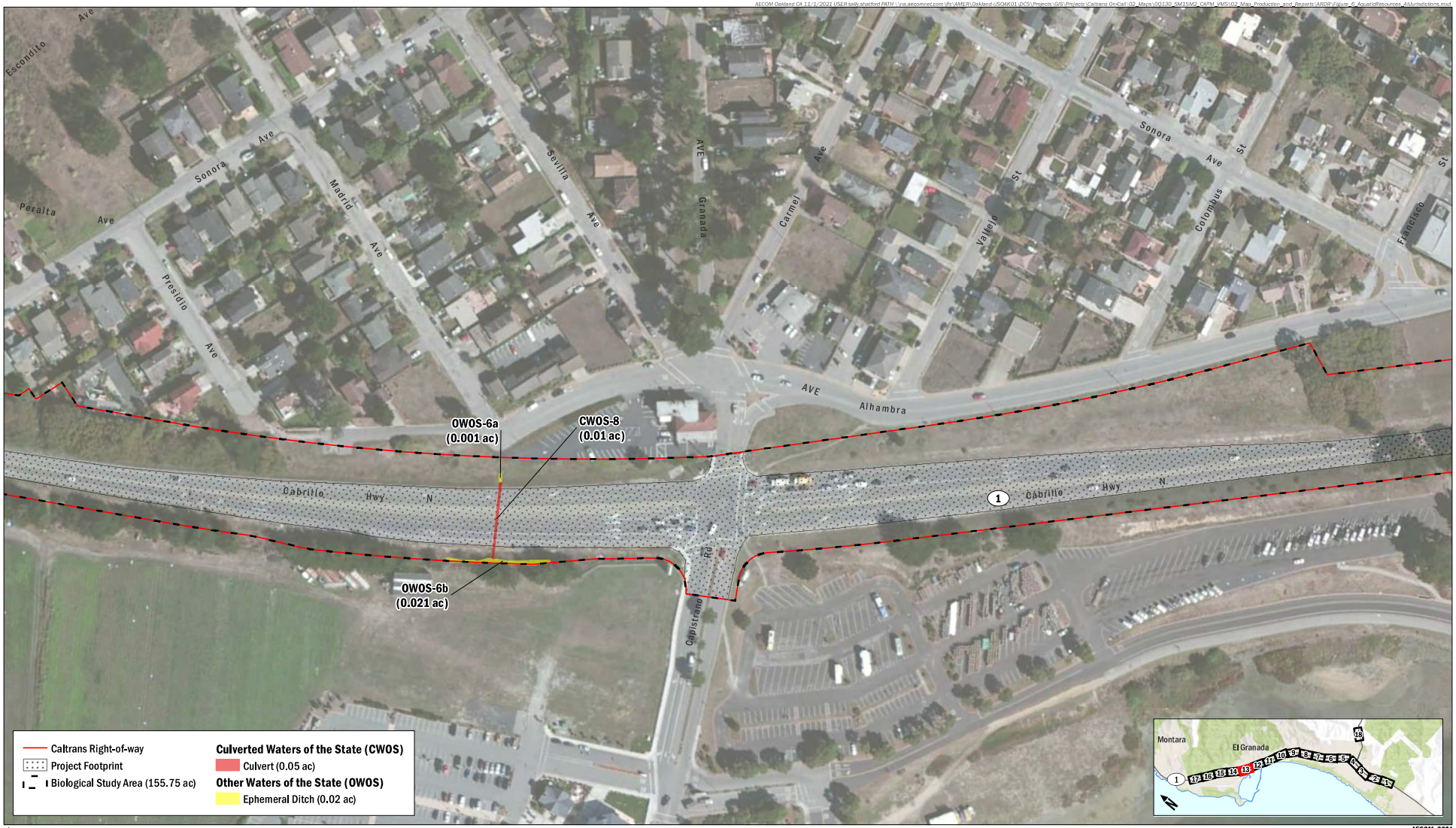

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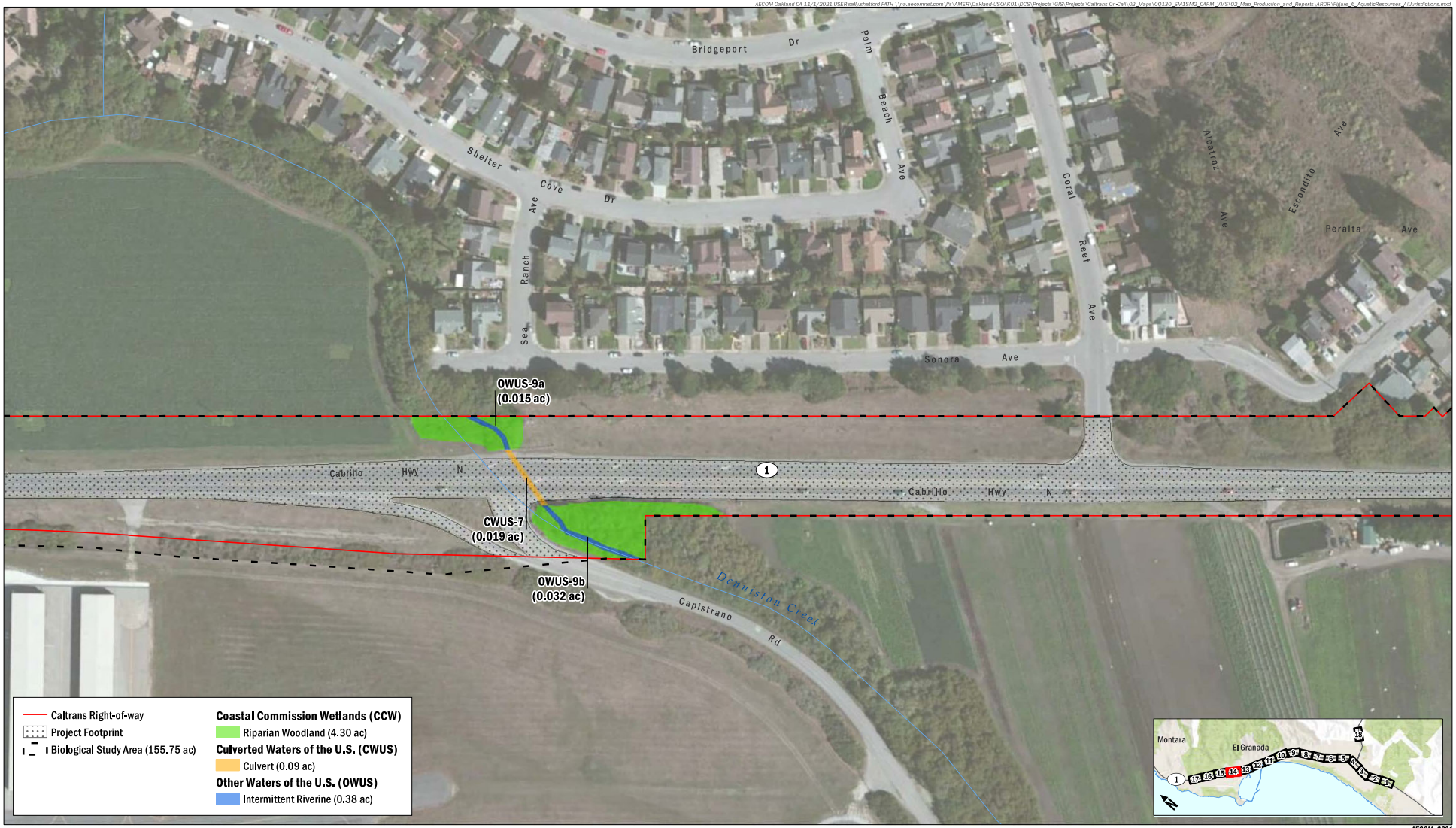

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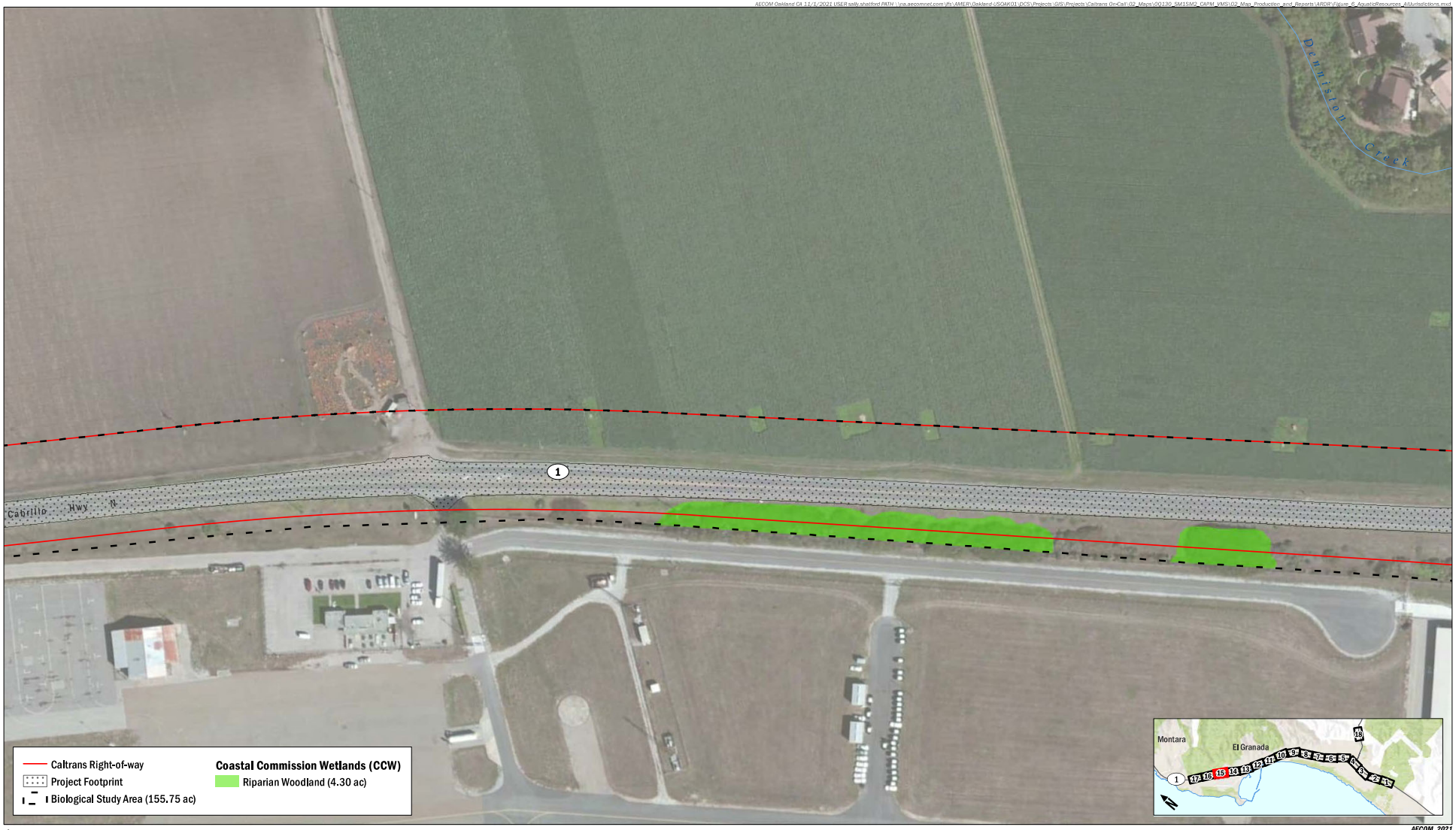

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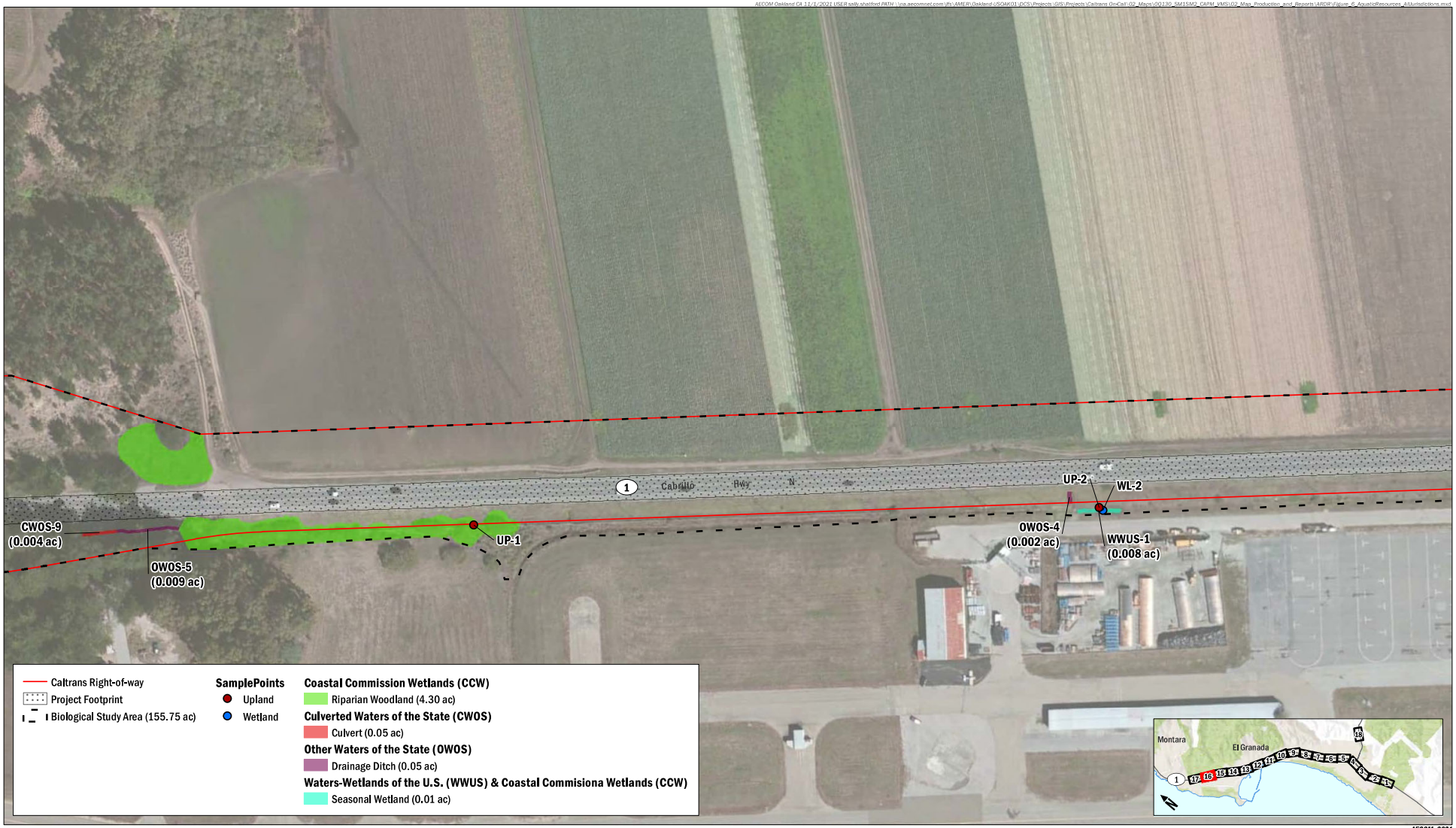

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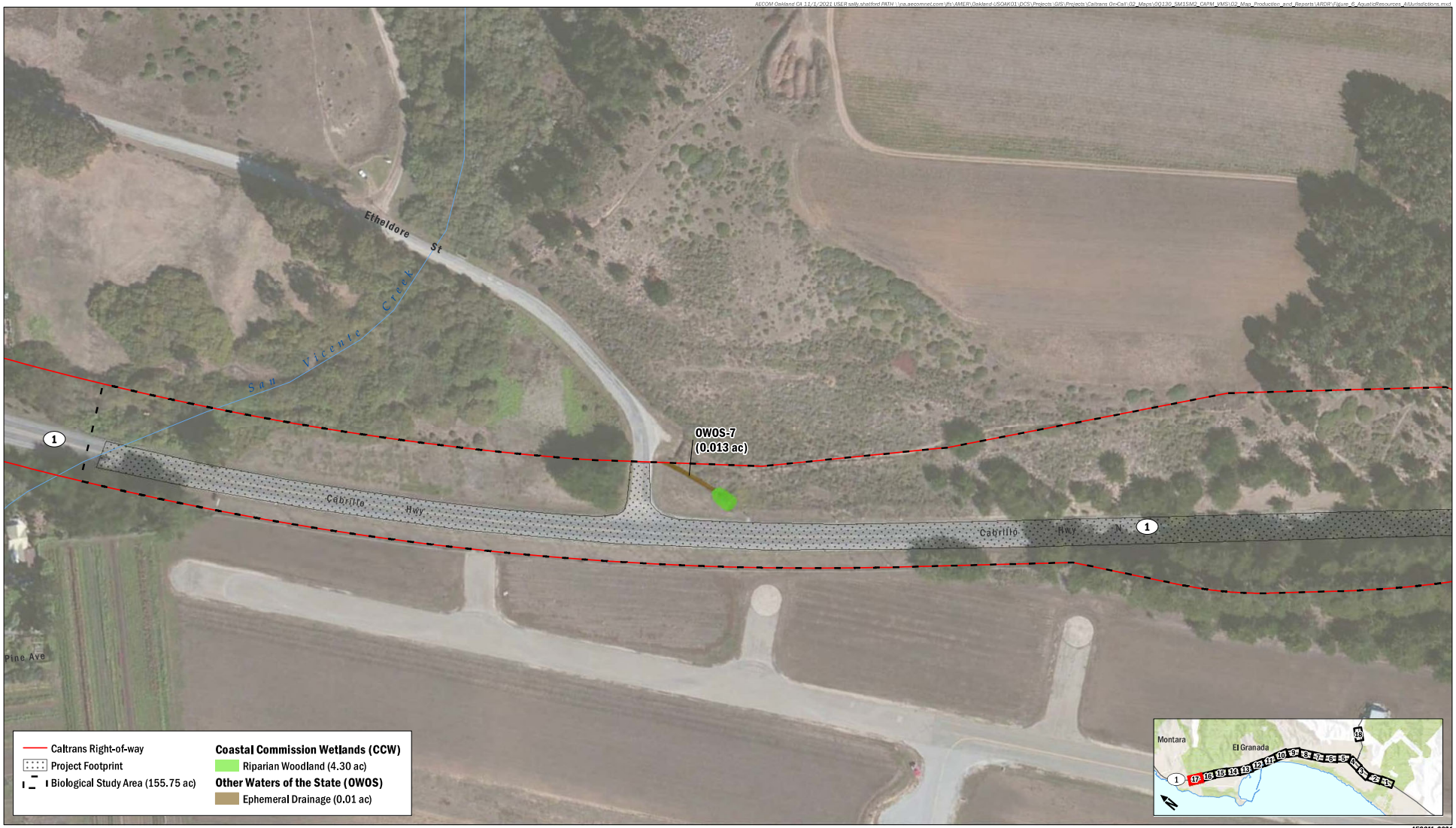

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FIGURE 6

Wetlands and Waters of the United States, Waters of the State, and Coastal Commission Wetlands

2.3 Limitations that May Influence Results

All surface waters that were exposed and observable were surveyed and delineated. For select locations that had especially dense vegetation, contained poison oak, or were near cliffs and unsafe slopes, the waters were mapped digitally from a safer location with visibility of the feature. The digitally mapped features were further refined from topography data and aerial imagery. Culverts were mapped based on culvert entrances/exits that were visible during the survey. The culverts were assumed to be in a straight line between culvert entrances/exits on either side of the highway. Many of the culvert entrances/exits were buried and difficult to locate, and some may have been overlooked because they were buried and not visible. There were no aquatic features that were not delineated due to lack of permission to enter, because the BSA covered only areas accessible in the Caltrans ROW. Because underground culverts were inaccessible, they could not be sized accurately; therefore, the approximate acreages occupied by these underground features were not estimated. Length in feet is recorded for these underground features.

As described further in Chapter 1, the climate conditions for the BSA have been drier than normal for the past couple of years, leading to drought conditions in the area. These dry conditions are likely to have had an effect on observed conditions during the field surveys. Nonetheless, field surveys were supplemented with desktop review datasets, and indicators were observed and assessed taking into account the drier than normal conditions.

Chapter 3: Results

3.1 Potential Jurisdictional Wetlands and Waters of the United States

Potential jurisdictional WOTUS in the BSA include perennial drainages, intermittent drainages, and wetlands that were delineated through the desktop and field methods described previously in Chapter 2. The estimated areas and lengths of the delineated potential jurisdictional WOTUS are listed in Table 4 and shown on Figure 5. All estimates of resources presented in this report are subject to change pending USACE official review and final jurisdictional determination.

The total area of potential WOTUS delineated in the BSA is 0.448 acre. Of this area, 0.439 acre is potential OWUS, and 0.009 acre is potential wetlands.

Table 4 summarizes the area and length of each potential jurisdictional WOTUS delineated in the BSA. Wetland features are identified by the water feature in which they are found, where applicable. All potential WOTUS are mapped in Figure 5.

3.1.1 Perennial, Ephemeral, and Intermittent Other Waters

The BSA contains perennial, intermittent, and ephemeral drainages that span SR 1 and are delineated as OWUS. The OWUS drainages are described below.

Pilarcitos Creek (OWUS-1): This perennial stream crosses SR 1 under a two-span bridge.

Unnamed Ephemeral Creek (OWUS-2): This ephemeral creek flows north directly to Pilarcitos Creek (OWUS-1).

Unnamed Ephemeral Creek (OWUS-3a): This ephemeral creek flows south into a culvert (CWUS-1).

Unnamed Ephemeral Creek (OWUS-3b): This ephemeral creek flows south from CWUS-1 to Pilarcitos Creek (OWUS-1).

Frenchman's Creek (OWUS-4a): This intermittent creek flows west to SR 1, at which point it enters a culvert (CWUS-3). OWUS-4a is surrounded by an arroyo willow riparian woodland.

Frenchman's Creek (OWUS-4b): This intermittent creek flows west from SR 1 (CWUS-3) toward the Pacific Ocean. The creek is surrounded by a willow and elderberry riparian woodland.

Unnamed Intermittent Creek (OWUS-5): This intermittent creek flows northwest under the pedestrian/bike path bridge to a culvert beneath SR 1 (CWUS-4).

Table 4 Potentially Jurisdictional Waters of the United States in the Biological Study Area

Feature Type	Length (feet)	Delineated Area (acres[1])	Cowardin Type	Figure 5 Map Page Number
OWUS-1 Pilarcitos Creek	238	0.259	R2UB2	4
OWUS-2 Ephemeral Drainage to Pilarcitos Creek	135	0.015	R6	4
OWUS-3a Ephemeral Drainage to Pilarcitos Creek	122	0.021	R6	4
OWUS-3b Ephemeral Drainage to Pilarcitos Creek	18	0.003	R6	4
OWUS-4a Frenchman's (Intermittent) Creek (Upstream of SR 1)	109	0.027	R4SB4	7
OWUS-4b Frenchman's (Intermittent) Creek (Downstream of SR 1)	44	0.010	R4SB4	7
OWUS-5 Unnamed Intermittent Creek	120	0.025	R4SB5	8
OWUS-6a Unnamed Intermittent Creek (Upstream of SR 1)	92	0.008	R4SB7	9
OWUS-6b Unnamed Intermittent Creek (Downstream of SR 1)	12	0.001	R4SB7	9
OWUS-7a Arroyo de en Medio (Intermittent) Creek (Upstream of SR 1)	72	0.009	R4SB7	9
OWUS-7b Arroyo de en Medio (Intermittent) Creek (Downstream of SR 1)	29	0.003	R4SB7	9
OWUS-8 Unnamed Ephemeral Creek	76	0.009	R6	12
OWUS-9a Denniston (Intermittent) Creek (Upstream of SR 1)	89	0.015	R4SB5	14
OWUS-9b Denniston (Intermittent) Creek (Downstream of SR 1)	185	0.032	R4SB5	14
Subtotal OWUS	**1,338**	**0.439**	**—**	**—**
WWUS-1 Seasonal Freshwater Wetland Western Rush Marsh	71	0.008	PEM2	16
WWUS-2 Instream Freshwater Wetland-Water Parsley Marsh	15	0.001	R2EM	9
Subtotal WWUS	**86**	**0.009**	**—**	**—**
Total Potential WOTUS (OWUS + WWUS)	**1,424**	**0.448**	**—**	**—**

Notes:

1. Acres are rounded to the nearest thousandth of an acre.

OWUS = other waters of the United States
SR = State Route
WOTUS = waters of the United States
WWUS = wetland waters of the United States

Source: AECOM Field Surveys 2021

Unnamed Intermittent Creek (OWUS-6a): This intermittent creek flows west to SR 1 (CWUS-5) and is surrounded by an arroyo willow riparian woodland.

Unnamed Intermittent Creek (OWUS-6b): This intermittent creek flows west from the instream wetland (WWUS-2) toward the Pacific Ocean and is surrounded by a willow riparian woodland.

Arroyo de en Medio Creek (OWUS-7a): This intermittent creek flows west and crosses under SR 1 (CWUS-6). It is surrounded by willow/elderberry riparian woodland.

Arroyo de en Medio Creek (OWUS-7b): This intermittent creek flows west from CWUS-6 toward the Pacific Ocean. The creek is surrounded by willow/dogwood riparian woodland.

Unnamed Ephemeral Creek (OWUS-8): This ephemeral creek flows west and enters a culvert under SR 1 (CWUS-8).

Denniston Creek (OWUS-9a): This intermittent creek flows west and enters a culvert under SR 1 (CWUS-9). It is surrounded by a willow riparian woodland.

Denniston Creek (OWUS-9b): This intermittent creek flows west from CWUS-9 toward the Pacific Ocean and is surrounded by a willow riparian woodland.

3.1.2 Wetlands

Seasonal Freshwater Wetland-Western Rush Marsh (WWUS-1): This wetland (0.008 acre, 344 square feet) occurs in a drainage ditch along the southbound side of SR 1. The wetland is dominated by western rush (*Juncus patens*) and nutsedge (*Cyperus eragrostis*), which are two FACW plant species; it also includes curly dock (*Rumex crispus*), willow dock (*Rumex salicifolius*), saltgrass (*Distichlis spicata*), and Bristly ox-tongue, which are FACW or FAC plant species.

Instream Freshwater Wetland-Water Parsley Marsh (WWUS-2): This instream wetland (0.001 acre, 57 square feet) occurs between the culvert (CWUS-5) and the willow riparian woodland of the unnamed intermittent creek flowing west toward the Pacific Ocean. This wetland is dominated by water parsley (*Oenanthe sarmentosa*), dotted smartweed (*Persicaria punctata*), watercress (*Nasturtium officinale*), and stinging nettle (*Urtica dioica*). Most of the dominant plants are OBL.

3.2 Culverted Waters

The BSA contains 576 linear feet of culverts or other engineered structures that are either culverted throughout the length of the BSA or were inaccessible due to highway/ roadway infrastructure in the BSA. The entrances/exits of the culverts were mapped in the field, and then the assumed culvert location was digitized to connect between the culvert openings. The features convey potentially jurisdictional WOTUS and are therefore potentially jurisdictional. Table 5 provides the lengths of the potentially jurisdictional CWUS in the BSA that were not delineated. All CWUS in the BSA are shown on the maps in Figure 5.

Table 5 Culverted Waters of the United States in the Biological Study Area

Feature Type	Length (feet)[1]	Figure 5 Map Page Number
CWUS-1 Culverted Waters	11	4
CWUS-2 Culverted Waters	146	7
CWUS-3 Culverted Waters	84	8
CWUS-4 Culverted Waters	44	9
CWUS-5 Culverted Waters	93	9
CWUS-6 Culverted Waters	86	12
CWUS-7 Culverted Waters	112	14
Total Potential CWUS	576	—

Notes:

1. The length in linear feet for each feature was estimated based on aerial maps and the NHD.

CWUS = culverted waters of the United States

Source: AECOM Field Survey 2021

3.3 Potential Coastal Commission Wetlands and Other Waters of the State

There were 4.300 acres of potential coastal commission wetlands delineated in the BSA, in addition to the jurisdictional wetlands and OWUS, which are also considered coastal commission wetlands. These wetlands occur in areas that were found to be dominated by willows and riparian vegetation but lacked one of the three parameters required to be a USACE jurisdictional wetland. Figure 6 shows the potential coastal commission wetlands in the BSA that were delineated. Table 6 provides the total area of potential wetlands and riparian areas subject to CCC jurisdiction in the BSA that were delineated.

Table 6 Coastal Commission Wetlands in the Biological Study Area

Feature Type	Delineated Area (acres[2])	Figure 6 Map Page Numbers
Coastal Commission Wetlands/Riparian Woodland	4.300	4, 7, 9, 10, 14, 15, 16, 17

The BSA contains another 841 linear feet of culverts that do not potentially convey jurisdictional WOTUS, but potentially convey WOS. These culverts are generally connected to drainage ditches, swales, or drain low spots in a relatively flat plain. Drainage ditches that do not have a requisite bed and bank and are man-made stormwater features are delineated as OWUS. Table 7 provides the potential CWOS in the BSA that were delineated, and Table 8 provides the potential OWOS in the BSA that were delineated. Figure 6 shows the potential CWOS and OWOS in the BSA that were delineated.

Table 7 Culverted Waters of the State in the Biological Study Area

Feature Type	Length (feet)[1]	Figure 6 Map Page Number (s)
CWOS-1 Culverted Waters	80	2
CWOS-2 Culverted Waters	80	2
CWOS-3 Culverted Waters	112	2, 3
CWOS-4 Culverted Waters	82	3
CWOS-5 Culverted Waters	152	5
CWOS-6 Culverted Waters	69	6
CWOS-7 Culverted Waters	89	10
CWOS-8 Culverted Waters	122	13
CWOS-9 Culverted Waters	55	16
Total Potential Culverted Waters of the State	**841**	**—**

Notes:

1. The length in linear feet for each feature was measured from one culvert opening to the next opening.

CWOS = culverted waters of the State

Source: AECOM Field Survey 2021

Table 8 Other Waters of the State in the Biological Study Area

Feature Type	Length (feet)[1]	Delineated Area (acres[2])	Figure 6 Map Page Number
OWOS-1a Drainage Ditch	121	0.012	6
OWOS-1b Drainage Ditch	49	0.007	6
OWOS-2 Drainage Ditch	94	0.009	9
OWOS-3 Drainage Ditch	105	0.012	10
OWOS-4 Drainage Ditch	18	0.002	16
OWOS-5 Drainage Ditch	102	0.009	16
OWOS-6a Drainage Ditch	14	0.001	13
OWOS-6b Drainage Ditch	169	0.021	13
OWOS-7 Drainage Ditch	97	0.013	17
Total Potential Other Waters of the State	**769**	**0.086**	**—**

Notes:

1. Linear feet are rounded to the nearest foot
2. Acres are rounded to the nearest thousandth of an acre.

OWOS = other waters of the State

Source: AECOM Field Survey 2021

Chapter 4: Summary of Findings

Approximately 4.834 acres of aquatic resources were delineated for the Project. Of those aquatic resources, 0.448 acre was delineated as WOTUS. This included wetlands and other waters delineated that are potentially subject to USACE jurisdiction under CWA Section 404, but also jurisdictional to the state agencies. Approximately 4.386 acres of these aquatic resources are not likely subject to USACE jurisdiction, but are expected to be subject to the jurisdiction of CCC, RWQCB, and/or CDFW. Approximately 576 linear feet of CWUS and 841 linear feet of CWOS were also delineated and mapped only in linear feet and not acreage. Table 9 and Table 10 summarize the delineated aquatic resources in the Project BSA and lists the federal and state agencies that may have jurisdiction over these features.

Table 9 Jurisdictional Status of Aquatic Resources in Waters of the United States in the Biological Study Area

Feature Type	Federal and State Agencies with Jurisdiction	Potential Applicable Federal and State Laws	Length (feet)[1]	Delineated Area (acres)[2]
WWUS	USACE, RWQCB, CCC	CWA Sections 404 and 401; CCA	86	0.009
OWUS	USACE, RWQCB, CDFW, CCC	CWA Sections 404 and 401; CCA, FGC 1602	1,338	0.439
CWUS	USACE, RWQCB, CDFW	CWA Sections 404 and 401; CCA, FGC 1602	576	--
Total WOTUS			**2,000**	**0.448**

Notes:

1. Linear feet are rounded to the nearest foot.
2. Acres are rounded to the nearest thousandth of an acre.

CCA = Coastal Commission Act
CCC = California Coastal Commission
CDFW = California Department of Fish and Wildlife
CWA = Clean Water Act
CWUS = culverted waters of the United States
FGC = Fish and Game Code
OWUS = other waters of the United States
RWQCB = Regional Water Quality Control Board
USACE = United States Army Corps of Engineers
WOTUS = waters of the United States
WWUS = wetlands of the United States

Table 10 Jurisdictional Status of Aquatic Resources in Waters of the State in the Biological Study Area

Feature Type	Federal and State Agencies with Jurisdiction	Potential Applicable Federal and State Laws	Length (feet)[1]	Delineated Area (acres)[2]
CCW/Riparian Woodlands[3]	CCC, RWQCB, CDFW	CCA, FGC 1602	—	4.30
OWOS	RWQCB	PCA	769	0.086
CWOS	RWQCB	PCA	841	—
Total waters of the State (includes WOTUS)			**3,610**	**4.834**

Notes:

1. Linear feet are rounded to the nearest foot.
2. Acres are rounded to the nearest thousandth of an acre.
3. For this delineation, all CCW (non-WOTUS) also happened to occur in riparian woodlands. Because they had a predominance of hydrophytic vegetation, the riparian woodlands had at least one-parameter to constitute a CCW, and also are under the jurisdiction of RWQCB and CDFW.

CCA = Coastal Commission Act
CCC = California Coastal Commission
CCW = Coastal Commission Wetland
CDFW = California Department of Fish and Wildlife
CWOS = culverted waters of the State
FGC = Fish and Game Code
OWOS = other waters of the State
PCA = Porter-Cologne Act
RWQCB = Regional Water Quality Control Board
WOTUS = waters of the United States

Chapter 5: References

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Appendix A – Photographs of Representative Wetlands and Waters in the Biological Study Area

SR 1 Field Survey Photographs

Pilarcitos Creek (Photographs taken during reconnaissance survey on December 4, 2019)

Photograph 1: Pilarcitos Creek (OWUS-1) under SR 1 southbound bridge.

Photograph 2: Pilarcitos Creek (OWUS-1) facing the SR 1 northbound bridge.

Photograph 3: Pilarcitos Creek (OWUS-1) under the SR 1 northbound bridge.

Photograph 4: Pilarcitos Creek (OWUS-1) upstream of the SR 1 northbound bridge.

Photograph 5. View of Pilarcitos Creek (OWUS-1) from SR 1 median.

Photographs 6 and 7: Riparian corridor for Frenchman's Creek (OWUS-4a) upstream of SR 1

Photograph 8: Looking down at Frenchman's Creek (OWUS-4a) from SR 1

Photograph 9: Looking downstream at riparian corridor of Frenchman's Creek (OWUS-4b) from the bike path

Photograph 10: Looking downstream at riparian corridor of Frenchman's Creek (OWUS-4b) from the bike path

Photographs 11 and 12: Unnamed Intermittent Creek (OWUS-5) on east side of SR 1.

Photograph 13: Double culvert (CWUS-3) for Unnamed Intermittent Creek (OWUS-5) on east side of SR 1.

Photographs 14 and 15: Unnamed intermittent creek (OWUS-6a) east of SR 1 surrounded by willow thicket.

Photograph 17: Culvert (CWUS-4) for unnamed intermittent creek west of SR 1


Photographs 18 and 19: Instream wetland (WWUS-2) dominated by water parsley (*Oenanthe sarmentosa*) and dotted smartweed (*Persicaria punctata*).

Arroyo de en Medio Creek


Photographs 20 and 21: Arroyo de en Medio intermittent creek (OWUS-7a) upstream of SR 1.


Photographs 22 and 23: Culvert (CWUS- 5) for Arroyo de en Medio Creek (upstream side).


Photographs 24 and 25: Culvert (CWUS- 5) for Arroyo de en Medio Creek (downstream side).

Photographs 26 and 27: Arroyo de en Medio intermittent creek (OWUS-7b) downstream of SR 1.

Ephemeral Creek (OWUS-8)

Photographs 28 and 29: Ephemeral creek (OWUS-8) leading to cross culvert (CWUS-6) under SR 1.

Denniston Creek (OWUS-9a, OWUS-9b)

Photographs 30 and 31: Willow riparian of Denniston Creek (OWUS-9a) east of SR 1.

Photograph 32: Streambed of Denniston Creek (OWUS-9b) next to the culvert (CWUS-7) headwall.

Photograph 33: Willow riparian of Denniston Creek (OWUS-9b) next to the guardrail of SR 1.

Photographs 34 and 35: Depressional freshwater wetland (WWUS-1) in roadside ditch area.

Appendix B – Western Mountains, Valleys, and Coast Datasheet Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: SM-1 OQ130 City/County: San Mateo (Half Moon Bay) Sampling Date: 9/7/21

Applicant/Owner: Caltrans State: CA Sampling Point: WET UP-1

Investigator(s): Joe Bundel, Danny Slatey Section, Township, Range: T5S, R5W

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): A: Northwest Forest + Coast Lat: 37.51767 Long: -122.501 Datum: NAD83

Soil Map Unit Name: DcA Denison clay loam, nearly level 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 X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m x 5m)			
1. Salix lasiolepis	~~90~~	Y	FACW
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Frangula californica	5	N	UPL
2. Rubus ursinus	30	Y	FACU
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus patens	8	~~N~~	FACW
2. Carex f. subbracteata	3	N	FACW
3. ~~Holcus lanatus~~			
4. Cortaderia jubata	~~25~~	N	FACU
5. Symphotrichum chilense	8	Y	FAC
6. "FREESIA"	3	N	UPL
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ~40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ~~4~~ 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ~~100~~ 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	
FACW species ~~100~~	x 2 =	200
FAC species 8	x 3 =	24
FACU species 35	x 4 =	140
UPL species 3	x 5 =	15
Column Totals: 146 (A)		379 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ 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:

SOIL

Sampling Point: VP-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
0-16	7.5YR 3/2	100					Loamy 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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

Remarks: Matrix was uniform throughout. There were no redox concentrations or soft mass pore linings. The color was not quite dark enough to be a depleted matrix. The value & chroma were not there.

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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 X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The wetland hydrology indicators were not readily apparent. Due to the geomorphic position of the area and the prevalence of hydrophytes this area, is sufficient for hydrology.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Hwy 1 OQ130 City/County: Half Moon Bay/San Mateo Sampling Date: 9/7/2021
Applicant/Owner: Caltrans State: CA Sampling Point: WL2
Investigator(s): Joe Bandel, Danny Slakey Section, Township, Range: T5S, R5W
Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): concave Slope (%): 5% (banks)
Subregion (LRR): A: Northwest Forest Coast Lat: 37.51609 Long: -122.498 Datum: NAD 83
Soil Map Unit Name: DcA Denison clay loam, nearly level 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 2m x 20m)			
1. Rumex salicifolius	8	N	FACW
2. Rumex crispus	3	N	FAC
3. Cyperus eragrostis	10	Y	FACW
4. Juncus patens	15	Y	FACW
5. Symphyotrichum chilense	2	N	FAC
6. Hemizonia fitchii	4	N	FAC
7. Festuca perennis	1	N	UPL
8. Distichlis spicata	1	N	FACW
9. Epilobium ciliatum ssp. densiflorum	0.5	N	FAC
10.			
11.			
	44.5 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 55.5

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 0	x 1 = 0
FACW species 33	x 2 = 66
FAC species 9.5	x 3 = 28.5
FACU species 0	x 4 = 0
UPL species 1	x 5 = 5
Column Totals: 43.5 (A)	99.5 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ 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:

SOIL

Sampling Point: WL-2

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
0-4	10YR62	100					clay	
4-8	10YR33	100					loamy clay	
8-12	10YR52	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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: The first layer 0-4 inches has a chroma of 2 or less and is a minimum of 2 inches thick. Therefore it is a depleted matrix

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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 X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Evident surface soil cracks + a sparsely vegetated concave surface were observed

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: QQ130 HWY 1 City/County: Half Moon Bay / San Mateo Sampling Date: 9/7/2021
Applicant/Owner: Caltrans State: CA Sampling Point: UP2
Investigator(s): Joe Bandel, Danny Slakey Section, Township, Range: T5S, R5W
Landform (hillslope, terrace, etc.): roadside slope Local relief (concave, convex, none): flat slope Slope (%): 3%
Subregion (LRR): A: Northwest Forest + Coast Lat: 37.51611 Long: -122.498 Datum: WGS 83
Soil Map Unit Name: DcA Denison clay loam, nearly level 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m x 20m)			
1. Baccharis pilularis	10	Y	UPL
2. Frangula californica	3	N	UPL
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5m x 20m)			
1. Avena barbata	40	Y	UPL
2. Hirschfeldia incana	10	Y	UPL
3. Festuca perennis	20	Y	UPL
4. Helminthotheca echioides	3	N	FAC
5. Rumex salicifolius	2	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 12

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 = 0
FACW species 2	x 2 = 4
FAC species 3	x 3 = 9
FACU species 0	x 4 = 0
UPL species 93	x 5 = 465
Column Totals: 98 (A)	478 (B)

Prevalence Index = B/A = 4.88

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ 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:

SOIL

Sampling Point: UP-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	10YR52	100					Sandy loam	
4-12	10YR42	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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

Remarks: No signs of 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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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 signs of hydrology present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Hwy 1 00130 City/County: Half Moon Bay / San Mateo Sampling Date: 9/15/21
Applicant/Owner: Caltrans State: CA Sampling Point: WL3
Investigator(s): Joe Bandel, Danny Skeen Section, Township, Range: T5S, R5W
Landform (hillslope, terrace, etc.): depressional on pitch Local relief (concave, convex, none): Concave Slope (%): ?
Subregion (LRR): Northwest Forest + Coast A Lat: 37.49172 Long: -122.452 Datum: NAD 83
Soil Map Unit Name: FcB Farallone coarse sandy loam, gently sloping NWI classification: Freshwater Shrub wetland
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:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____) None			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. ~~Rubus ursinus~~	2	N	
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 3m x 3m)			
1. Persicaria punctata	22	Y	OBL
2. Oenanthe sarmentosa	10	Y	OBL
3. Nasturtium officinale	10	Y	OBL
4. Lemna sp.	<1	N	OBL
5. Conium maculatum	5	N	FACW
6. Urtica dioica	10	Y	FAC
7. Tropaeolum majus	2	N	UPL
8. Epilobium ciliatum	1	N	FACW
9. Cyperus eragrostis	1	N	FACW
10. ~~Rubus ursinus~~	2		
11.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 3x3m)			
1. Rubus ursinus	2	N	FAC
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ~~3~~ 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	42	x 1 = 42
FACW species	7	x 2 = 14
FAC species	~~10~~ 12	x 3 = 36
FACU species		x 4 =
UPL species	2	x 5 = 10
Column Totals:	63 (A)	~~96~~ 102 (B)

Prevalence Index = B/A = ~~1.52~~ 1.62

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ 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:

SOIL

Sampling Point: WL3

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 loam~~ loamy sand	very high organic muck
4-16	10YR4/3	100					~~Sandy~~ 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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: High percentage of muck material in top 4 inches in sandy soils. Qualifies as a Sandy Muck Mineral (S1) hydric soil indicator.

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- X Other (Explain in Remarks) ~~Semi-Sat~~

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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 X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Other hydro indicators: Semi-saturated sandy soil. Live Lemna plants on soil surface indicate recent surface water. Passes FAC-Neutral Test and maintains a low spot where water drains.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: OQ138 Hwy 1 City/County: Half Moon Bay / San Mateo Sampling Date: 9/15/21
Applicant/Owner: Caltrans State: CA Sampling Point: UP3
Investigator(s): Joe Bartel, Danny Slakey Section, Township, Range: T5S, R5W
Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): Convex Slope (%): 2
Subregion (LRR): A: Northwest Forest+Coast Lat: 37.49173 Long: -122.452 Datum: NAD 83
Soil Map Unit Name: Fch Farallone coarse sandy loam, gently sloping 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 X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 2m x 3m)			
1. Ehrharta erecta	25	Y	UPL
2. Rumex crispus	1	N	FAC
3. Lactuca serriola	1	N	FACU
4. Malva sp.	1	N	UPL
5. Hirschfeldia incana	1	N	UPL
6. Erigeron glaucus	3	N	FACU
7. Sonchus asper	1	N	FACU
8. Fumaria capreolata	1	N	UPL
9. Festuca perennis	1	N	UPL
10.			
11.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum ____			

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 0	x 1 = 0
FACW species 0	x 2 = 0
FAC species 1	x 3 = 3
FACU species 3	x 4 = 12
UPL species 29	x 5 = 145
Column Totals: 33 (A)	159 (B)

Prevalence Index = B/A = 4.85

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ 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: Predominance of Upland Plants

SOIL

Sampling Point: UP3

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 4/3						Loam	
9-16	10YR 4/2						Silty 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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

Remarks: No hydric soil indicator 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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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 signs or indicators of hydrology present

Appendix C – Plant List

Scientific Name	Common Name	Native Status	WMVC Wetland Rating[1]	Cal-IPC Rating[2]
Acacia melanoxylon	blackwood acacia	nonnative		Limited
Agapanthus africanus	lily of the Nile	nonnative		
Albizia julibrissin	silktree	nonnative		
Aloe sp.[3]	unknown aloe	nonnative		
Amaranthus powellii	Powell's amaranth	native		
Amaryllis belladonna	naked lady	nonnative		
Apiaceae sp.[4]	unknown carrot family	unknown		
Artemisia californica	coastal sage brush	native		
Artemisia douglasiana	California mugwort	native	FACW	
Atriplex prostrata	fat-hen	nonnative	FAC	
Baccharis pilularis	coyote brush	native		
Brassica nigra	black mustard	nonnative		Moderate
Brassica oleracea	cabbage	nonnative		
Bromus catharticus	rescue grass	nonnative		
Bromus madritensis	foxtail chess	nonnative	FACU	
Capsella bursa-pastoris	shepherd's purse	nonnative	FACU	
Cardamine oligosperma	Idaho bittercress	native	FAC	
Carduus pycnocephalus	Italian thistle	nonnative		Moderate
Carex subbracteata	small bract sedge	native	FACW	
Carpobrotus edulis	iceplant	nonnative		High
Ceanothus sp.[3,4]	unknown California lilac	native		
Chasmanthe floribunda	chasmanthe	nonnative		
Chenopodium album	lambs quarters	nonnative	FACU	
Cirsium vulgare	bullthistle	nonnative	FACU	Moderate
Conium maculatum	poison hemlock	nonnative	FAC	Moderate
Convolvulus arvensis	field bindweed	nonnative		
Cornus sericea	American dogwood	native		
Cortaderia jubata	Andean pampas grass	nonnative	FACU	High
Cotoneaster franchetii	cotoneaster	nonnative		Moderate
Cynodon dactylon	Bermuda grass	nonnative	FACU	Moderate
Cynosurus echinatus	dogtail grass	nonnative		Moderate
Cyperus eragrostis	tall cyperus	native	FACW	
Daucus carota	carrot	nonnative	FACU	
Delairea odorata	cape ivy	nonnative		High
Dipsacus sativus	indian teasel	nonnative		Moderate
Distichlis spicata	salt grass	native	FACW	

Scientific Name	Common Name	Native Status	WMVC Wetland Rating[1]	Cal-IPC Rating[2]
Ehrharta erecta	upright veldt grass	nonnative		Moderate
Epilobium canum	California fuchsia, zauschneria	native		
Epilobium ciliatum	slender willow herb	native	FACW	
Epilobium densiflorum	willow herb	native	FACW	
Equisetum arvense	common horsetail	native	FAC	
Erigeron glaucus	seaside daisy	native	FACU	
Erigeron sumatrensis	tropical horseweed	nonnative		
Eschscholzia californica	California poppy	native		
Eucalyptus globulus	blue gum	nonnative		Limited
Euthamia occidentalis	western goldenrod	native	FACW	
Festuca bromoides	brome fescue	nonnative		
Festuca perennis	Italian rye grass	nonnative		Moderate
Foeniculum vulgare	fennel	nonnative		Moderate
Fragaria chiloensis	beach strawberry	native	FACU	
Frangula californica	California coffeeberry	native		
Fumaria capreolata	white ramping fumitory	nonnative		
Geranium core-core	Alderney crane's-bill	nonnative		
Geranium dissectum	wild geranium	nonnative		Limited
Geranium robertianum	Robert’s geranium	nonnative	FACU	
Glebionis coronaria	crown daisy	nonnative		Limited
Grindelia stricta var. *platyphylla*	gumplant	native	FACW	
Hedera helix	English ivy	nonnative	FACU	High
Hesperocyparis macrocarpa[5]	Monterey cypress	nonnative		
Hirschfeldia incana	mustard	nonnative		Moderate
Holcus lanatus	common velvetgrass	nonnative	FAC	Moderate
Hypochaeris radicata	hairy cats ear	nonnative	FACU	Moderate
Ipomoea purpurea	common morning glory	nonnative	UPL	
Juncus hesperius	coast or bog rush	native		
Juncus patens	rush	native	FACW	
Lactuca serriola	prickly lettuce	nonnative	FACU	
Lemna minor	smaller duckweed	native	OBL	
Leptospermum laevigatum	Australian tea tree	nonnative		
Ligustrum lucidum	glossy privet	nonnative		Limited
Linum bienne	flax	nonnative		

Scientific Name	Common Name	Native Status	WMVC Wetland Rating[1]	Cal-IPC Rating[2]
Lobularia maritima	sweet alyssum	nonnative		Limited
Lotus corniculatus	bird's foot trefoil	nonnative	FAC	
Lupinus arboreus	coastal bush lupine	native		
Lythrum hyssopifolia	hyssop loosestrife	nonnative		
Madia sativa	coastal tarweed	native		
Malva sp.[4]	unknown mallow	unknown		
Matricaria discoidea	pineapple weed	native	FACU	
Mercurialis annua	annual mercury	nonnative		
Muhlenbergia rigens[3]	deergrass	native	UPL	
Myoporum laetum	ngaio tree	nonnative	UPL	Moderate
Nasturtium officinale	watercress	native	OBL	
Oenanthe sarmentosa	water parsley	native	OBL	
Oenothera elata ssp. hookeri	evening primrose	native	FACW	
Opuntia ficus-indica	tuna	nonnative		
Oxalis corniculata	creeping wood sorrel	nonnative	FACU	
Pennisetum clandestinum	Kikuyu grass	nonnative		Limited
Phacelia malvifolia	stinging phacelia	native		
Phachelia sp.[4]	unknown phaclia	native		
Phalaris aquatica	Harding grass	nonnative	FACU	Moderate
Pinus radiata[5]	Monterey pine	native		
Pinus sp.[4]	unknown pine	unknown		
Plantago coronopus	cut leaf plantain	nonnative	FAC	
Plantago lanceolata	ribwort	nonnative	FACU	Limited
Platanus racemosa	California sycamore	native	FACW	
Polygonum aviculare ssp. *depressum*	prostrate knotweed	nonnative	FAC	
Raphanus sativus	jointed charlock	nonnative		Limited
Rosa sp.[3]	ornamental rose	nonnative		
Rubus armeniacus	Himalayan blackberry	nonnative	FAC	High
Rubus ursinus	California blackberry	native	FACU	
Rumex acetosella	sheep sorrel	nonnative	FACU	Moderate
Rumex transitorius	willow dock	native	FACW	
Salix lasiolepis	arroyo willow	native	FACW	
Sambucus racemosa	red elderberry	native	FACU	
Scabiosa atropurpurea	pincushions	nonnative		Watch
Scirpus microcarpus	mountain bog bulrush	native	OBL	

Scientific Name	Common Name	Native Status	WMVC Wetland Rating[1]	Cal-IPC Rating[2]
Scrophularia californica	California bee plant	native	FAC	
Senecio vulgaris	common groundsel	nonnative	FACU	
Solanum sp. [4]	unknown nightshade	unknown		
Sonchus asper	spiny sowthistle	nonnative	FACU	
Stachys sp.[4]	unknown hedgenettle	native		
Symphyotrichum chilense	pacific aster	native	FAC	
Toxicodendron diversilobum	poison oak	native	FAC	
Tropaeolum majus	garden nasturtium	nonnative	UPL	
Urtica dioica	stinging nettle	native	FAC	
Vicia sativa	spring vetch	nonnative	UPL	
Viola sp.	unknown violet	unknown		
Woodwardia fimbriata	western chain fern	native	FACW	
Zantedeschia aethiopica	calla lily	nonnative	OBL	Limited

Notes:

[1] WMVC wetland rankings are defined as follows: WET (wetland obligate), FACW (faculative wetland), FAC (facultative upland), FACU (facultative upland), UPL (upland). Plants without a wetland indicator ranking are assumed to be upland species.

[2] Cal-IPC invasive plant rankings are defined as follows: High (species with severe ecological impacts), Moderate (substantial and apparent, but not severe, ecological impacts), Limited (minor ecological impacts, or information on them is limited), Watch (at a high risk of becoming invasive in the future).

[3] Ornamental landscape or cultivated agricultural crops.

[4] Plants that could not be identified to the species level, most due to not being in flower or fruit at the time of survey.

[5] Plants that are native to California but not native to San Mateo County; they are therefore considered nonnative in this report.