APPENDIX BR-1
Aquatic Resources Delineation Report

Sacramento Municipal Utility District
Oveja Ranch Solar Project

FINAL Aquatic Resource Delineation Report
September 2024

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Sacramento Municipal Utility District Oveja Ranch Solar Project

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September 2024

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Acronyms and Abbreviations

ac	acres
AD	Agricultural Ditch
APN	Assessor’s Parcel Number
BESS	Battery energy storage system
CFR	Code of Federal Regulation
CNPS	California Native Plant Society
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ES	Ephemeral Stream
FAC	Facultative
FACU	Facultative upland
FACW	Facultative wetland
FM	Freshwater Marsh
GNSS	Global Navigation Satellite System
HUC	Hydrological Unit Code
IS	Intermittent Stream
JFP	Jepson Flora Project
kV	Kilovolt
linear ft	linear feet
LRR-C	Land Resource Region subregion C (i.e., Mediterranean California)
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary High Water Mark
OW	Other Water (Reservoir)
project	Oveja Ranch Solar Project
PS	Perennial Stream
PV	photovoltaic
RD	Roadside Ditch
report	preliminary aquatic resource delineation report
RWQCB	Regional Water Quality Control Board
S	Swale
SMUD	Sacramento Municipal Utility District
sq ft	square feet
SW	Seasonal Wetland
SWRCB	State Water Resources Control Board

TNW	Traditional Navigable Water
UPL	Upland
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VP	Vernal Pool
WDR	Waste Discharge Requirement
WGS 84	World Geodetic System datum
WIS	Wetland Indicator Status
WOS	Waters of the State
WUS	Waters of the U.S.

Executive Summary

This report describes the methods and results of an aquatic resource delineation for federal and state potentially jurisdictional wetlands and waters in the study area for the proposed project. The delineation has been conducted in accordance with the following:

- Corps of Engineers Wetlands Delineation Manual (USACE 1987);
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0, USACE 2008);
- A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (Lichvar and McColley 2008)
- National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version (USACE 2022);
- State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021);

The aquatic resource delineation was conducted in January, February, May, and June 2024 and identified the following potentially jurisdictional wetlands and other waters in the 643-acre study area:

Aquatic Resources Summary Table

Aquatic Resource Type	Total Acres	Acres of Potential WUS	Acres of Potential WOS	Total Linear Feet	Linear Feet of Potential WUS	Linear Feet of Potential WOS
Other Waters						
Agricultural Ditch (AD)	6.480	0	0	23,123	0	0
Ephemeral Stream (ES)	0.106	0	0.106	380	0	380
Intermittent Stream (IS)	0.095	0.095	0.095	452	452	452
Other Waters/ Reservoir (OW)	2.851	0	0			
Perennial Stream (PS)	0.182	0.182	0.182	176	176	176
Roadside Ditch (RD)	0.964	0.003	0.003	21,680	53	53
Other Waters Grand Total	**10.678**	**0.280**	**0.386**	**45,811**	**681**	**1,061**
Wetlands						
Freshwater Marsh (FM)	1.412	0.188	0.856			
Swale (S)	0.078	0	0.078			
Seasonal Wetland (SW)	5.471	0.101	5.421			
Vernal Pool (VP)	1.279	0	1.29			
Wetlands Grand Total	**8.240**	**0.289**	**7.645**			

Notes:

AD	= Agricultural Ditch	OW	= Open Water	SW	= Seasonal Wetland
ES	= Ephemeral Stream	PS	= Perennial Stream	VP	= Vernal Pool
FM	= Freshwater Marsh	RD	= Roadside Ditch	WOS	= Waters of the State
IS	= Intermittent Stream	S	= Swale	WUS	= Waters of the U.S

1 Introduction

This aquatic resource delineation report (report) has been prepared on behalf of the Sacramento Municipal Utility District (SMUD) by AECOM for a new proposed photovoltaic (PV) solar facility and a battery energy storage system (BESS) facility, the Oveja Ranch Solar Project (project), located in unincorporated southeastern Sacramento County, California. The proposed project would include the installation of new 69-kilovolt (kV) lines and the reconducting of existing lines (referred to collectively as powerlines). This report provides the project background, regulatory setting, methodology, environmental setting, and results of the aquatic resource delineation documenting potentially jurisdictional wetlands and other waters of the United States (WUS) and of the State (WOS). A map book showing the results of the potentially jurisdictional WUS and WOS are provided as Appendix A, Aquatic Resources Delineation Map Book. The delineation of WUS is considered draft until verified by the U.S. Army Corps of Engineers (USACE) Sacramento District Regulatory Division. WOS would be acknowledged by the Regional Water Quality Control Board, if a permit application was submitted to them as part of the project.

1.1 Project Background

SMUD is proposing to develop the proposed project on approximately 400 acres of leased land within the project site, delivering up to 75 megawatts of PV solar energy generation. SMUD is proposing to construct PV solar panels, a BESS, a substation, and new and upgraded distribution lines to interconnect the project to SMUD's existing distribution system.

The project would include up to 3.5 miles of new offsite 69 kV lines and up to 4 miles of reconductored existing overhead 69 kV lines. Reconductoring is the process of replacing wires on an existing electric circuit to update them to meet capacity needs; reconductoring often requires the existing poles to be replaced. There are two options to connect the project gen-tie lines to the SMUD 69 kV system:

- Option 1 (preferred): install 69 kV along Florin Rd, Eagles Nest Road, and the property line to the project site. There is existing overhead 12 kV along the majority of the route; plans call for installing a double-circuit 69 kV with an 12 kV underbuild.

- Option 2: install new 69 kV along non-public road/property line to the west of the project site. There are no existing facilities along the route. This new line would connect to existing 69 kV lines along Excelsior Road between Florin Road and Gerber Road which would require reconductoring of 69 kV existing single-circuit 69 kV with 12 kV underbuild.

Both options include using the existing 69 kV line along Florin Road between approximately 300 feet east of Arroyo Willow Drive and Excelsior Road, which will require reconductoring existing single-circuit 69 kV with a 12 kV underbuild; the 12 kV will also be reconductored since the pole line will have to be rebuilt.

1.2 Project Location

The project is located in unincorporated southeastern Sacramento County, south of the City of Rancho Cordova and north of Wilton, within the Elk Grove U.S. Geological Survey (USGS) 7.5-minute quadrangle, and within Township 7N, Range 06E, Sections 1, 2, 3, 11, and 12 (refer to Appendix B, Supporting Maps, Figure 1. Project Vicinity). The approximate center of the project is 38.474179 degrees north and -121.273349 degrees west.

The study area is composed of the project site and the associated powerlines options which is approximately 643 acres total. The project site includes three parcels: Assessor's Parcel Number (APN)

123-0030-003, 123-0040-001, and 067-0110-083. APN 123-0030-003 and APN 123-0040-001 are next to each other, located near the intersection of Grant Line Road and Eagles Nest Road and will collectively be referred to as the “South Property.” APN 067-0110-083 is located to the north, on the south side of Florin Road just east of the intersection with Eagles Nest Road, physically separated from the other two parcels, and will be referred to as the “North Property.” The South Property comprises the western portion of APN 123-0030-003, most of APN 123-0040-001 (except for the northeastern salient portion), and the North Property includes the western half of APN 067-0110-083 (refer to Appendix B, Supporting Maps, Figure 2. Project Location).

The project site is accessed by heading south on Sunrise Boulevard from Rancho Cordova, then heading West on Florin Road. The North Property is best accessed directly from Florin Road or turning south on Eagles Nest Road and using a private drive. The South Property is best accessed by continuing south on Eagles Nest Road and turning west at the private drive at 7700 Eagles Nest Road.

The North Property is bound by agricultural lands to the east and south, Florin Road to the north, and Frye Creek to the west. The South Property is bound by a dirt road and preserve to the north, a preserve to the west and south, and agricultural land (e.g., cropland and irrigated pasture) to the east. The topography in the study area is generally flat (zero to 5 percent slope) and the elevation ranges between approximately 53 and 120 feet above mean sea level. The North and South Properties are primarily used as agricultural lands. The powerlines portion of the study area supports developed areas (roads, low density development), undeveloped lands including preserves which support annual grasslands, vernal pools, wetlands, streams and riparian habitats.

2 Regulatory Setting

2.1 Federal

2.1.1 Clean Water Act

Section 404 of the Clean Water Act (CWA) sets forth the USACE and the Environmental Protection Agency (EPA) as the regulatory authorities for permitting the discharge of pollutants into WUS, including wetlands. Section 404 permits typically require the avoidance or minimization to impacts on federally protected aquatic resources and a CWA Section 404 permit prior to discharges to WUS. Where impacts to WUS are unavoidable, compensatory mitigation for impacts to federally protected wetlands and waters (i.e., WUS) are required.

The definition of WUS was revised on August 29, 2023, to conform to the U.S. Supreme Court's decision in the case of *Sackett v. EPA* and published in the Federal Register on September 8, 2023. Significant changes include the following:

Under the current 2023 rule, WUS include:

- Traditional navigable waters (TNW), the territorial seas, and interstate waters;
- Impoundments of "waters of the U.S.";
- Tributaries to traditional navigable waters, the territorial seas, interstate waters, or paragraph (a)(2) impoundments when the tributaries meet either the relatively permanent standard ("jurisdictional tributaries");
- Wetlands adjacent to (a)(1) waters; wetlands adjacent to and with a continuous surface connection to relatively permanent standard (a)(2) impoundments or (a)(3) jurisdictional tributaries when the jurisdictional tributaries meet the relatively permanent standard; and (5) intrastate lakes and ponds, streams, or wetlands not identified in paragraphs (a)(1) through (4) that meet either the relatively permanent standard, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) ("paragraph (a)(5) waters"). (33 CFR Section 328, 40 CFR Section 120).

Waters excluded from the definition of WUS include:

- Waters or water features that are not identified under a(1) through a(4);
- Groundwater and groundwater recharge, water reuse, and wastewater recycling structures;
- Ephemeral features that flow only in direct response to precipitation;
- Stormwater runoff and directional sheet flow over upland;
- Ditches that are not TNWs, tributaries, or that are not constructed in adjacent wetlands, subject to certain limitations;
- Prior converted cropland;
- Artificially irrigated areas that would revert to upland if artificial irrigation ceases;

- Artificial lakes and ponds that are not jurisdictional impoundments and are constructed or excavated in upland or non-jurisdictional waters;
- Water-filled depressions constructed or excavated in uplands;
- Stormwater control features that are constructed or excavated in upland or non-jurisdictional waters to convey, treat, infiltrate, or store stormwater runoff;
- Waste treatment systems;

Recent significant changes to the definition of WUS include the following:

- Removal of the significant nexus test from consideration when identifying tributaries and other waters as federally protected;
- Revision of the adjacency test when identifying federally jurisdictional wetlands; adjacent wetlands are now defined as only those “have a continuous surface connection”;
- Clarification that interstate wetlands do not fall within the interstate waters category;
- Clarification of the types of features that qualify in the “additional waters” category (EPA 2023).

Under Section 404 of the CWA, the USACE regulates and issues permits for activities that involve the discharge of dredged or fill materials into WUS. Fills of less than one-half acre of non-tidal waters of the United States for residential, commercial, or institutional development projects can generally be authorized under USACE’s nationwide permit (NWP) program, provided that the project satisfies the terms and conditions of the particular NWP. Fills that do not qualify for a NWP require a letter of permission or an individual permit.

2.1.2 Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from the USACE. Where the navigable waters are defined as “waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later action or events which impede or destroy navigable capacity.”

2.2 State

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act of 1969 regulates water rights and water quality through the authority of the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) though the adoption of water quality control plans, the development and enforcement of water quality standards, and the regulation of activities that would or that have the potential to impair the beneficial uses of water bodies. The SWRCB or RWQCBs regulate the waste discharges into WOS through the issuance of Waste Discharge Requirement (WDRs) under the Porter-Cologne Water Quality Control Act.

2.2.2 Section 401 of the CWA

Section 401 of the federal CWA recognizes state authority for water quality standards. In California, section 401 defers water quality certification authority to the SWRCB and the RWQCBs to ensure federal

permits do not violate California water quality standards. A water quality certification or waiver is required for all nationwide or individual permits issued by USACE under Section 404 of the CWA.

Recent changes and narrowing in the federal definition of WUS means that many WOS are no longer considered federally jurisdictional under the CWA. Therefore, permitting through the CWA section 401 Water Quality Certification is no longer feasible and instead a WDR permit through the Porter-Cologne Water Quality Control Act may be required.

3 Methods

The aquatic resources delineation field surveys and analysis was conducted in accordance with the current regulation, as outlined in Section 2 Regulatory Setting above, and the following standards and guidelines:

Federal

- Corps of Engineers Wetlands Delineation Manual (USACE 1987);
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0, USACE 2008);
- A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (Lichvar and McColley 2008);
- National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version (USACE 2022);
- USACE Regulatory Guidance Letter No. 05-05, which provides further guidance on OHWM identification (USACE 2005);
- The National Wetland Plant List, Regional Plant List for the Arid West (USACE 2020);
- Field Indicators of Hydric Soils in the United States (NRCS 2018);
- Classification of Wetlands and Deepwater Habitats of the United States (FGDC 2013);
- Wetland Determination Data Sheet (USACE 2023);
- Rapid Ordinary High Water Mark (OHWM) Field Identification Data Sheet (USACE 2021).

State

- State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021).

3.1 Desktop Review

A desktop review of relevant resources was conducted for the preparation of this report. The follow resources, databases, and reports were reviewed:

- National Wetlands Inventory (NWI, USFWS 2023);
- National Hydrography Dataset (NHD, USGS 2024);
- Google Earth Pro aerial recent (2023) and historical imagery (Google Earth 2024);
- Earth Point Topo Map (USGS 2024);
- Climate data from the Agricultural Applied Climate Information System (AgACIS 2024)

- Web Soil Survey reviewed for the study area and a custom soil report was generated for the study area which is provided as Appendix D (NRCS 2024a);

- SMUD Oveja Ranch Solar Project Final Biological Resources Survey Report (AECOM 2024)

3.2 Field Delineation, Mapping and Data Collection

The delineation of potentially jurisdictional federal and state aquatic resources was conducted consistent with the guidelines and standards provided in Section 3 Methods. A summary of the dates, purpose, and personnel for the field surveys is provided as Table 1.

Table 1. Field Surveys

Dates	Location	AECOM Personnel	Purpose
January 10, 11, and 12 2024	South Property and powerlines except for the private property to west and north of the South Property.	Renee Richardson (biologist), Shannon Henke (biologist), Ranie Schreckengost (biologist), and Bre Cooney (biologist)	Aquatic and biological resource surveys and mapping
February 16, 2024	Private property in the powerlines portion of the study area, west of the South Property.	Renee Richardson (biologist), Shannon Henke (biologist), and Bre Cooney (biologist)	
May 7, 2024	North Property.	Renee Richardson (biologist), Shannon Henke (biologist), and Bre Cooney (biologist)	
June 10, 2024	Powerlines that connect the North and South Properties.	Renee Richardson (biologist), Shannon Henke (biologist), and	

Some field surveys were conducted in winter when many plant species may have been dormant, unidentifiable, or at the seedling and early growth stage. Plant species composition and abundance is best assessed during the peak growing season, typically in late spring or early summer. Additionally, some areas within the study area were inundated and plant species present in those features could not accurately be assessed.

Potentially jurisdictional aquatic resources were assessed for the presence of three indicators: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation was assessed by the dominance or prevalence of plant species that meet the definition of hydrophytic based on their Wetland Indicator Status (WIS) according to the National Wetland Plant List, Regional Plant List for the Arid West (USACE 2020). This list recognizes the following wetland indicator status definitions based on Lichvar at al. 2016:

- Obligate (OBL) – Plants that almost always occur in wetlands, hydrophyte.

- Facultative wetland (FACW) – Plants that occur usually in wetlands, but also occur in non-wetlands, hydrophyte.

- Facultative (FAC) – Plants that occur in wetlands and non-wetlands, hydrophyte

- Facultative upland (FACU) – Plants usually occur in non-wetlands, but may occur in wetland, nonhydrophyte

- Upland (UPL) – Plants that almost never occur in wetlands, nonhydrophyte.

Plant species not listed on the National Wetland Plant List for the Arid West Region are recorded as Upland.

Hydrophytic species are those listed as OBL, FACW, or FAC. Plant species were identified in the field and using the Jepson Flora Project (JFP 2023). Botanical binomial nomenclature in this report is also consistent with the JFP.

Soils were examined by digging soil test pits to determine whether hydric soils exist at a sampling location. Soils were described in terms of depth, matrix color, redoximorphic features (when present), and moisture status at each sampling location. Other diagnostic features indicative of hydric soils, such as the presence of concretions and oxidized rhizospheres were also recorded on data forms. Hydric soils were identified using the *Field Indicators of Hydric Soils in the United States* (NRCS 2018), the *2022 Pocket Guide to Hydric Soil Field Indicators* (WTI 2022), and soil color was determined using the *Munsell Soil Color Book* (Munsell, 2023).

Wetland hydrology was assessed by recording observations of drainage patterns, watermarks, flooded or saturated soil conditions, and other indicators. Other waters were delineated based on the presence of an Ordinary High Water Mark (OHWM). A stream feature's OHWM is typically defined by characteristics such as shelving, scour lines, and other natural linear features that define the bed-and-bank portion of the stream that floods under normal conditions (USACE 2005).

Aquatic resources were mapped on foot when possible, however instances where the study area was inaccessible (e.g., private property or for safety reason) mapping used visually inspection and aerial imagery to delineation feature boundaries. Spatial, tabular and photographic data were recorded in the field using a Global Navigation Satellite System (GNSS) Trimble R1 unit connected to a smartphone or tablet using the Esri Field Maps application to collect. Spatial data were recorded using the World Geodetic System datum (WGS 84).

Instances where part of a feature qualifies as an other water (e.g., stream) and a wetland (within a stream), the feature was mapped as a wetland to prevent double counting.

In addition to the delineation of potentially jurisdictional aquatic resources, land cover types were identified in the study area and Figure 5 in Appendix B shows the location of land covers observed in the study area. All vascular plant species were identified when possible, and a list of plant species observed during the survey is provided in Appendix E.

4 Environmental Setting

The study area is located within the northern portion Great Central Valley Geographic Region, within the Sacramento Valley Subregion (JFP 2023). This lowland is bordered by the Coast Range to the west, the Sierra Nevada Range to the east, the Cascade Range to the north, and the San Joaquin Valley Subregion (also within the Great Central Valley Region) to the south. This region supports a variety of grassland, riparian, wetland, woodland, and vernal pools habitats, however much of the Sacramento Valley has been converted to agriculture, including most of the land in the study area.

4.1 Climate and Weather

Long term climate conditions and recent weather influences hydrological processes and function, as well as the extent of wetlands and waters in any given location. Indicators of hydrology may not be reliable during years with above- or below-normal rainfall.

The study area is located within the Mediterranean California (Land Resource Region C) sub-region of the Arid West Region, which is characterized by relatively warm, wet winters and dry summers, with most of the precipitation falling between November and April (USACE 2008).

The closest weather station to the study area with a complete climate summary is in Sacramento, California and is approximately 8 miles west of the study area. The 50-year average (1973 to January 2024) average mean air temperature was 61.5 degrees Fahrenheit, and the average precipitation was 17.83 inches. During the 50-year period, precipitation occurred predominantly November and April with the peak being December through March. 2023 had slightly above average precipitation at 18.9 inches (AgACIS 2024).

4.2 Hydrology

A general description of the hydrology in the study area is provided from a desktop review of the USGS topography maps and NHD (USGS 2024). The description provided does not include field observations which are provided in Section 5. Delineation Results.

The study area is in the Elder Creek (Hydrological Unit Code [HUC] 180201630401), Laguna Creek (HUC 180201630403), and Lower Deer Creek Watersheds (HUC 180400130503; EPA 2024). The hydrology consists of combination of natural and artificial sources. Seasonal precipitation occurs in the winter/early spring typically as rain, and results in overland flow which contributes to stream flow as well as the inundation of seasonal vernal pools. Artificial sources of hydrology include ground water wells and a surface water pumps that pulls water from Laguna Creek, both of which are used for flood irrigation of row crops and pastures. Typically, irrigation begins in May, start at approximately at a monthly basis, and increases to every 9 to 10 days (Rebecca Waegell, pers. com. with Shannon Henke and Petra Unger of AECOM, January 2024) till late summer, fall, or harvest.

4.2.1 Natural Hydrology

Three named streams overlap the powerlines portion of the study area: Laguna Creek, Frye Creek and Gerber Creek. There are no streams reported from the North or South Properties however, the South Property supports three canal ditches and Frye Creek is just west of the North Property.

The headwaters to Frye Creek are located near the intersection of Kiefer Boulevard and Sunrise Boulevard. Frye Creek starts as an ephemeral stream, flows southwest, and transitions to an intermittent stream. It confluences with Laguna Creek after approximately 4.5 miles west of Eagles Nest Road. Frye Creek intersects the powerline portion of the study area where it is conveyed under Florin Road.

The headwaters of Laguna Creek are approximately 5 miles northeast of the powerlines and the creek flows in a southwest direction. It starts as an intermittent stream and becomes perennial east of the study area. It enters the study area at three locations. It enters the eastern portion of the powerline portion of the study area and is conveyed under Eagle Nest Road. It reenters the powerline portion of the study area at a private dirt road which connects the North Property to the South Property. It is conveyed under the dirt road, exits the study area, flows northwest, and then confluences with Frye Creek. Laguna Creek continues to flow west and reenter the powerline portion of the study area, is conveyed under the private portion of Gerber Road, exits the study area, continues to flow west, confluences with Morrison Creek and then the Sacramento River which is a Traditional Navigable Waterway (TNW, USACE 2024).

Gerber Creek is an ephemeral stream that originates near the intersection of Excelsior and Florin Road where it crosses through the powerline portion of the study area in two locations, first as it flows south and is conveyed under Florin Road, then it flows west and is conveyed under Excelsior Road and exits the study area. Gerber Creek and flows southwest for approximately 5.5 miles where it confluences into Elder Creek, and intermittent stream. Elder creek flows southwest to Morrison Creek which confluences into the Sacramento River, a TNW (USACE 2024, USGS 2024).

4.2.2 Artificial Hydrology

Three canal ditches and a constructed pond are present in the South Property. The canal ditches convey water used for agricultural practices, specifically flood irrigation. One canal ditch is present on the southern boundary of the North Property. Additionally, a canal ditch is present in the powerline portion of the study area that connects the North Property to the South Property.

4.3 Upland Vegetation Communities and Land Cover Types

Land cover types and their associated vegetation communities were documented in the study area during the field survey and are described below. Dominant and common plant species are provided for each land cover type as well as their respective WIS. Land covers in the study area are shown in Figure 5 in Appendix B, Supporting Maps. Table 2 summarizes area of the terrestrial and developed/non-habitat land covers in the study area. Aquatic land covers are discussed in the Delineation Results, Aquatic Resources, Section 5. Representative photos are provided in Appendix F.

Table 2. Upland Vegetation Communities and Land Cover Types in the Study Area

Vegetation Community/Land Cover Type	Powerlines Acres	South Property Acres	North Property Acres	Total Acres
Developed	69.3	1.3	0	70.7
Cropland	0.8	305.4	79.5	385.6
Irrigation Pasture	0	102.9	0	102.9
Valley Grassland	32.8	31.0	0.0	63.9
Riparian	0.9	0	0	0.9
Blackberry Thickets	0.1	0	0	0.1
			Grand Total	**624.1**

4.3.1 Developed

Developed land cover includes the asphalt and dirt roads in the study area as well as the disturbed road shoulders which generally surround the cropland, irrigated pastures, and valley grasslands. Low density development, consisting of small residential and a commercial nursery structure as well as their associated landscaping, are also included in this land cover. Detailed descriptions of each of these land covers (major roads, disturbed, and low-density development) are provided below.

Major Roads

The major roads in the study area are Florin Road in the north, Excelsior Road in the west, Gerber Road in the south, and Eagles Nest Road on the east side of the study area. These major roads are mostly paved, impervious surfaces that undergo regular high disturbances. Vegetation does not typically grow on the major roads. The shoulders of these roads are also subject to frequent disturbance and compaction.

Disturbed

Disturbed land cover is present throughout the study area. This landcover consists of disturbed road shoulders and dirt roads around pastures or cropland fields. The road shoulders typically have compacted and altered soils with a mixture of low density, non-native forbs and grasses that appear to be routinely disturbed by motor vehicles, pedestrians, or maintenance. The vegetation identified within the disturbed land cover at the time of the survey was dominated by grasses such as bromes (*Bromus* spp.), and Italian rye grass (*Festuca perennis*, FAC), medusahead (*Elymus caput-medusae*, UPL) and forbs such as filaree (*Erodium* spp.), prickly lettuce (*Lactuca serriola*, FACU), yellow starthistle (*Centaurea solstitialis*, UPL), and Canadian horseweed (*Erigeron canadensis*, FACU).

Low Density Development

Low density developments within the study area are primarily small residential buildings or buildings associated with agriculture along Eagles Nest Road, mostly associated with the North and South Properties, and Birch Ranches off Gerber Road. The Matsuda nursery in the northeast portion of the study area off Florin Road is also included in this land cover. Developed landcovers are dominated by landscaped and native or non-native ornamental trees and plants. This vegetation is subject to disturbance, removal, alteration, irrigation, herbicide or pest control. There were many large trees such as eucalyptus (*Eucalyptus* spp.), oaks (*Quercus* spp.), incense cedar (*Calocedrus decurrens*, UPL), Oregon ash (*Fraxinus latifolia*, FACW), Mexican fan palms (*Washingtonia robusta*, FACW), and other exotic species found within these developments.

4.3.2 Terrestrial

Terrestrial land covers are upland habitats in the study area, including croplands, irrigated pastures, riparian, valley grassland, and blackberry thickets. They are found primarily in the North and South Properties and surrounding the roads in preserves. Detailed descriptions of each of these land covers are provided below.

Cropland

Croplands consisted of annual row and field crops that are subject to ongoing agricultural practices. During the field surveys, croplands were mostly fallow and appeared to have been plowed in 2023. Identifiable sprouting vegetation in these areas included Italian rye grass, medusahead, filaree, and in some areas, tall nut sedge (*Cyperus eragrostis*, FACW).

Irrigated Pasture

The irrigated pastures occur the South Property, and were being grazed by sheep at the time of the field survey. All fields with signs of grazing are included in the irrigated pasture land cover. Irrigated pastures often support wetland species such as nut sedge, spinyfruit buttercup (*Ranunculus muricatus*, FACW), wall barley (*Hordeum marinum* spp. *gussoneanum*, FAC), and lamp rush (*Juncus effusus*, FAC). A verbal discussion with the landowners revealed these pastures receive flood irrigation during the dry season to promote forage for livestock (B. Waegell, personal communication, SMUD, AECOM. January 23, 2024).

Valley Grassland

Valley grassland is an annual herbaceous plant community that is found in the study area on undeveloped and uncultivated lands, adjacent to roads, and developments. Valley grassland occurs as an upland component of vernal pool complexes in the northwest portion of the South Property and occurs as an understory within riparian woodland. Valley grassland is dominated by naturalized annual grasses such as bromes, Italian ryegrass, wild barley (*Hordeum* spp.), and wild oats (*Avena* spp.). Native and non-native forbs and native grasses are also present. Common forbs include filaree, turkey mullein (*Croton setiger*), true clovers (*Trifolium* spp.), lupines (*Lupinus* spp.), fiddleneck (*Amsinckia* spp.), and willowherb (*Epilobium* spp.).

Riparian

Riparian habitats are transition zones between terrestrial and aquatic habitats which support a gradient of conditions (NRC 2002). They provide a buffer between the two habitats (upland and aquatic) while also having unique qualities. Mixed riparian woodland occurs along the terrace of Laguna Creek on both sides of Eagle Nest Road in the eastern powerline portion of the study area. The dominant species in the canopy is valley oak (*Quercus lobata,* FACU) with orchard grass (*Dactylis glomerata,* FACU) in the understory. A fringe of lamp rush grows along the banks of the creek.

Blackberry Thickets

Dense blackberry thickets are present in the study area, often along the edges of agricultural field. It is dominated by Himalayan blackberry (*Rubus armeniacus,* FAC) shrubs and has few if any other plant species present.

4.4 Soils

There are 18 soil map units are mapped in the project area which are summarized in Table 3 and shown in Figure 4 in Appendix B, Supporting Maps. A Custom Soil Report for the project area is provided as Appendix D (NRCS 2024a).

Table 3. Soil Map Units Present in the Study Area

Soil Map Unit	Map Unit Symbol	Area (acres)	Hydric Rating[1]
Durixeralfs, 0 to 1 percent slopes	137	55.3	Predominantly Nonhydric
Fiddyment fine sand loam, 1 to 8 percent slopes	145	13.3	Nonhydric
Galt clay, 0 to 1 percent slopes, MLRA 17	152	0.9	Predominantly Hydric
Hedge loam, 0 to 2 percent slopes	157	39.6	Predominantly Nonhydric
Red Bluff loam, 0 to 2 percent slopes	191	8.6	Predominantly Nonhydric
Red Bluff - Redding complex, 0 to 5 percent slopes	193	9.6	Predominantly Nonhydric
Red Bluff-Xerarents complex, 0 to 2 percent slopes	195	<0.1	Predominantly Nonhydric
Redding loam, 2 to 8 percent slopes	197	2.6	Predominantly Nonhydric
Redding gravelly loam, 0 to 8 percent slopes, MLRA 17	198	57.3	Predominantly Nonhydric
San Joaquin silt loam, leveled, 0 to 1 percent slopes	213	57.3	Predominantly Nonhydric
San Joaquin silt loam, 0 to 3 percent slopes	214	21.7	Predominantly Nonhydric
San Joaquin silt loam, 3 to 8 percent slopes	215	3.7	Predominantly Nonhydric
San Joaquin - Durixeralfs complex, 0 to 1 percent slopes	216	196.2	Predominantly Nonhydric
San Joaquin- Galt complex, leveled, 0 to 1 percent slopes	217	14.9	Partially Hydric
San Joaquin - Galt complex, 0 to 3 percent slopes	218	0.1	Partially Hydric
San Joaquin – Xerarents complex, leveled, 0 to 1 percent slopes	221	178.9	Predominantly Nonhydric
Xerarents – San Joaquin complex, 0 to 1 percent slopes	238	25.7	Predominantly Nonhydric
Water	247	3.0	Nonhydric
	Total	**643.0**	

Notes:

[1] Hydric Rating Definition (NRCS 2023b)

Hydric: all major and minor components listed for a given map unit are rated as being hydric.

Predominantly Hydric: all major components listed for a given map unit are rated as hydric, and at least one contrasting minor component is not rated hydric.

Partially Hydric: at least one major component listed for a given map unit is rated as hydric, and at least one other major component is not rated hydric.

Predominantly Nonhydric: no major component listed for a given map unit is rated as hydric, and at least one contrasting minor component is rated hydric.

Nonhydric: no major or minor components for the map unit are rated hydric. The assumption is that the map unit is nonhydric even if none of the components within the map unit have been rated.

5 Delineation Results: Aquatic Resources

The results of the aquatic resource delineation are provided in this section including descriptions of all delineated features and tables summarizing the area and length of potentially jurisdictional WUS and WOS. These potentially jurisdictional aquatic resources, associated data points, and photo points are shown in the Aquatic Resources Delineation Map Book provided as Appendix A. Supporting Maps are provided as Appendix B. Wetland Determination Data Forms and Rapid OHWM Field Identification Data Sheets are provided in Appendix C. A Custom Soil Report is provided as Appendix D. Plant species observed during the field survey is provided as Appendix E. Representative photographs of aquatic resources features and land covers are provided in Appendix F.

5.1 Other Waters

Other waters include streams, ditches, lakes, ponds, and reservoirs. Streams are characterized by the presence of a bed and bank that form through the process of conveying water. The flow of water can scour the bed, create multiple channels, and can results in the movement of sediment which lead to aggradation and formation of bars or degradation which can incise stream channels. Many streams have been modified, channelized, and altered. Streams often support riparian vegetation that is adapted to the site hydrology and occasional flooding. Riparian vegetation is often associated with stream, though it may occur in upland conditions and may not qualify as an aquatic resource. There are three types of streams in the study area: perennial streams, intermittent streams, and ephemeral streams. Ditches are constructed linear features that convey water. There are two types of ditches in the study area: agricultural ditches and roadside ditches. Pond, lakes and reservoirs are considered open water aquatic habitats. One type of open water habitat, reservoir, is present in the study area. Table 4 provides the aquatic resource name, Cowardin classification, latitude/longitude, acres, and linear ft of each potentially jurisdictional other waters in the study area. Additionally, potentially jurisdictional WUS and WOS are indicated with a “X,” however jurisdiction is determined by the respective regulatory agency. Features that could potentially qualify as both an other water and a wetland are reported as a wetland to avoid double counting.

Table 4. Potentially Jurisdictional Other Waters in the Study Area

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	Linear Feet	WUS	WOS
AD-1	Riverine	38.496108	-121.294718	0.081	705		
AD-2a		38.480192	-121.27786	0.021	223		
AD-2b		38.476401	-121.278549	0.285	3,101		
AD-3		38.470783	-121.27514	1.252	2,711		
AD-4		38.470827	-121.275038	0.481	2,665		
AD-5		38.474496	-121.274257	0.247	606		
AD-6		38.473742	-121.279083	<0.001	10		
AD-7		38.473598	-121.279084	<0.001	9		
AD-8		38.471421	-121.279092	<0.001	10		
AD-9		38.473463	-121.279085	<0.001	10		
AD-10		38.471303	-121.279055	0.001	25		
AD-11		38.471135	-121.279071	0.001	28		
AD-12		38.467308	-121.279088	0.001	49		
AD-13		38.467499	-121.273933	0.003	124		

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	Linear Feet	WUS	WOS
AD-14		38.467455	-121.268819	0.948	2,751		
AD-15		38.475775	-121.273082	0.614	1,093		
AD-16		38.471	-121.266972	0.874	2,532		
AD-17		38.494297	-121.270142	<0.001	3		
AD-18		38.474641	-121.268286	0.052	747		
AD-19		38.482765	-121.269836	0.020	540		
AD-20		38.482063	-121.266833	0.001	62		
AD-21		38.486504	-121.269935	0.340	1,845		
AD-22		38.481888	-121.263981	0.514	740		
AD-23		38.481802	-121.268707	0.208	601		
AD-24		38.481841	-121.266445	0.288	596		
AD-25		38.48919	-121.267643	0.246	1,337		
			AD Total	**6.480**	**23,123**		
ES-1	Riverine	38.496442	-121.332716	0.003	80		X
ES-2a		38.496509	-121.309019	0.012	27		X
ES-2b		38.496312	-121.309053	0.013	31		X
ES-3		38.496279	-121.292355	0.002	27		X
ES-4		38.496025	-121.278129	0.013	26		X
ES-5		38.488789	-121.297858	0.006	46		X
ES-6		38.484323	-121.270068	0.057	143		X
			ES Total	**0.106**	**380**		
IS-1a	Riverine,	38.496321	-121.296168	0.018	16	X	X
IS-1b	Intermittent,	38.494319	-121.297838	0.002	33	X	X
IS-2a	Unconsolidated	38.49633	-121.270207	0.004	25	X	X
IS-2b	Shore	38.496147	-121.270202	0.008	31	X	X
IS-3a		38.481742	-121.289004	0.009	24	X	X
IS-3b		38.481574	-121.28919	0.012	132	X	X
IS-4		38.481725	-121.288621	0.041	191	X	X
			IS Total	**0.095**	**452**		
OW-1	Lacustrine, Limnetic, Unconsolidated Bottom	38.478391	-121.272378	2.851			
			OW Total	**2.851**			

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	Linear Feet	WUS	WOS
PS-1	Riverine, Lower Perennial, Unconsolidated Bottom	38.496308	-121.311798	0.015	23	X	X
PS-2a		38.485047	-121.260735	0.038	43	X	X
PS-2b		38.485053	-121.260968	0.018	40	X	X
PS-2c		38.483632	-121.269863	0.061	27	X	X
PS-2d		38.483707	-121.270096	0.050	43	X	X
			PS Total	**0.182**	**176**		
RD-1	Riverine	38.496355	-121.348217	0.113	2,600		
RD-2		38.496187	-121.349839	0.035	538		
RD-3		38.496187	-121.348047	0.033	593		
RD-4		38.496235	-121.34416	0.065	1,133		
RD-5		38.496415	-121.335937	0.014	360		
RD-6a		38.496419	-121.333421	0.018	400		
RD-6b		38.496404	-121.33236	0.009	197		
RD-7		38.49629	-121.328133	0.073	3,160		
RD-8		38.496446	-121.321089	0.010	221		
RD-9		38.49653	-121.313596	0.036	782		
RD-10		38.496343	-121.312729	0.034	502		
RD-11		38.496475	-121.310415	0.053	767		
RD-12		38.496194	-121.296801	0.012	268		
RD-13		38.496305	-121.296364	0.003	53	X	X
RD-14		38.49618	-121.295127	0.027	581		
RD-15		38.496171	-121.29377	0.007	151		
RD-16		38.496254	-121.288777	0.001	45		
RD-17		38.496231	-121.283615	0.032	707		
RD-18		38.496096	-121.284285	0.003	48		
RD-19		38.496083	-121.275884	0.001	10		
RD-20		38.496313	-121.269888	0.008	171		
RD-21		38.494313	-121.297614	<0.001	2		
RD-22		38.489133	-121.297633	<0.001	2		
RD-23		38.488954	-121.297653	0.008	121		
RD-24		38.48163	-121.297256	0.001	35		
RD-25		38.487442	-121.297623	0.004	214		
RD-26		38.495372	-121.260945	0.038	817		

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	Linear Feet	WUS	WOS
RD-27		38.496115	-121.260815	0.011	233		
RD-28		38.493583	-121.260924	0.019	421		
RD-29		38.4783	-121.271492	0.009	373		
RD-30		38.49051	-121.260945	0.038	834		
RD-31		38.489231	-121.26093	0.003	56		
RD-32		38.488236	-121.260801	0.094	2,088		
RD-33		38.488651	-121.260925	0.014	293		
RD-34		38.487831	-121.260936	0.006	125		
RD-35		38.487345	-121.260937	0.008	166		
RD-36		38.486371	-121.260912	0.021	160		
RD-37		38.485276	-121.260749	0.004	58		
RD-38		38.483973	-121.260899	0.035	770		
RD-39		38.486524	-121.297606	0.012	316		
RD-40		38.484831	-121.260766	0.002	109		
RD-41		38.484505	-121.260766	0.001	53		
RD-42		38.481974	-121.26068	<0.001	15		
RD-43		38.481601	-121.287573	0.003	151		
RD-44		38.496229	-121.26848	0.045	981		
			RD Total	**0.964**	**21,680**		
			Grand Total	**10.678**	**45,811**		

Notes:

AD	= Agricultural Ditch	OW	= Open Water	WOS	= Waters of the State
ES	= Ephemeral Stream	PS	= Perennial Stream	WUS	= Waters of the U.S.
IS	= Intermittent Stream	RD	= Roadside Ditch		

5.1.1 Perennial Streams

Perennial streams convey water throughout the year. Typically, they convey water from rainfall, overland flow, and groundwater. However, artificial sources such as urban and agricultural runoff can also be sources of flow. Such artificial sources can increase the volume and duration of flow and in some cases, streams that would naturally be characterized as intermittent streams may qualify as perennial streams.

Two perennial streams occur in the study area, one unnamed stream (PS-1) and Laguna Creek (PS-2) which is mapped as four segments: PS-2a through d. Additional, Laguana Creek crosses the study area in a third location however, the stream is vegetated at that location and this location was mapped as a freshwater marsh wetland (FM-10).

PS-1 is in the western portion of the powerlines on the south side of Florin Road. Its average width is 30 feet wide, and it flows south and exits the study area via a straight channel through undeveloped

valley grassland habitat. It confluences with an ephemeral stream and continues to flow south and supports instream ponded areas. The stream continues in a generally southwest direction until it confluences with Elder Creek, reported as an intermittent stream by NHD. PS-1 is mapped as an artificial path in the NHD and is not included in the NWI (USFWS 2023, USGS 2024).

Laguna Creek (PS-2) intersects the study area at three locations however the most western portion is vegetated within the OHMW and is thus categorized as a freshwater marsh (FM-10) in this report. PS-2a enters the study area at the eastern portion of the powerlines, crossed under Eagles Nest Road PS-2b is on the west side of the bridge and the stream exits the study area. The stream has a 17-foot-wide OHWM at this location (refer to OHWM Data Form 3), supports a narrow fringe of wetland vegetation occurring just above the OHWM, and the adjacent upland area surrounding the creek supports riparian vegetation.

Laguna Creek flows southwest for approximately 0.6 miles and then reenters the study area at the powerline that connects the North and South Properties. Segment PS-2c has an OHWM that is 133 feet wide and freshwater marsh (FM-8) occurs along the banks. Laguna Creek is conveyed under the private dirt road and reemerges as PS-2d which has an OHWM 60 feet wide. Laguna Creek exits the study area and continues to flow in a westerly direction for approximately 1.1 miles, confluences with numerous other streams including Fry Creek, and reenters the study area west of the South Property along the southern portion of the powerlines. This location of the stream averages approximately 38 feet wide, flows in a southerly direction to exit the study area, and supports freshwater marsh wetlands within the OHWM. To avoid double counting, this portion of the stream is described as wetland in Section 5.2.1 Freshwater Marsh. Refer to Section 4.2.1 Natural Hydrology for a broader description of Laguna Creek within the region. The NWI reports PS-2 a and b (the eastern portion of Laguna Creek in the study area) as a Freshwater Emergent Wetland, a Freshwater Pond that transitions to riverine at PS-2c, and Freshwater Emergent Wetland at PS-2d (USFWS 2023). Within the study area, the NHD reports Laguna Creek as a perennial stream (USGS 2024).

PS-1 and PS-2 (Laguna Creek) are perennial streams that supports permanent water are anticipated to be potentially jurisdictional WUS and WOS.

5.1.2 Intermittent Streams

Intermittent streams are characterized by seasonal flows. They convey surface water after precipitation, and typically flows also are supplemented from other sources of water such as groundwater or artificial sources (e.g., irrigation or urban runoff). Increases in the duration and volume of flow due to artificial sources can result in naturally ephemeral streams to qualify as intermittent streams. Four intermittent streams occur in the study area as seven segments: IS-1a and b, IS-2a and b, IS 3a and b, and IS-4.

Gerber Creek (IS-1) is in the northwestern portion of the powerlines. IS-1a is on the north side of the Florin Road just west of the intersection with Excelsior Road. It is approximately 58 feet wide, flows south through a culvert under Florin Road and out of the study area. A roadside ditch (RD-13), freshwater marshes FM-1 and FM-2, are hydrologically connected to IS-1a.

Gerber Creek reenters the study area along the west side of Excelsior Road. The stream is conveyed through a culvert under Excelsior Road and emerges on the west side of the road as IS-1b. IS-b OHWM is approximately 2 feet wide and supports seasonal wetlands on the banks (SW-8a and SW-8b) which are discussed in Section 5.2.2 Seasonal Wetlands. IS-1b flows west and exits the study area flowing through undeveloped valley grassland habitat, into a instream pond, confluences with numerous ephemeral streams, then confluences with the intermittent stream Elder Creek, which continues to flow west until it confluences with the perennial stream Morrison Creek. Within the study area, Gerber Creek is mapped as an ephemeral stream in the NDH and as a Freshwater Emergent Wetland by the NWI (USGS 2024, USFWS 2023).

Frye Creek (IS-2) is in the northeastern portion of the powerlines. Segment IS-2a is on the north side of Florin Road, 10 feet wide, conveys water south through a culvert under Florin Road and emerges on the south side of the road as IS-2b. Frye Creek exits the study area and continues to flow southwest until it confluences with the perennial stream Laguna Creek. Within the study area, Frye Creek is mapped as an intermittent stream by the NHD and is not included in the NWI (USGS 2024, USFWS 2023).

IS-3 is an unnamed stream that has two segments in the southwestern portion of the powerlines. IS-3a is on the north side of Gerber Road and has an OHWM that is 20 feet wide. It is hydrologically connected to a freshwater marsh (FM-9, refer to Section 5.2.1, Freshwater Marshes), an intermittent stream (IS-4), and two seasonal wetlands (SW-16 and 17, refer to Section 5.2.2 Seasonal Wetlands). It is conveyed through a culvert under Gerber Road and emerges on the south side as IS-3b. IS-3b is 5 feet wide, supports seasonal wetlands on the banks (SW-14a and b). It exits the study area, flowing south, and confluences with the perennial stream Laguna Creek. In the study area, IS-3 is mapped as an ephemeral stream in the NHD and as a Freshwater Emergent Marsh in the NWI (USGS 2024, USFWS 2023).

IS-4 is an unnamed stream with an OHWM of 8 feet and supports a seasonal wetland on its bank (SW-17, refer to Section 5.2.2 Seasonal Wetlands). It occurs just east of IS-3a, on the north side of Gerber Road, in the powerlines portion of the study area. It enters the study area and flows west until it intersects IS-3a which is conveyed via a culvert under the road, exits the study area, and then flows into the perennial stream, Laguna Creek, just south of the study area.

Intermittent streams typically support relatively permanent, seasonal water, flowing annually during certain times of the year. Therefore, IS-1, IS-2, IS-3, IS-4 are potentially jurisdictional WUS and WOS.

5.1.3 Ephemeral Streams

Ephemeral streams have a bed and a bank, are characterized by short durations of flow that occur in direct response to precipitation, but are not connected to ground water.

There are six ephemeral streams in the study area (ES-1 through ES-6), ES-2 is composed of two segments (ES-2a and b) yielding a total of seven ephemeral stream segments.

ES-1 is in the northwestern portion of the powerlines on the north side of Florin Road, appears to be manmade, and has an OHWM that is 5 feet wide. ES-1 is not included in the NHD or NWI, though an ephemeral stream is mapped to the west of the feature in the NDH (USFWS 2023, USGS 2024), which was not observed during the field survey.

ES-2 is in the northwestern portion of the powerlines with ES-2a on the north side of Florin Road and ES-2b on the south side. ES-2a has an OHWM that is 23 feet wide and ES-2b is 22 feet wide. The NHD maps ES-2a as an artificial path and ES-2b as an ephemeral stream (USGS 2024) ES-2 is not included to the NWI (USFWS 2023).

ES-3 is in the northern portion of the powerlines on the north side of Florin Road. It flows north into Gerber Creek and has an OHWM that is 3 feet wide where it overlaps the study area. This stream is not included in the NHD though it is mapped as a Freshwater Emergent Marsh in the NWI (USGS 2024, USFWS 2023).

ES-4 is in the northern portion of the powerlines on the south side of Florin Road, has a OHWM that is 23 feet wide, and flows south. This stream is included in the NHD as an ephemeral stream it is mapped as a Freshwater Emergent Marsh in the NWI (USGS 2024, USFWS 2023).

ES-5 is in the western portion of the powerlines on the west side of Excelsior Road. It has an OWHM that is 5 feet wide and flows west. This stream is not included in in the NHD or NWI (USFWS 2023, USGS 2024).

ES-6 is in the powerline portion of the study are that connects the North and South Properties. It flows northwest and has and average OHWM of 15 feet. This stream is not included in in the NHD or NWI (USGS 2024, USFWS 2023).

Ephemeral streams do not support relatively perennial water, typically flow for a short duration in response to precipitation, and therefore ES-1 through 6 are not anticipated to be potentially jurisdictional WUS. They are potentially jurisdictional WOS.

5.1.4 Agricultural Ditches

Agricultural ditches are constructed channels that are used to convey irrigation water to agricultural fields such as croplands and irrigated pastures. Typically, water from agricultural ditches is considered an artificial source. There are 25 agricultural ditches (AD-1 through 25) in the study area however AD-2 has two segments (AD-2a and b) yielding a total of 26 agricultural segments in the study area. AD-3 and 4 are in the vicinity of a riverine feature included in the NWI (USFWS 2023). The NHD maps AD-3, 14, 25, and 25 as Canal Ditches (USGS 2024). Other agricultural ditches in the study area are not included in the NHD or NWI. Agricultural ditches are not typically considered potentially jurisdictional WUS or WOS.

5.1.5 Roadside Ditches

Roadside ditches are constructed ditches in uplands that are made to drain and convey water from uplands and developed areas. They commonly are located along roads. There are 44 roadside ditches in the study area varying in depth and width. One roadside ditch has two segments (RD-6a and b) yielding a total of 45 ditch segments. Roadside ditches in the study area are not included in the NWI or NHD (USFWS 2023, USGS 2024). Roadside ditches are not typically considered potentially jurisdictional WUS or WOS. However, one roadside ditch (RD-13) is hydrologically connected to a freshwater marsh (FM-1) and an intermittent stream (IS-1a) and therefore is a potentially jurisdictional WUS and WOS.

5.1.6 Reservoir

Reservoirs can be perennial or intermittent water bodies that have natural or artificial sources of water which are typically used as a water source. There is one reservoir (other water, OW-1) in the study area in the northern portion of the South Property. It is manmade from an artificial water source and supports deep water habitat. OW-1 is included in the NWI as a Freshwater Pond and as a Reservoir by the NHD (USFWS 2023, USGS 2024).

The reservoir in the study area is manmade and from an artificial water source, therefore it is not anticipated to be a potentially jurisdictional WUS or WOS.

5.2 Wetlands

Wetlands are features that support wetland hydrology, hydric soils, and typically, hydrophytic vegetation. They can occur along streams, lakes, and ponds; in depressional areas; on floodplains; seeps; and meadows. Four wetland habitat types are present in the study area: freshwater marsh, seasonal wetland, vernal pool, and swales. Table 5 provides the aquatic resource name, Cowardin classification, latitude/longitude, and acres of each potentially jurisdictional wetland in the study area. Additionally, potentially jurisdiction of WUS and WOS are indicated with a “X,” however jurisdiction is determined by the respective regulatory agency.

Table 5. Potentially Jurisdictional Wetlands in the Study Area

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	WUS	WOS
FM-1	Palustrine,	38.496314	-121.296536	0.012	X	X
FM-2	Emergent	38.496185	-121.296233	0.004		
FM-3		38.496312	-121.295888	0.020	X	X
FM-4a		38.493817	-121.297549	<0.001	X	X
FM-4b		38.493718	-121.297555	0.001	X	X
FM-5		38.492339	-121.261076	0.155		
FM-6		38.478443	-121.272372	0.396		
FM-7		38.467537	-121.273265	0.668		X
FM-8		38.483674	-121.269897	0.067	X	X
FM-9		38.48176	-121.288938	0.003	X	X
FM-10		38.481616	-121.283325	0.085	X	X
			FM Total	**1.412**		
S-1	Palustrine,	38.496169	-121.299931	0.012		X
S-2	Emergent	38.496064	-121.273143	0.001		X
S-3		38.496602	-121.263829	0.052		X
S-4		38.481496	-121.282346	0.013		X
			S Total	**0.078**		
SW-1	Palustrine,	38.496475	-121.32353	0.053		X
SW-2	Emergent	38.496462	-121.318867	0.064		X
SW-3a		38.496255	-121.304118	0.138		X
SW-3b		38.496446	-121.304105	0.072		X
SW-4a		38.496201	-121.302083	0.111		X
SW-4b		38.496399	-121.302037	0.057		X
SW-5		38.496301	-121.288672	0.011		X
SW-6a		38.49625	-121.275901	<0.001		X
SW-6b		38.496244	-121.275821	0.001		X
SW-7		38.495372	-121.297809	0.004		X
SW-8a		38.494329	-121.297838	0.004	X	X
SW-8b		38.494308	-121.297833	0.004	X	X
SW-9		38.49626	-121.278016	0.002		X
SW-10		38.485595	-121.29784	0.023		X
SW-11		38.469685	-121.274503	4.752		X
SW-12a		38.48174	-121.295814	0.009		X
SW-12b		38.481554	-121.295872	0.012		X
SW-13		38.481561	-121.29179	0.011		X

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	WUS	WOS
SW-14a		38.481531	-121.289529	0.025	X	X
SW-14b		38.481534	-121.289314	0.005	X	X
SW-15		38.481737	-121.289385	0.037	X	X
SW-16		38.48174	-121.28916	0.010	X	X
SW-17		38.481713	-121.288435	0.016	X	X
SW-18		38.495948	-121.270078	0.050		
			SW Total	**5.471**		
VP-1	Palustrine,	38.496444	-121.318481	0.011		X
VP-2	Emergent	38.496332	-121.295834	0.006		X
VP-3		38.496054	-121.284574	0.014		X
VP-4a		38.496281	-121.284447	0.016		X
VP-4b		38.496286	-121.284211	0.003		X
VP-5		38.496269	-121.284023	0.014		X
VP-6		38.496277	-121.275819	0.011		X
VP-7		38.496303	-121.272989	0.018		X
VP-8		38.496428	-121.268094	0.075		X
VP-9		38.496674	-121.261561	0.002		X
VP-10		38.495713	-121.297836	0.001		X
VP-11		38.494556	-121.297832	0.019		X
VP-12		38.490576	-121.297902	0.007		X
VP-13		38.488993	-121.297882	0.007		X
VP-14		38.486559	-121.29787	0.017		X
VP-15		38.486319	-121.297851	0.005		X
VP-16		38.486113	-121.297868	0.024		X
VP-17		38.484448	-121.297861	0.013		X
VP-18		38.484201	-121.297854	0.015		X
VP-19		38.48311	-121.297811	0.029		X
VP-20		38.483797	-121.29785	0.015		X
VP-21		38.48257	-121.297843	0.058		X
VP-22		38.480755	-121.277888	0.003		X
VP-23		38.481334	-121.274185	0.017		X
VP-24		38.480807	-121.277464	0.014		X
VP-25		38.481758	-121.270895	0.093		X
VP-26		38.481627	-121.271584	0.123		X
VP-27		38.481643	-121.270936	0.006		X
VP-28		38.481673	-121.270444	0.003		X
VP-29		38.481633	-121.270653	0.002		X
VP-30		38.481522	-121.270535	0.031		X

Aquatic Resource Name	Cowardin	Latitude	Longitude	Acres	WUS	WOS
VP-31		38.481547	-121.270241	0.003		X
VP-32		38.481628	-121.27014	0.063		X
VP-33		38.496285	-121.284805	0.005		X
VP-34		38.496339	-121.29735	0.001		X
VP-35		38.496248	-121.27843	0.006		X
VP-36		38.496052	-121.27578	0.021		X
VP-37		38.496079	-121.272147	0.006		X
VP-38		38.495832	-121.297857	0.001		X
VP-39		38.496477	-121.266991	0.010		X
VP-40		38.481753	-121.291973	0.020		X
VP-41		38.481521	-121.290568	0.006		X
VP-42		38.481719	-121.288088	0.006		X
VP-43		38.481761	-121.288042	0.005		X
VP-44		38.481496	-121.287349	0.001		X
VP-45		38.481561	-121.287192	0.008		X
VP-46		38.481538	-121.28687	0.036		X
VP-47		38.481535	-121.286556	0.014		X
VP-48		38.48151	-121.285956	0.011		X
VP-49		38.481734	-121.285706	0.022		X
VP-50		38.481489	-121.28528	0.001		X
VP-51		38.481493	-121.281549	0.032		X
VP-52		38.481471	-121.28127	0.010		X
VP-53		38.481693	-121.279823	0.006		X
VP-54		38.481541	-121.279753	0.032		X
VP-55		38.481529	-121.285631	0.020		X
VP-56		38.481724	-121.272838	0.084		X
VP-57		38.481743	-121.272006	0.083		X
VP-58		38.487212	-121.270169	0.046		X
VP-59		38.481693	-121.282262	0.030		X
VP-60		38.486417	-121.270183	0.019		X
			VP Total	**1.279**		
			Grand Total	**8.240**		

Notes:

FM	= Freshwater Marsh	SW	= Seasonal Wetland	WOS	= Waters of the State
S	= Swale	VP	= Vernal Pool	WUS	= Waters of the U.S.

5.2.1 Freshwater Marshes

There are 10 freshwater marshes (FM-1 through 10) in the study area. One freshwater marsh has two segments (FM-4a and b) yielding a total of 11 freshwater marsh segments in the study area. Vegetation is typically composed of emergent species, including narrow leaf cattail (*Typha angustifolia*, OBL), common tule (*Schoenoplectus acutus* var. *occidentalis,* OBL), lamp rush (*Juncus effusus*, FACW), tall cyperus, and dallis grass (*Paspalum dilatatum,* FAC). Within the study area, freshwater marshes occur in the channel (FM-10) or banks (FM-8) of a slow-moving perennial stream, in or along the edge of slow-moving intermittent stream channels (FM-3, 4, 8, and 9), in roadside ditches (FM-1 and 2), along the edges of ponds (FM-5 and 6), and one occurs in a unique location at the topographic low of a irrigated pasture flanked by agricultural ditches (FM-7).

The NWI Freshwater Emergent Wetlands overlap or are very close to FM-3, 4, 9, and 10. Freshwater Pond overlaps FM-5, 6, and 8 (USFWS 2023). The NHD maps FM-10 (Laguna Creek) as perennial stream and FM-4 (Gerber Creek) is mapped as an ephemeral stream (USGS 2024).

Freshwater marshes that have a continuous connection with surface water (e.g., within or adjacent to a perennial or intermittent stream) are potentially jurisdictional WUS. Therefore, because FM-8 and 10 are within or adjacent to a perennial stream, they qualify as potentially jurisdictional WUS and WOS. Similarly, FM-3, 4, and 9 are associated with intermittent streams, which support relatively permanent water, and are potentially jurisdictional WUS and WOS. FM-1 is in a roadside ditch that is hydrologically connected to an intermittent stream (IS-1a, Gerber Creek) and therefore it is a potentially jurisdictional WUS and WOS. FM-7 is isolated and therefore is not anticipated to be a potentially jurisdictional WUS. Although FM-7 is adjacent to an irrigated cropland used for an ongoing agricultural operation (i.e., receives routine discing), surface water and shallow water table in areas that did not support surface water was observed during the January field survey suggesting that this area may be a natural wetland, a wetland created by modification of a surface water of the state, or a combination of both. Therefore, FM-7 is anticipated to be a potentially jurisdictional WOS. FM-5 and 6 are associated with artificial ponds used for ongoing agricultural activities. Therefore FM-5 and 6 are not anticipated to be WUS or WOS. FM-2 is in roadside ditch feature that is not directly hydrologically to a potentially jurisdictional feature, suggesting that it is an artificial wetland and therefore it is not anticipated to be a potentially jurisdictional WUS or WOS.

FM-10 is within Laguna Creek and also qualifies as an other water, however it is only addressed as a wetland to avoid double counting.

5.2.2 Seasonal Wetlands

Seasonal wetlands are depressional areas that are inundated during the rainy season but dry out in the spring or summer. Seasonal wetlands in the study area are typically found in isolated low depression and within and along intermittent and ephemeral stream channels adjacent to valley grassland habitats. Common species in seasonal wetlands includes spikerush, dallis grass, tall cyperus, barley, and Italian rye grass.

There are 18 seasonal wetlands (SW-1 through SW-18) in the study area. However, in some instances a seasonal wetland is bisected by a stream and is mapped as two separate features though the features are hydrologically connected. Specifically, SW-3, 4, 6, 8, 12, and 14 have two features (a and b) yielding a total of 24 seasonal wetland features. The NWI Freshwater Emergent Wetland mapped features overlap or are very close to SW-3a, SW-4a, SW-8a and b, SW-12a and b, SW-14a and b, SW-17. Similar to FM-7 discussed above, SW-11 occurs in an irrigated cropland used for an ongoing agricultural operation (i.e., receives routine discing and grazing) however it may be a natural wetland, a wetland created by modification of a surface water of the state, or a combination of both. SW-18 also occurs in an irrigated cropland. SW-8, 14, 15, 16, and 17 are adjacent or hydrologically connected to

intermittent streams. SW-3, 4, 5, and 9 are within ephemeral streams and SW 10 is adjacent to an ephemeral stream (USGS 2024). SW-1, 2, 6, 7, 11, 12, 13, and 18, are isolated.

Seasonal wetland SW-8, 14, 15, 16, and 17 are adjacent or within intermittent streams which support relatively permanent water are potentially jurisdictional WUS and WOS. Seasonal wetlands SW-1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13 are isolated, within or adjacent to ephemeral streams (which lack relatively permanent water) are not anticipated to be potentially jurisdictional WUS but are potentially jurisdictional WOS. SW-18 is isolated and occurs in an irrigated cropland. A review of historical imagery indicates SW-18 is not persistent through time. It is likely an intermittent feature that developed in response to agricultural practices (i.e., discing and irrigation) and weather. Given its small size (less than 1 acre), it being artificially created, and it being subject to ongoing agricultural practices; SW-18 is not anticipated to be a WUS or a WOS.

5.2.3 Vernal Pools

Vernal pools are shallow, seasonal depressional wetlands that have a prolonged hydroperiod due to a restrictive soil layer that slows or prevents water infiltration. These features often support specialized flora and fauna that are adapted to the unique conditions. The presence of vernal pool species can be diagnostic in identifying vernal pools. Due to vernal pools being either saturated or plant species seedlings not being identifiable during the field delineation, vegetation composition likely differs during peak bloom. However, common plant species observed in vernal pools includes vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus,* OBL), coyote thistles (*Eryngium* spp., FACW/OBL), typical white meadowfoam (*Limnanthes alba* spp. *alba*, FACW), Italian ryegrass, and barley.

There are 60 vernal pools in the study area (VP-1 through 60) though one vernal pool includes two segments (VP-4a and b), yielding a total of 61 vernal pool segments in the study area.

All vernal pools in the study area are isolated and support seasonal water that accumulates from winter rainfall and dries down by late spring or summer. Therefore, vernal pools are not anticipated to be a potentially jurisdictional WUS. However, they are potentially jurisdictional WOS.

5.2.4 Swale

Swales are linear depressional features or topographic lows that convey water for a short duration after a storm events. They do not have a bed and bank are not considered streams. Swales may connect vernal pools and may supports the associated species. Swales must have hydrophytic vegetation, hydric soils, and hydrology to be considered as a potentially jurisdictional aquatic resource. There are four swales in the study area (S-1 through 4) and have similar vegetation as vernal pools. S-2 is very close to a Freshwater Emergent Wetland feature mapped in the NWI (USFWS 2023). The NHD does not overlap any swale feature (USGS 2024).

Swales do not support relatively permanent water, are isolated, and therefore are not anticipated to be a potentially jurisdictional WUS. They are anticipated to be potentially jurisdictional WOS.

5.3 Summary of Potentially Jurisdictional Aquatic Resources

Potentially jurisdictional wetlands and other waters are summarized in Table 6. Potential jurisdiction is indicated for WUS and WOS columns of the table, however jurisdiction is determined by the respective regulatory.

Table 6. Summary of Potentially Jurisdictional Wetlands and Other Waters in the Study Area

Aquatic Resource Type	Total Acres	Acres of Potential WUS	Acres of Potential WOS	Total Linear Feet	Linear Feet of Potential WUS	Linear Feet of Potential WOS
Other Waters						
Agricultural Ditch (AD)	6.480	0	0	23,123	0	0
Ephemeral Stream (ES)	0.106	0	0.106	380	0	380
Intermittent Stream (IS)	0.095	0.095	0.095	452	452	452
Other Waters/ Reservoir (OW)	2.851	0	0			
Perennial Stream (PS)	0.182	0.182	0.182	176	176	176
Roadside Ditch (RD)	0.964	0.003	0.003	21,680	53	53
Other Waters Grand Total	**10.678**	**0.280**	**0.386**	**45,811**	**681**	**1,061**
Wetlands						
Freshwater Marsh (FM)	1.412	0.188	0.856			
Swale (S)	0.078	0	0.078			
Seasonal Wetland (SW)	5.471	0.101	5.421			
Vernal Pool (VP)	1.279	0	1.29			
Wetlands Grand Total	**8.240**	**0.289**	**7.645**			

Notes:

AD	= Agricultural Ditch	OW	= Open Water	SW	= Seasonal Wetland
ES	= Ephemeral Stream	PS	= Perennial Stream	VP	= Vernal Pool
FM	= Freshwater Marsh	RD	= Roadside Ditch	WOS	= Waters of the State
IS	= Intermittent Stream	S	= Swale	WUS	= Waters of the U.S

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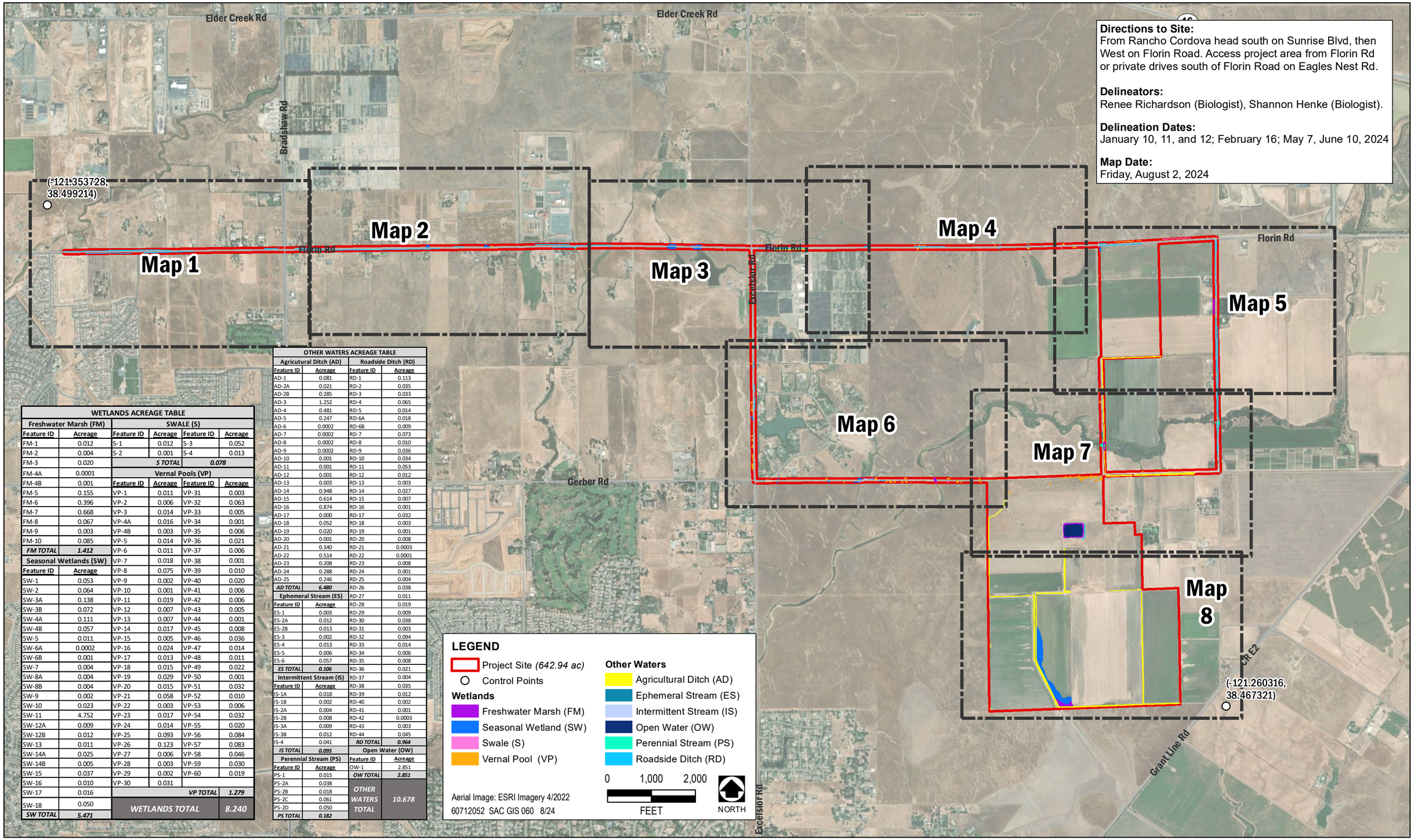
Appendix A: Aquatic Resources Delineation Map Book



WETLANDS ACREAGE TABLE

Freshwater Marsh (FM)		SWALE (S)			
Feature ID	Acreage	Feature ID	Acreage	Feature ID	Acreage
FM-1	0.012	S-1	0.012	S-3	0.052
FM-2	0.004	S-2	0.001	S-4	0.013
FM-3	0.020	*S TOTAL*	*0.078*		
FM-4A	0.0001	Vernal Pools (VP)			
FM-4B	0.001	Feature ID	Acreage	Feature ID	Acreage
FM-5	0.155	VP-1	0.011	VP-31	0.003
FM-6	0.396	VP-2	0.006	VP-32	0.063
FM-7	0.668	VP-3	0.014	VP-33	0.005
FM-8	0.067	VP-4A	0.016	VP-34	0.001
FM-9	0.003	VP-4B	0.003	VP-35	0.006
FM-10	0.085	VP-5	0.014	VP-36	0.021
FM TOTAL	*1.412*	VP-6	0.011	VP-37	0.006
Seasonal Wetlands (SW)		VP-7	0.018	VP-38	0.001
Feature ID	Acreage	VP-8	0.075	VP-39	0.010
SW-1	0.053	VP-9	0.002	VP-40	0.020
SW-2	0.064	VP-10	0.001	VP-41	0.006
SW-3A	0.138	VP-11	0.019	VP-42	0.006
SW-3B	0.072	VP-12	0.007	VP-43	0.005
SW-4A	0.111	VP-13	0.007	VP-44	0.001
SW-4B	0.057	VP-14	0.017	VP-45	0.008
SW-5	0.011	VP-15	0.005	VP-46	0.036
SW-6A	0.0002	VP-16	0.024	VP-47	0.014
SW-6B	0.001	VP-17	0.013	VP-48	0.011
SW-7	0.004	VP-18	0.015	VP-49	0.022
SW-8A	0.004	VP-19	0.029	VP-50	0.001
SW-8B	0.004	VP-20	0.015	VP-51	0.032
SW-9	0.002	VP-21	0.058	VP-52	0.010
SW-10	0.023	VP-22	0.003	VP-53	0.006
SW-11	4.752	VP-23	0.017	VP-54	0.032
SW-12A	0.009	VP-24	0.014	VP-55	0.020
SW-12B	0.012	VP-25	0.093	VP-56	0.084
SW-13	0.011	VP-26	0.123	VP-57	0.083
SW-14A	0.025	VP-27	0.006	VP-58	0.046
SW-14B	0.005	VP-28	0.003	VP-59	0.030
SW-15	0.037	VP-29	0.002	VP-60	0.019
SW-16	0.010	VP-30	0.031		
SW-17	0.016			*VP TOTAL*	*1.279*
SW-18	0.050	*WETLANDS TOTAL*			*8.240*
SW TOTAL	*5.471*				

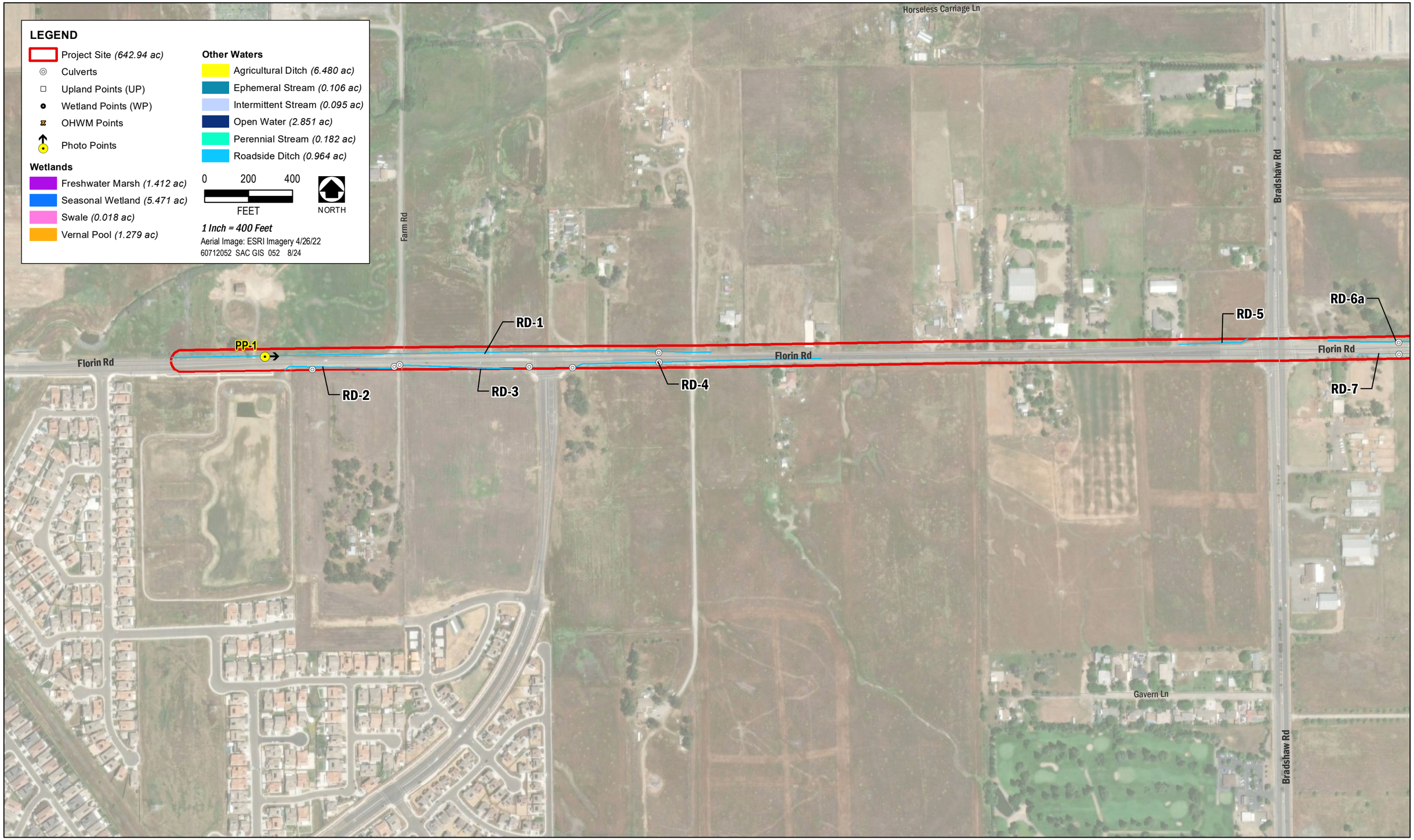
OTHER WATERS ACREAGE TABLE

Agricutural Ditch (AD)		Roadside Ditch (RD)	
Feature ID	Acreage	Feature ID	Acreage
AD-1	0.081	RD-1	0.113
AD-2A	0.021	RD-2	0.035
AD-2B	0.285	RD-3	0.033
AD-3	1.252	RD-4	0.065
AD-4	0.481	RD-5	0.014
AD-5	0.247	RD-6A	0.018
AD-6	0.0002	RD-6B	0.009
AD-7	0.0002	RD-7	0.073
AD-8	0.0002	RD-8	0.010
AD-9	0.0002	RD-9	0.036
AD-10	0.001	RD-10	0.034
AD-11	0.001	RD-11	0.053
AD-12	0.001	RD-12	0.012
AD-13	0.003	RD-13	0.003
AD-14	0.948	RD-14	0.027
AD-15	0.614	RD-15	0.007
AD-16	0.874	RD-16	0.001
AD-17	0.000	RD-17	0.032
AD-18	0.052	RD-18	0.003
AD-19	0.020	RD-19	0.001
AD-20	0.001	RD-20	0.008
AD-21	0.340	RD-21	0.0003
AD-22	0.514	RD-22	0.0001
AD-23	0.208	RD-23	0.008
AD-24	0.288	RD-24	0.001
AD-25	0.246	RD-25	0.004
AD TOTAL	*6.480*	RD-26	0.038
Ephemeral Stream (ES)		RD-27	0.011
Feature ID	Acreage	RD-28	0.019
ES-1	0.003	RD-29	0.009
ES-2A	0.012	RD-30	0.038
ES-2B	0.013	RD-31	0.003
ES-3	0.002	RD-32	0.094
ES-4	0.013	RD-33	0.014
ES-5	0.006	RD-34	0.006
ES-6	0.057	RD-35	0.008
ES TOTAL	*0.106*	RD-36	0.021
Intermittent Stream (IS)		RD-37	0.004
Feature ID	Acreage	RD-38	0.035
IS-1A	0.018	RD-39	0.012
IS-1B	0.002	RD-40	0.002
IS-2A	0.004	RD-41	0.001
IS-2B	0.008	RD-42	0.0003
IS-3A	0.009	RD-43	0.003
IS-3B	0.012	RD-44	0.045
IS-4	0.041	*RD TOTAL*	*0.964*
IS TOTAL	*0.095*	Open Water (OW)	
Perennial Stream (PS)		Feature ID	Acreage
Feature ID	Acreage	OW-1	2.851
PS-1	0.015	*OW TOTAL*	*2.851*
PS-2A	0.038		
PS-2B	0.018	*OTHER WATERS TOTAL*	*10.678*
PS-2C	0.061		
PS-2D	0.050		
PS TOTAL	*0.182*		

Source: AECOM 2024

Oveja Ranch Wetland Delineation Overview Map

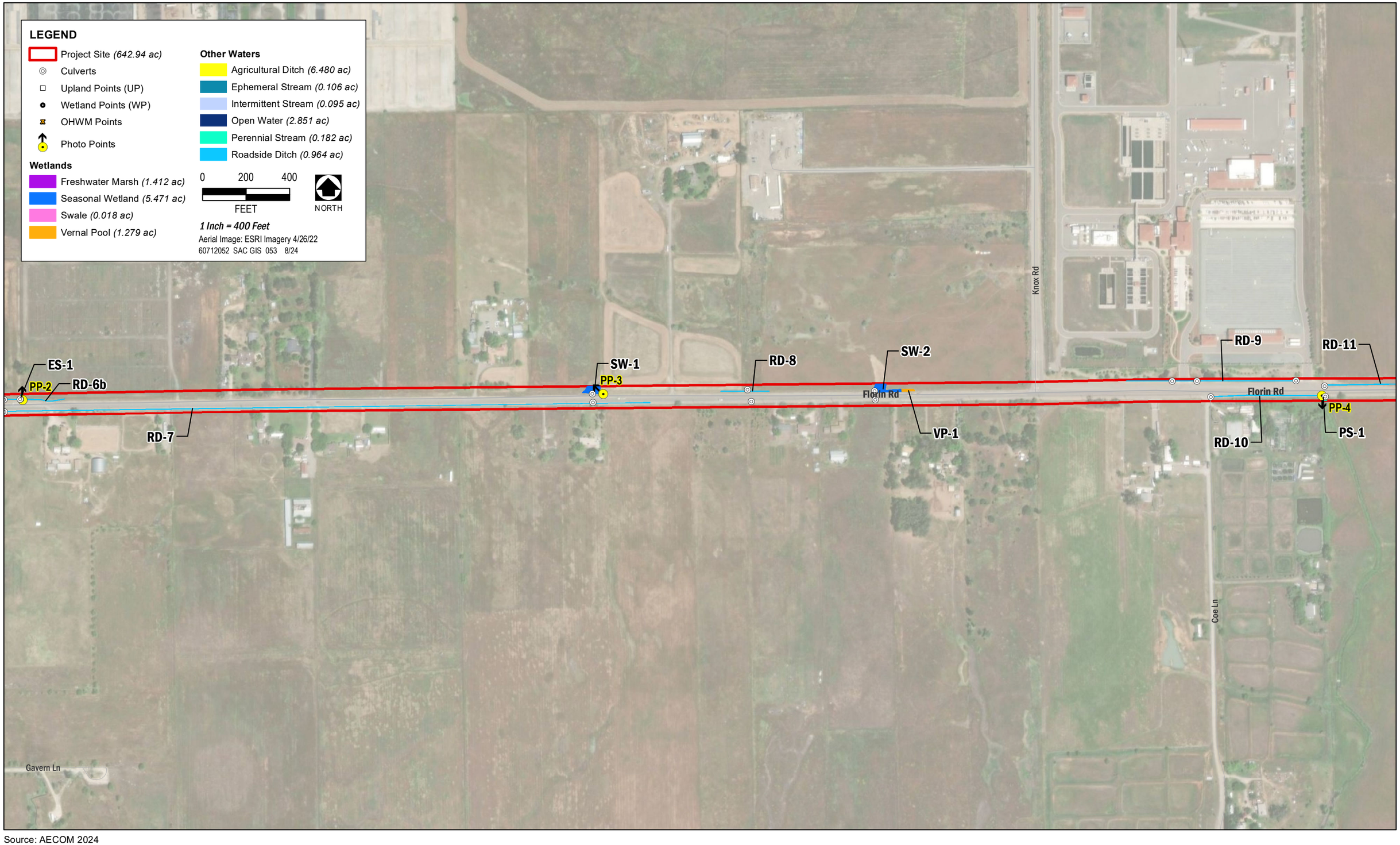
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 1

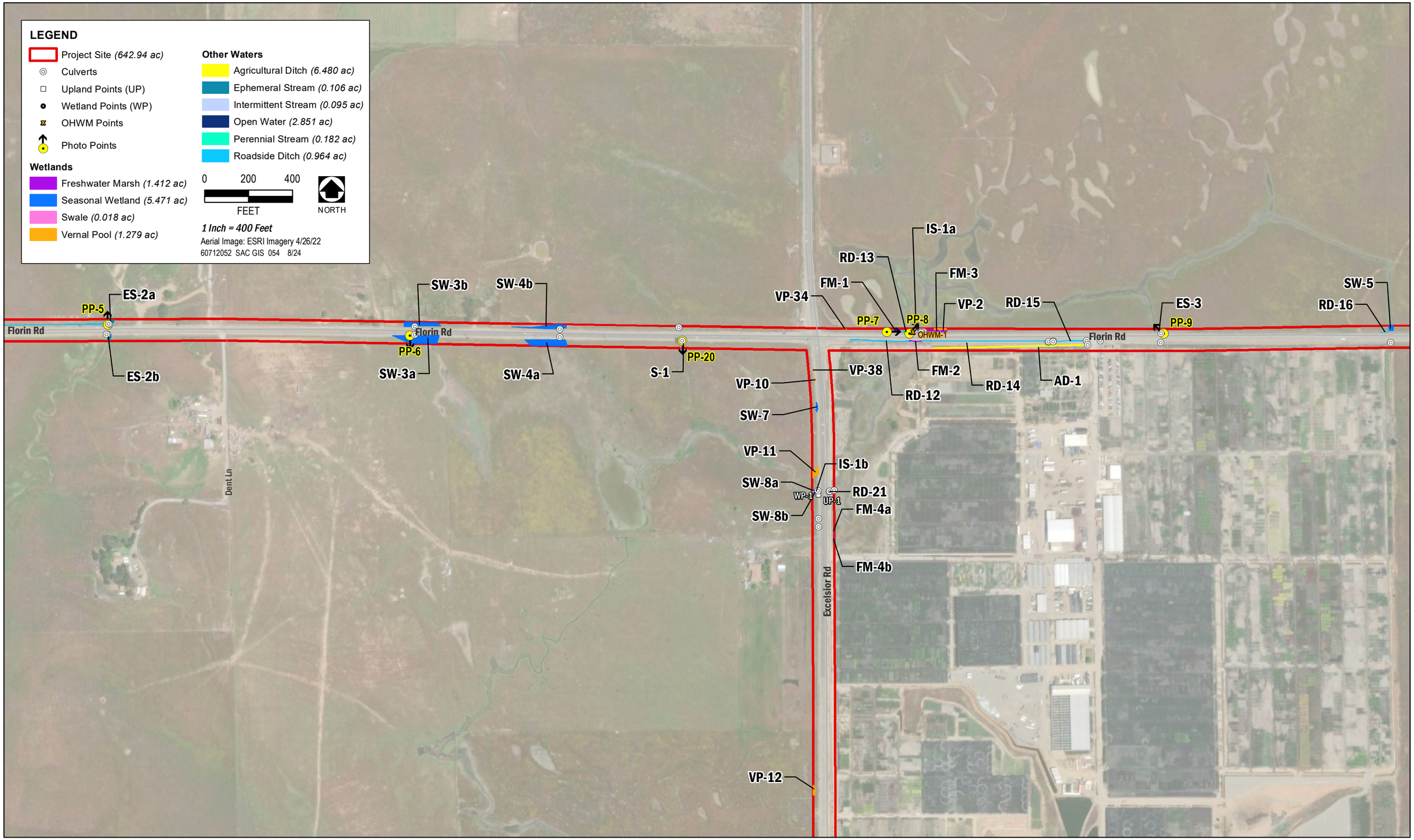
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 2

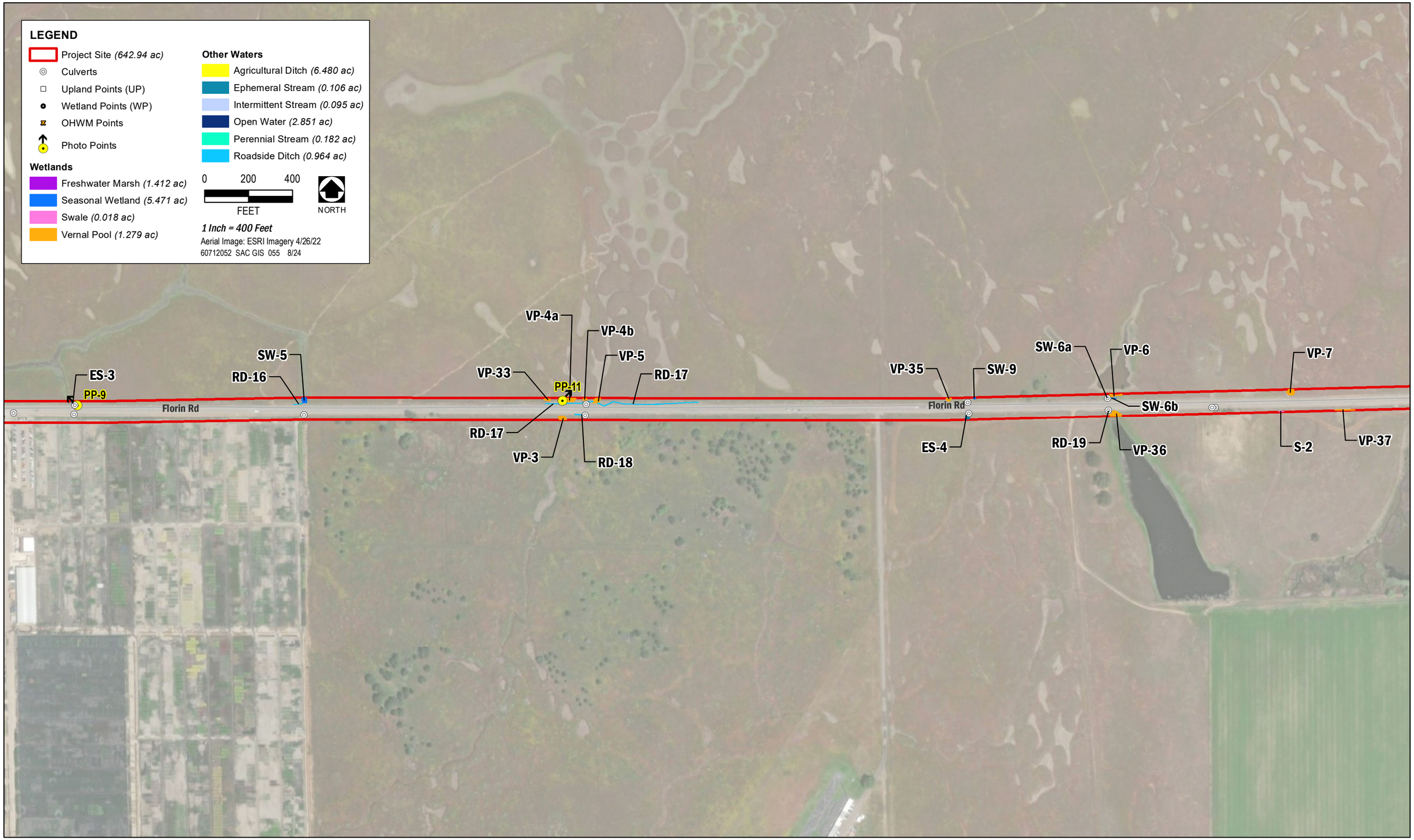
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 3

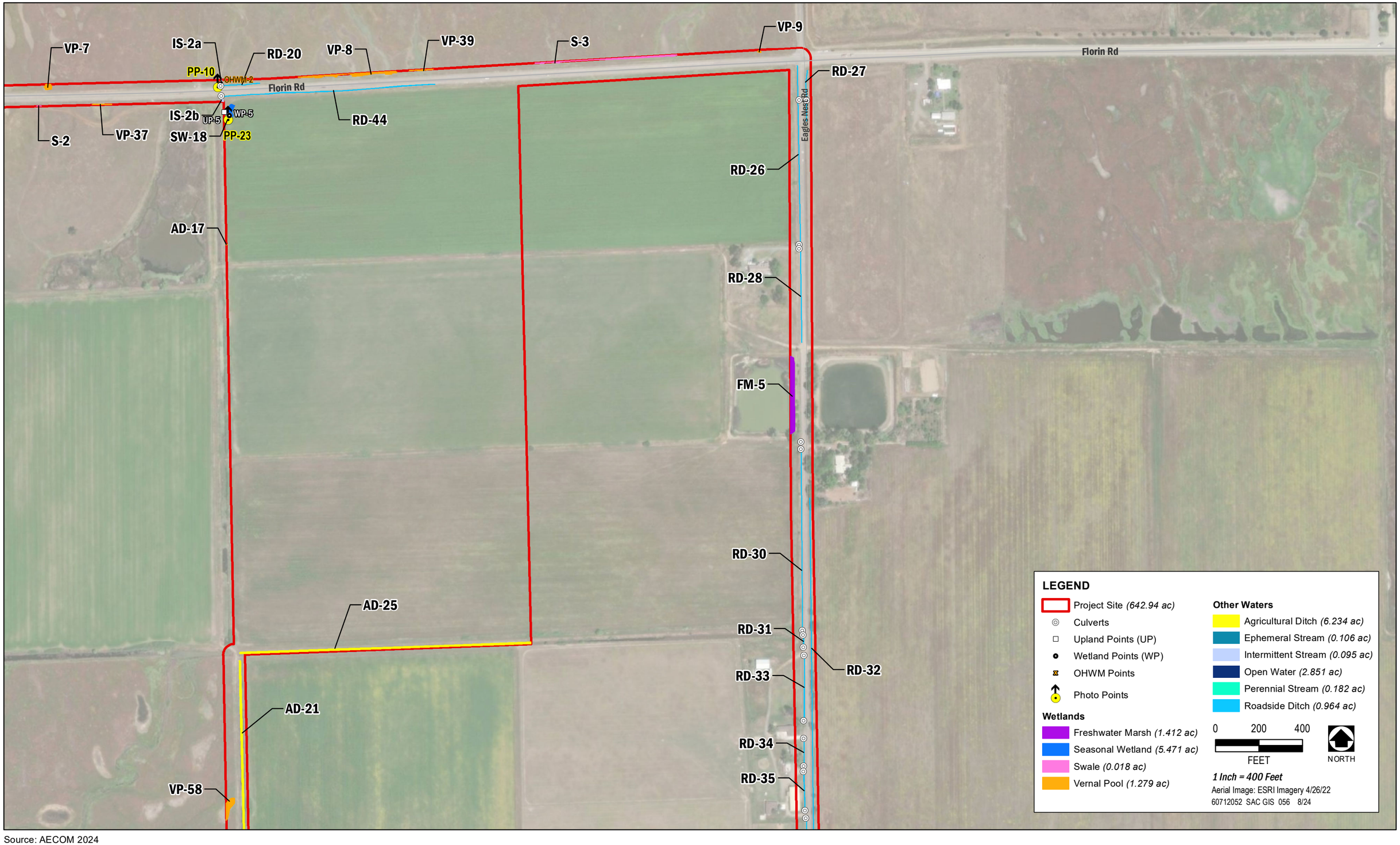
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 4

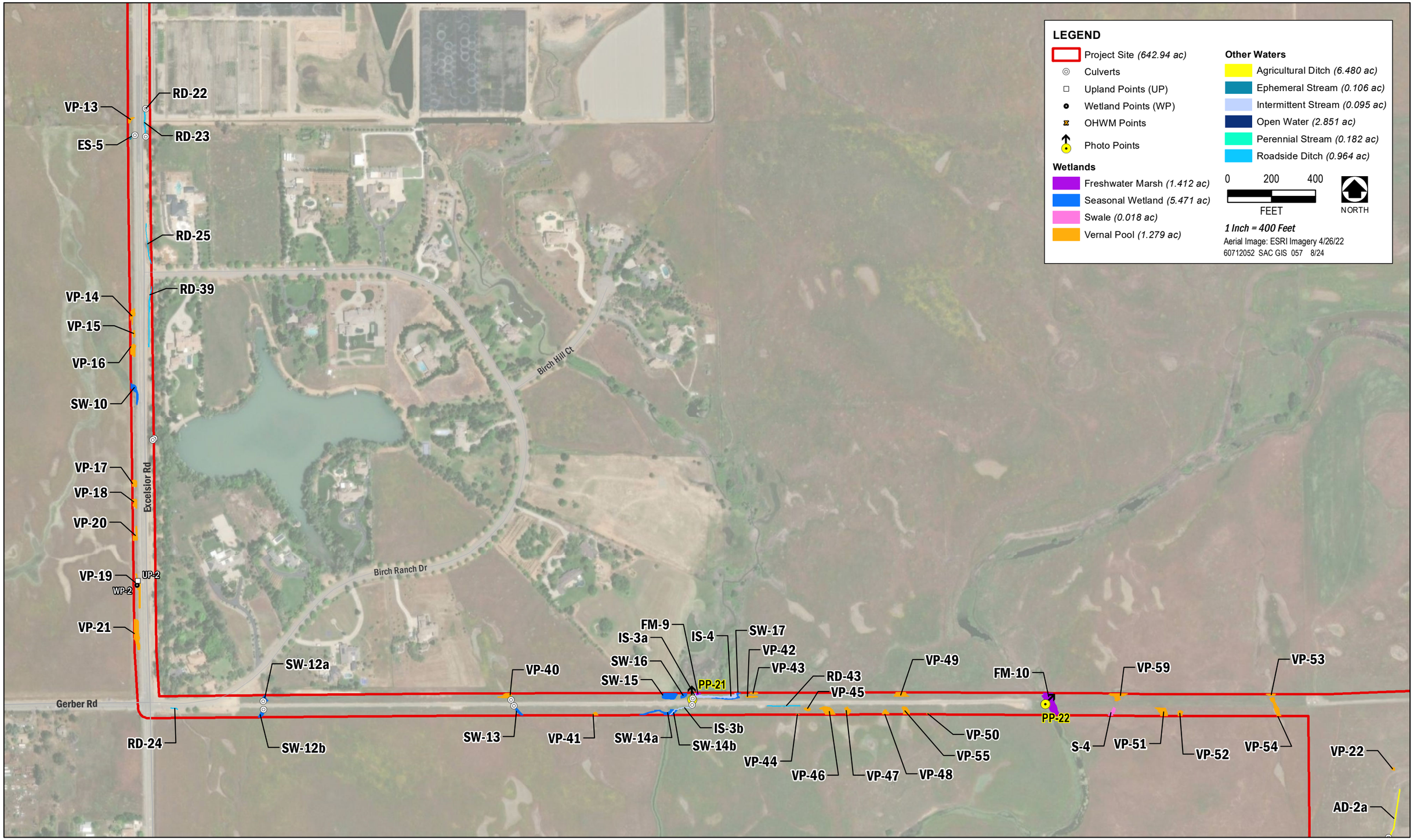
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 5

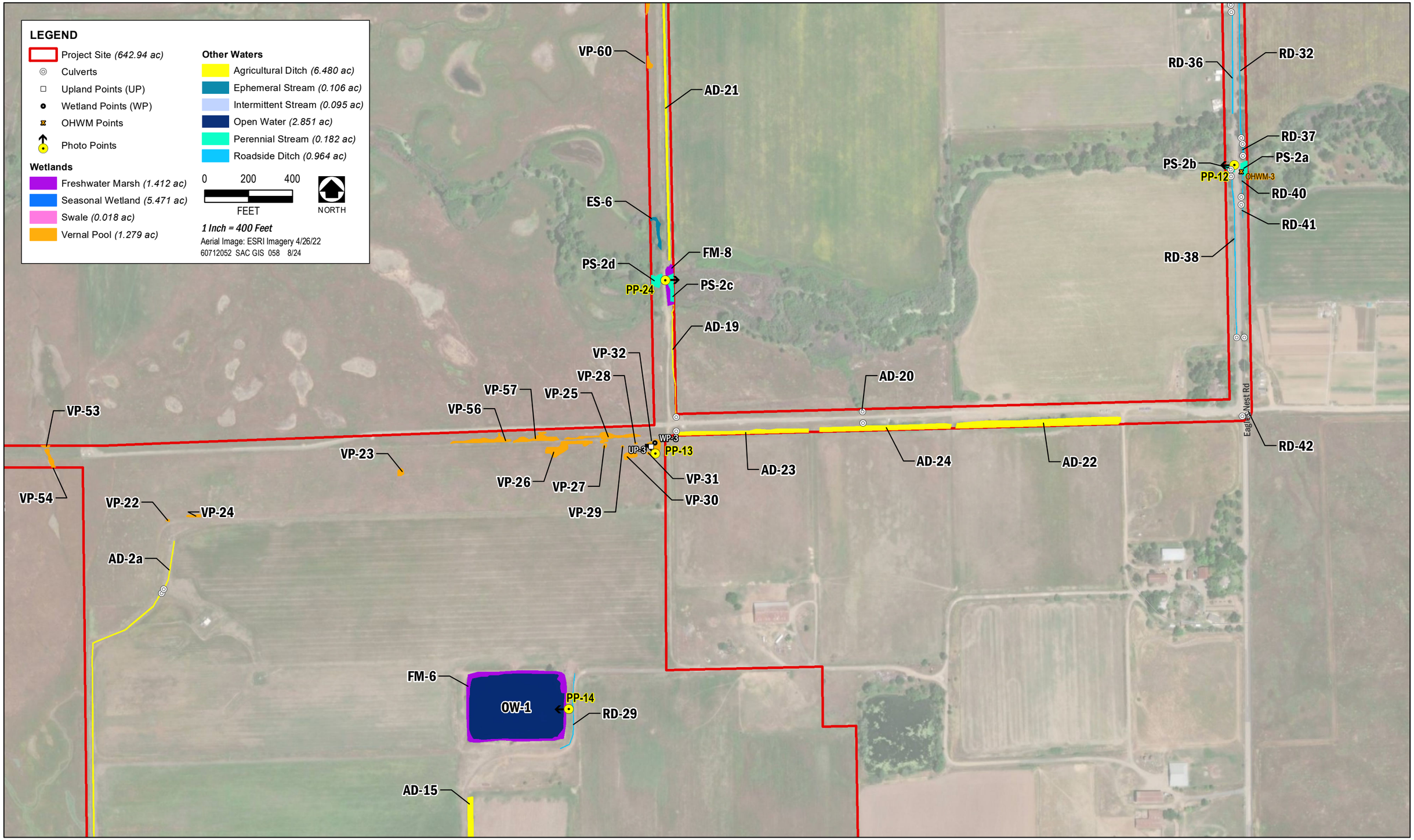
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 6

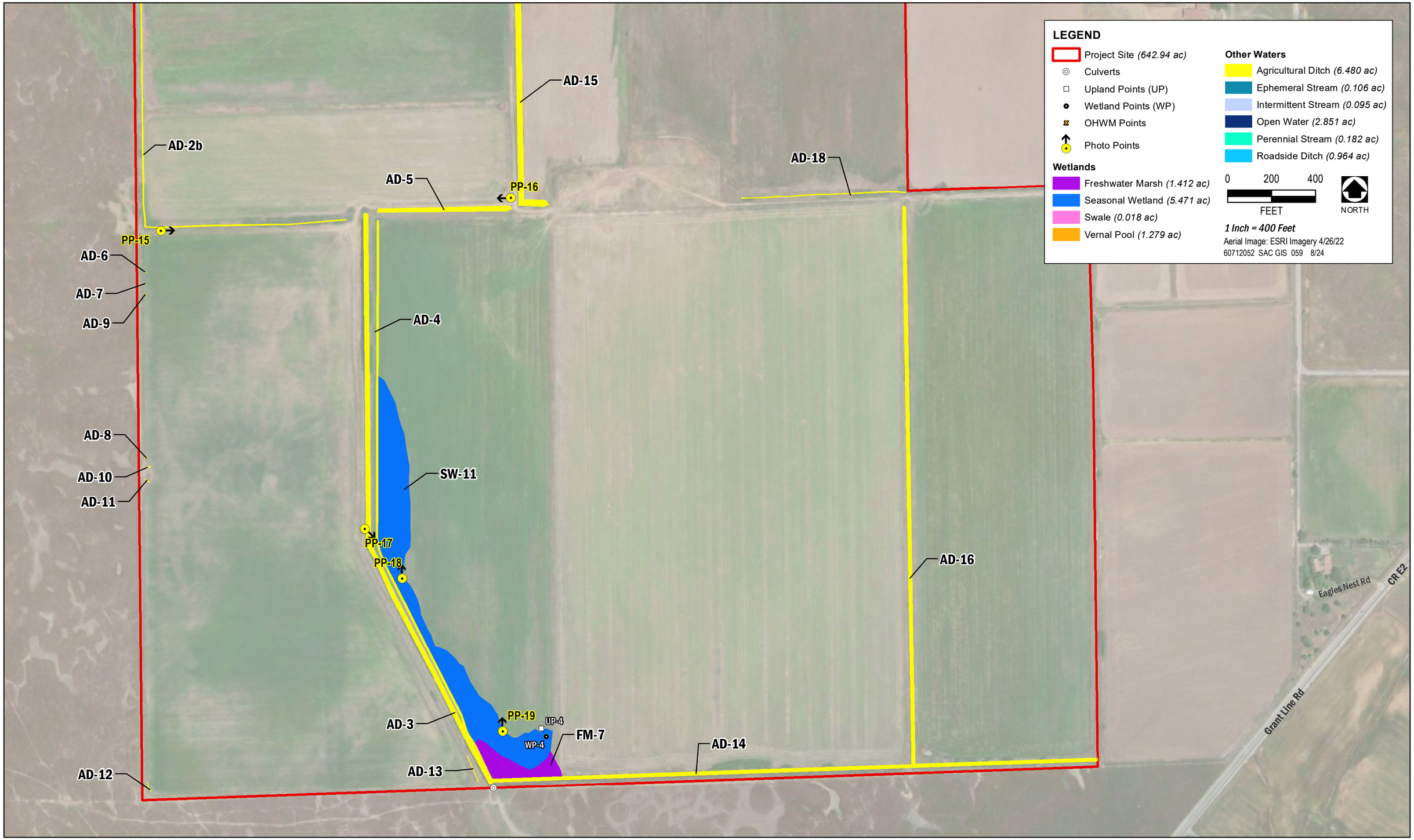
AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 7

AECOM



Source: AECOM 2024

Oveja Ranch Wetland Map 8

AECOM

Appendix B: Supporting Maps

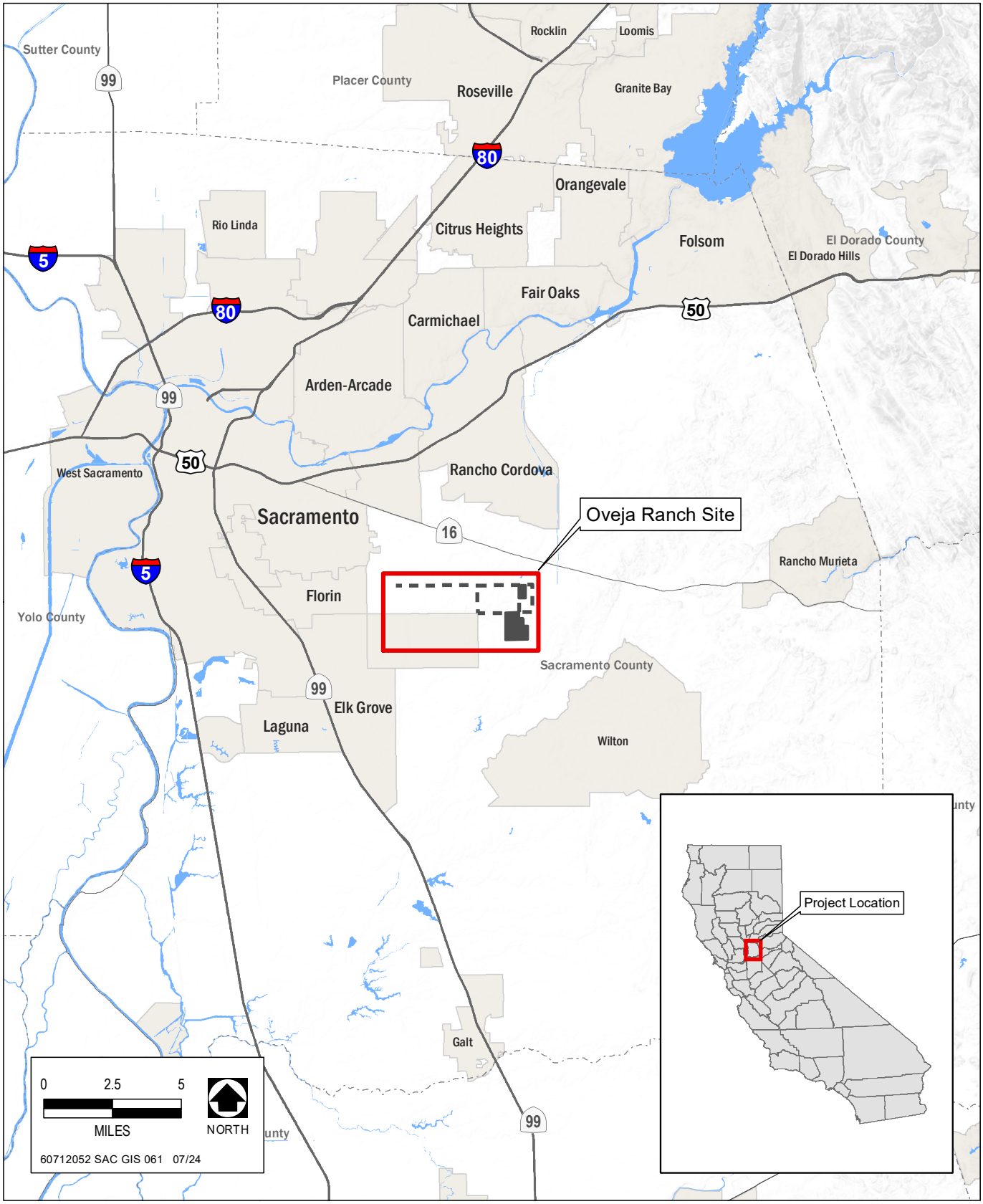
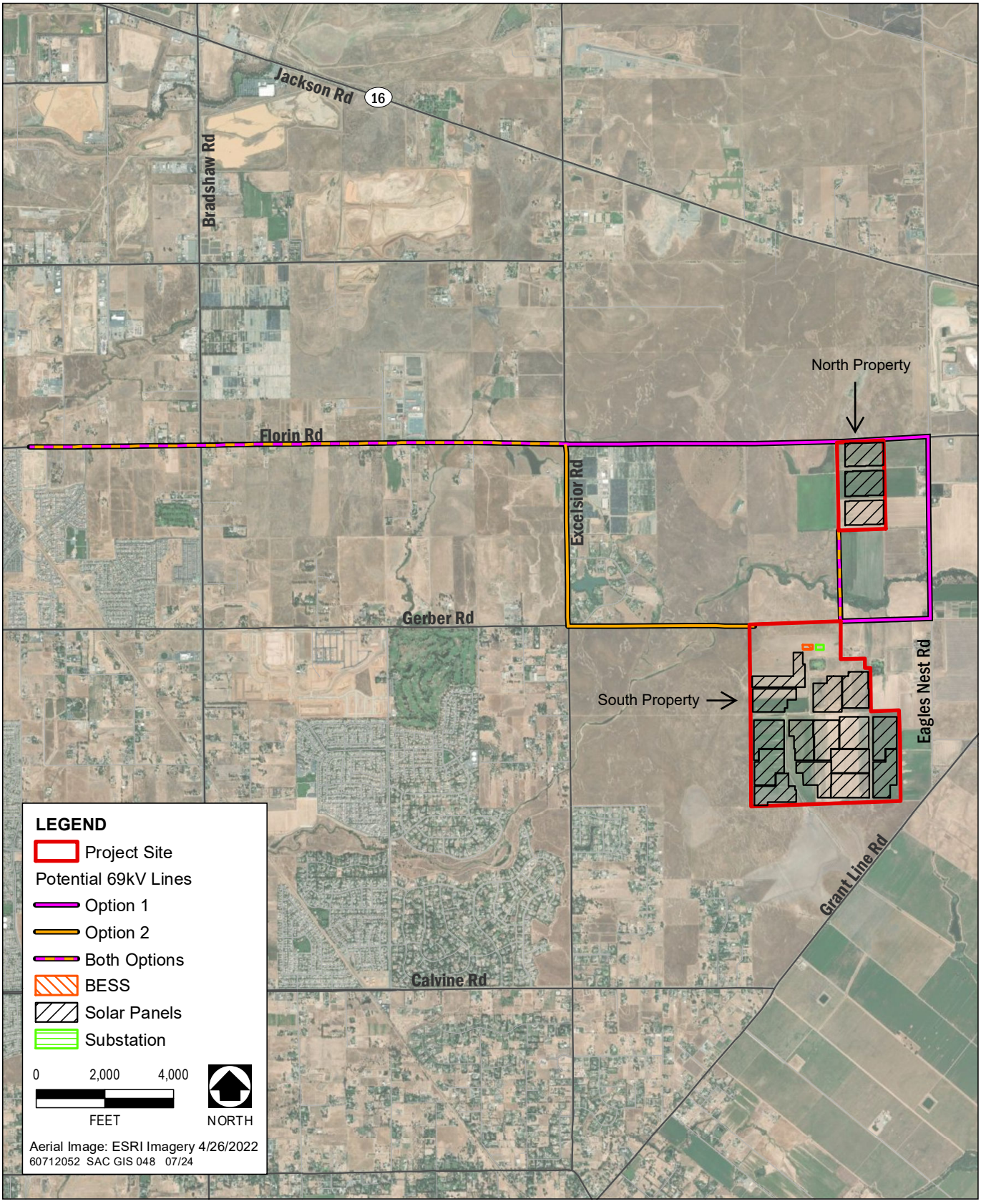


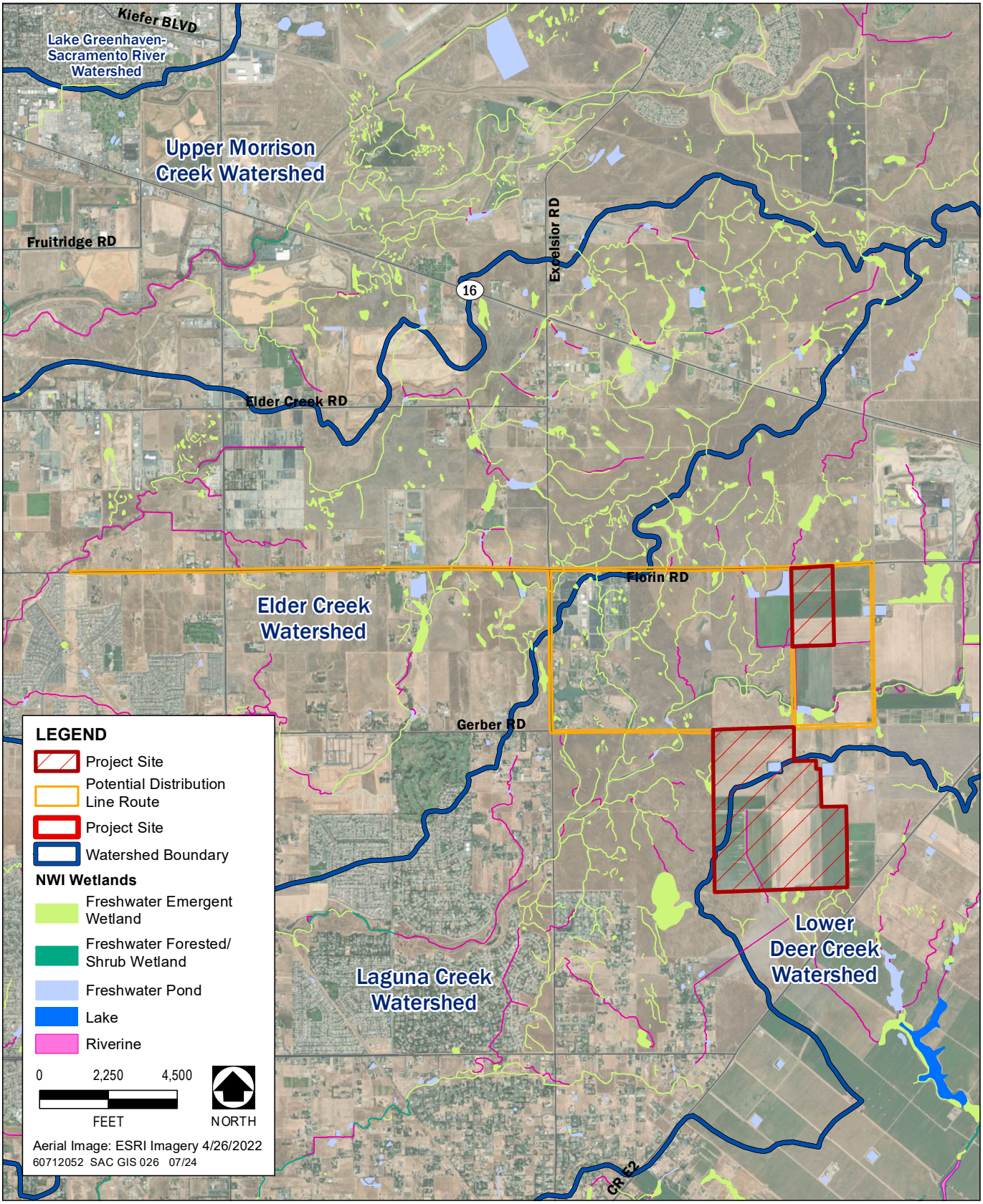
Figure 1. Project Vicinity



Source: SMUD 2024, AECOM 2024

Figure 2: Project Location with Site Components

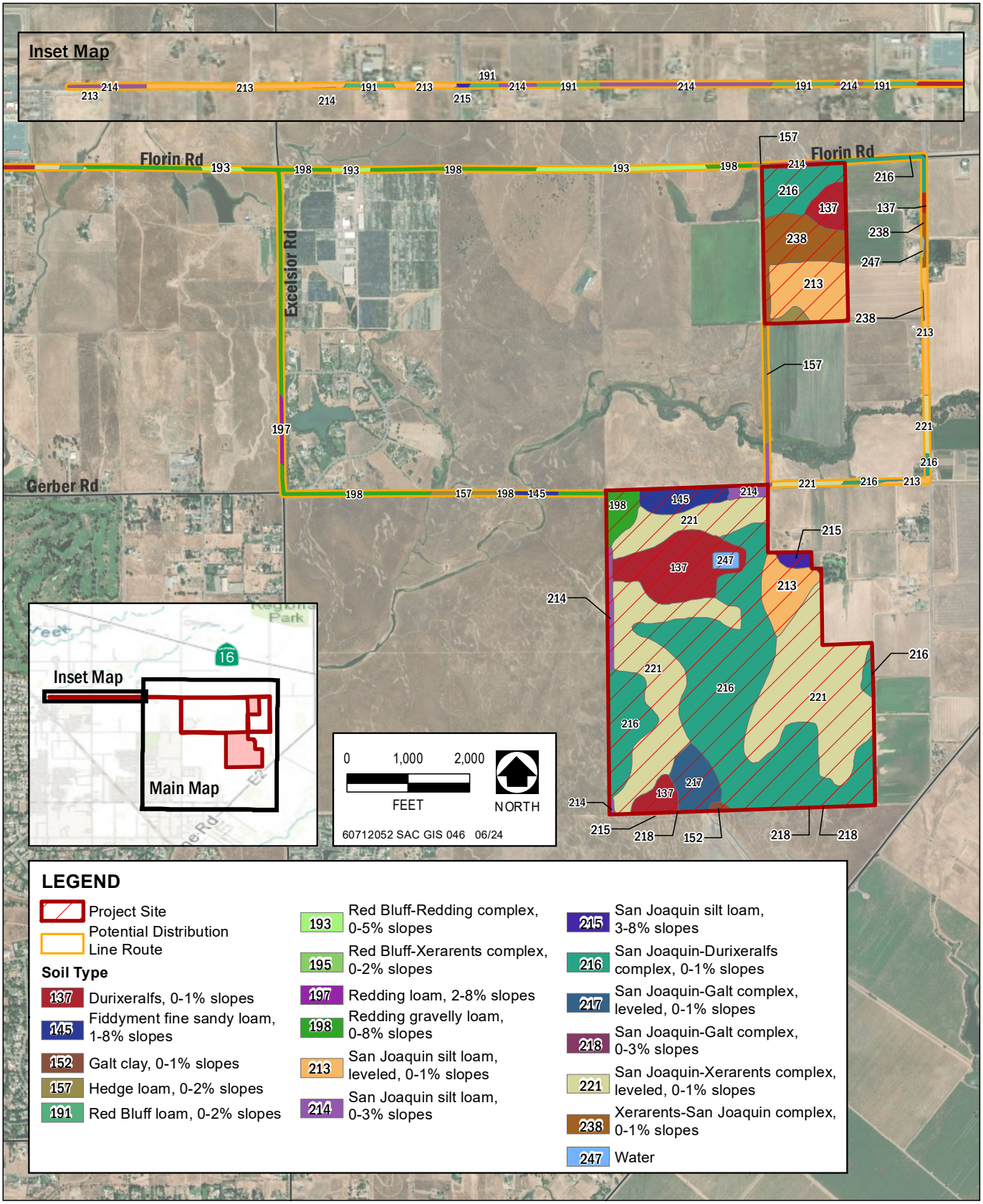
AECOM



Sources: NWI 2020

Figure 3. Watersheds and Hydrology Map

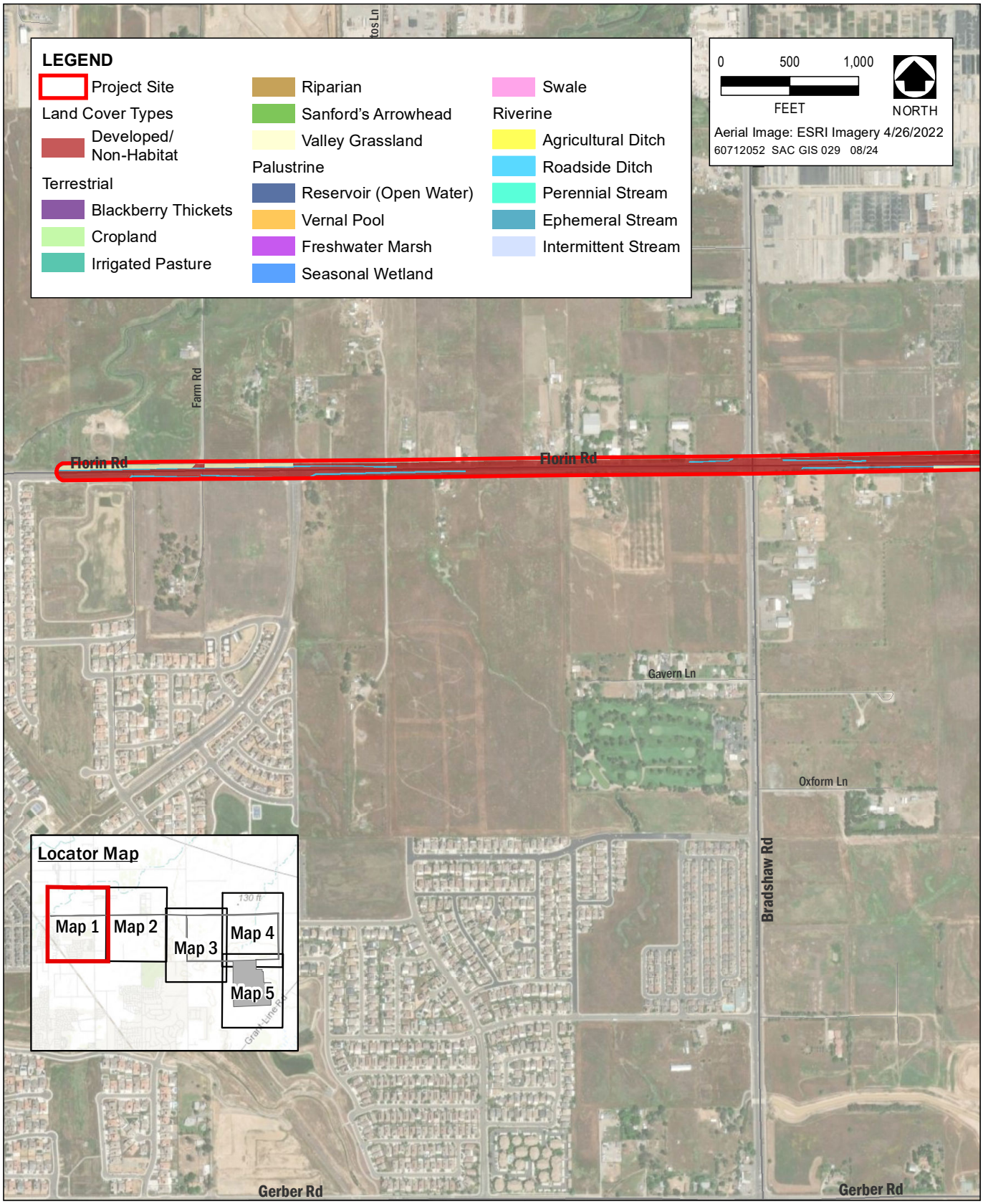
AECOM



Source: USDA NRCS 2019

Figure 4: Soil Types within the Study Area

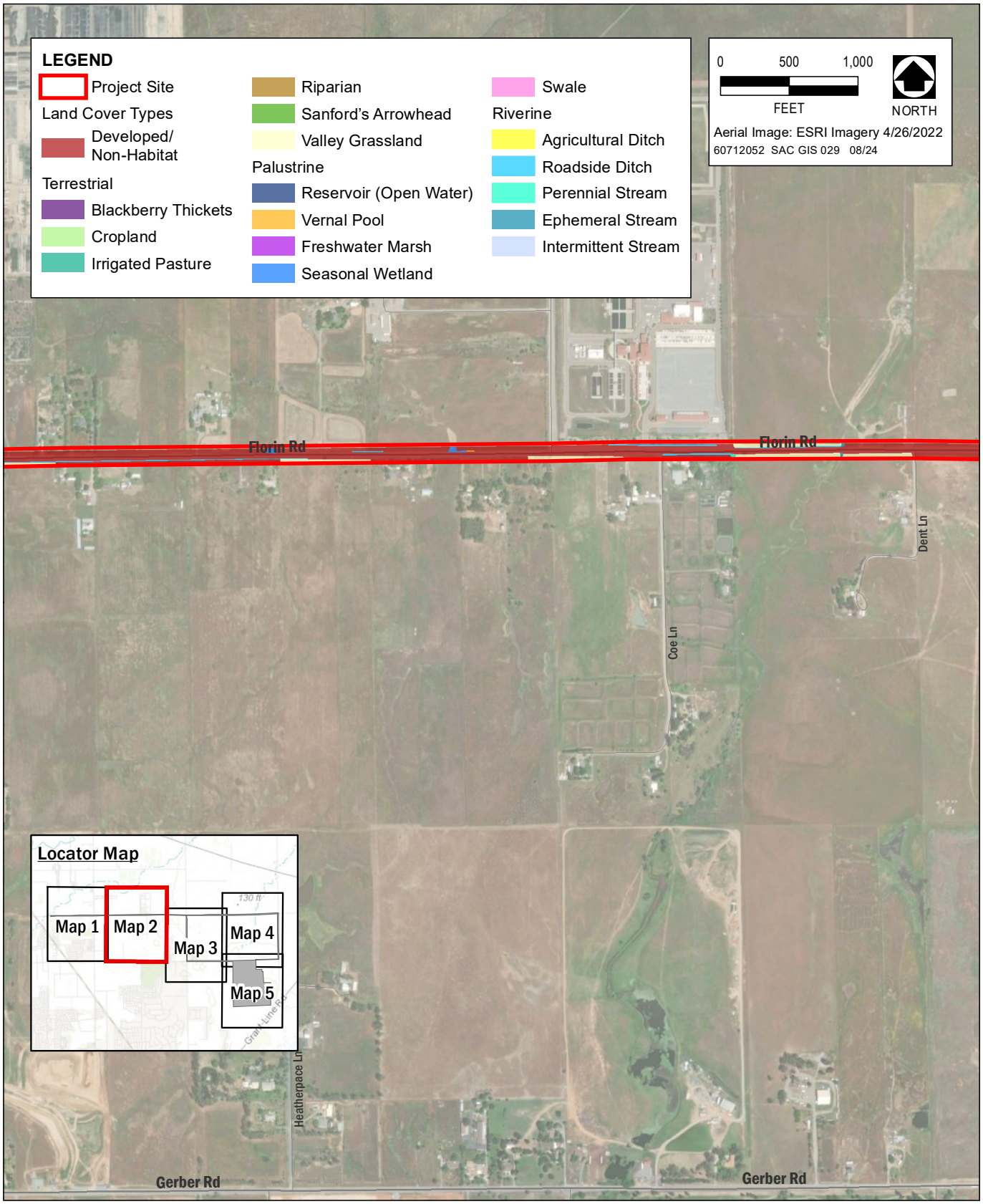
AECOM



Source: AECOM 2024

Figure 5. Vegetation Communities and Land Cover Types Map 1 of 5

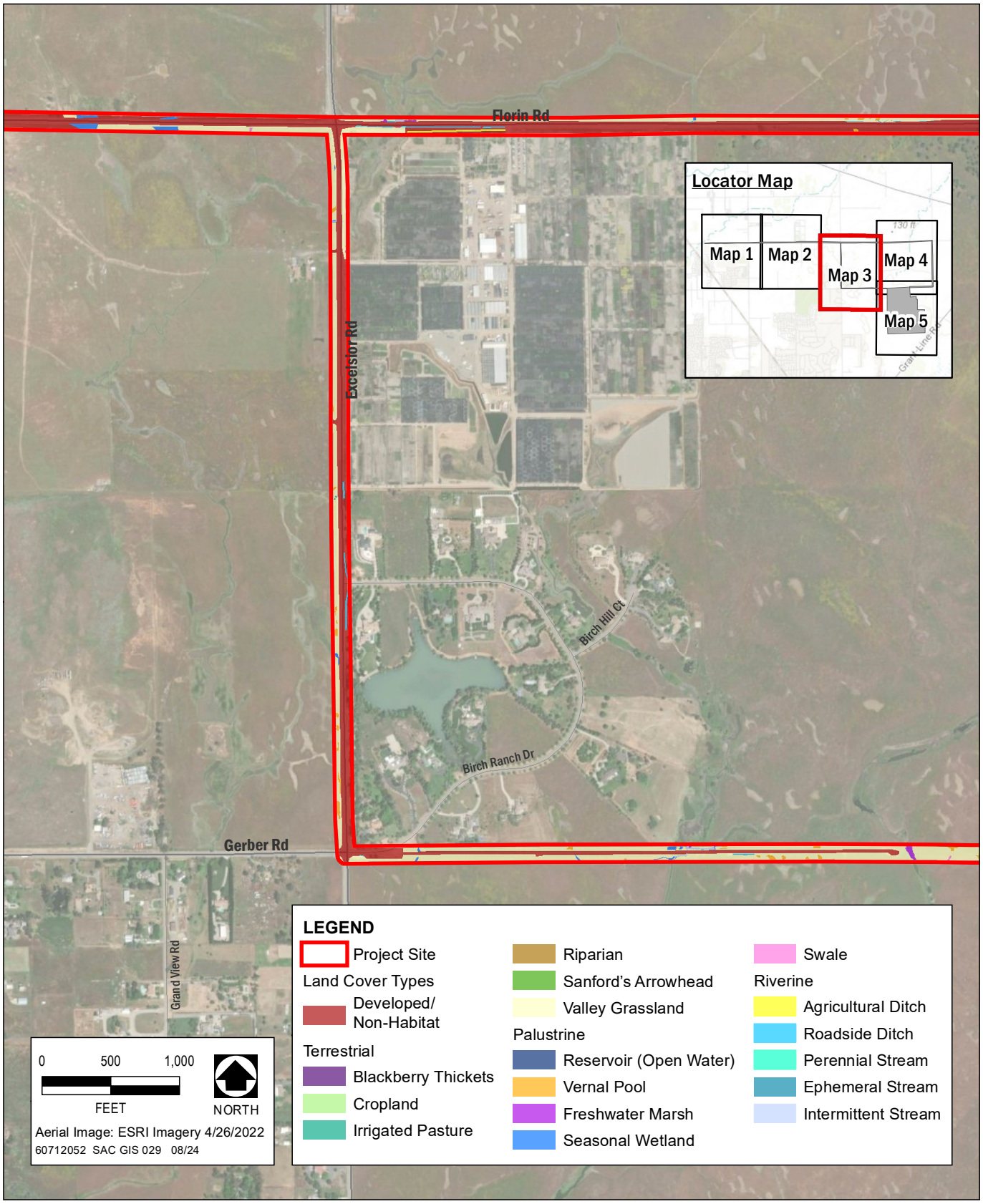
AECOM



Source: AECOM 2024

Figure 5. Vegetation Communities and Land Cover Types Map 2 of 5

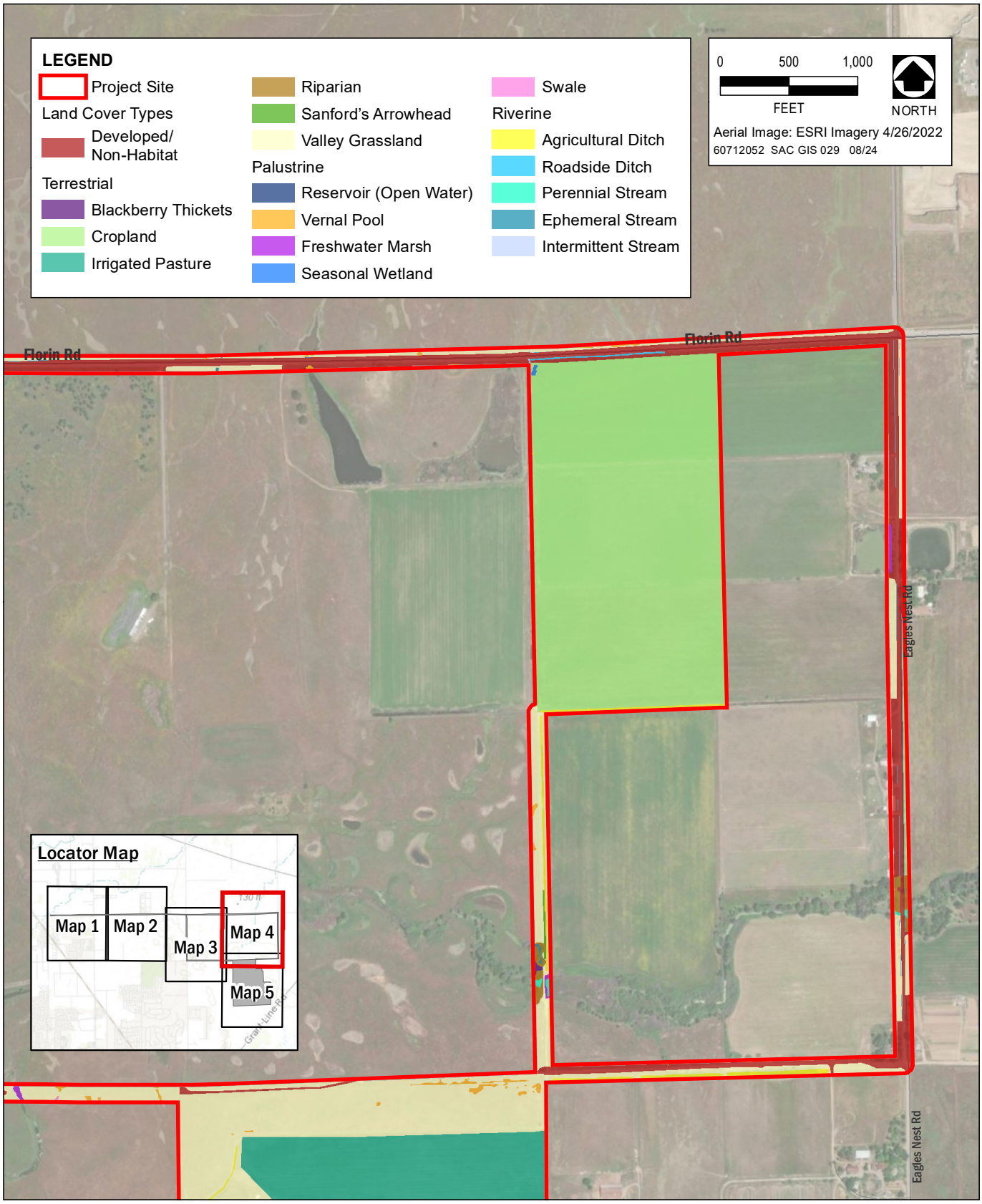
AECOM



Source: AECOM 2024

Figure 5. Vegetation Communities and Land Cover Types Map 3 of 5

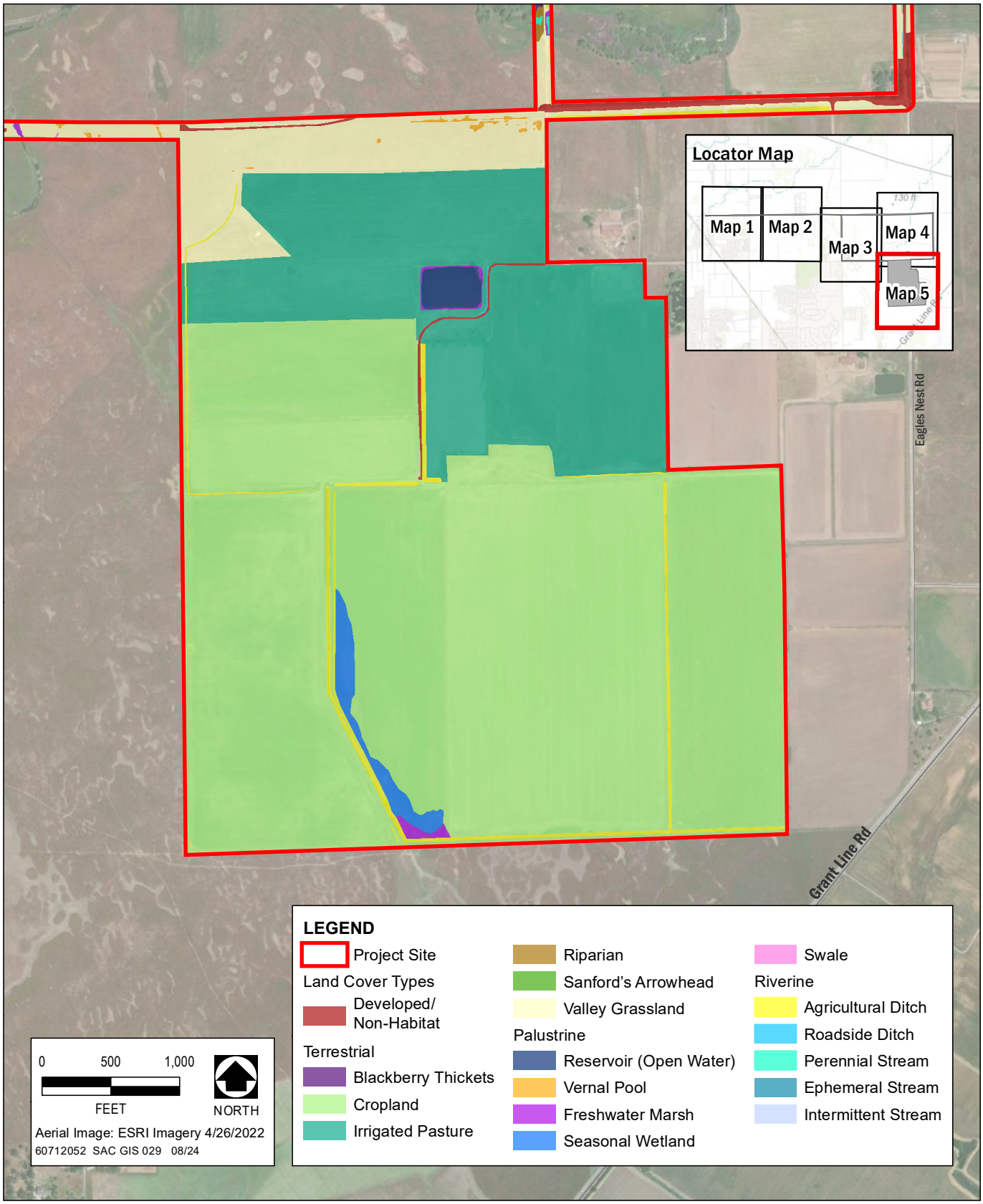
AECOM



Source: AECOM 2024

Figure 5. Vegetation Communities and Land Cover Types Map 4 of 5

AECOM



Source: AECOM 2024

Figure 5. Vegetation Communities and Land Cover Types Map 5 of 5

AECOM

Appendix C: Data Sheets and Data Forms

- C-1: Wetland Determination Data Sheets
- C-2: Rapid Ordinary High Water Mark (OHWM) Field Identification Data Form

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Wagdl Solar City/County: Sacramento Sampling Date: 1/12/24
Applicant/Owner: KSWD State: CA Sampling Point: WP-1
Investigator(s): SH, RS Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley, floodplain Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): C Lat: 38.494311 °N Long: 121.297808°W Datum: WGS84
Soil Map Unit Name: Redding gravelly loam 0 to 8% slopes mLRR17 NWI classification: PEMIA
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? N Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? Y (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks: Roadside and near culvert

VEGETATION

Tree Stratum (Use scientific names.) NA	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum NA			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum 5ft r			
1. Paspalum dilatatum	60	Y	FAC
2. Cyperus eragrostis	15	N	FACW
3. Eleocharis macrostachya	5	N	OBL
4. Geranium molle	2	N	UPL
5.			
6.			
7.			
8.			
Total Cover:	80		
Woody Vine Stratum NA			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: WP-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
0-3	10YR 3/2	100					S. CL	
3-12	10YR 4/3	210	5YR 4/6	30	C	M/PL	S, CL	
11	10YR 4/2	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: NA

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: Disturbed roadside edge near culvert

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

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

NA

Remarks: Surface Water present is adjacent stream

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Waegell Solar City/County: Sacramento Sampling Date: 1/12/24
Applicant/Owner: SMUD State: CA Sampling Point: UP-1
Investigator(s): SH, RS Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): C Lat: Long: Datum: WGS 84
Soil Map Unit Name: Rodoling gravelly loam 0 to 8% Slopes NWI classification: NA
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? N Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? Y (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: Roadside

VEGETATION

Tree Stratum (Use scientific names.) NA	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum NA			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum 5ft r			
1. Elymus caput-medusae	65	Y	UPL
2. Festuca perennis	10	N	FAC
3. Geranium molle	10	N	UPL
4. Erodium botrys	2	N	FACU
5.			
6.			
7.			
8.			
Total Cover:	87		
Woody Vine Stratum NA			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 13 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 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 =	
FACW species	0	x 2 =	
FAC species	10	x 3 =	30
FACU species	2	x 4 =	8
UPL species	75	x 5 =	375
Column Totals:	87 (A)		413 (B)

Prevalence Index = B/A = 4.75

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: UP-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
0-8	7.5YR4/4						SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ✓ ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Roadside, fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

NA

Remarks:

NA

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Waegell Solar - Powerlines City/County: Sacramento Sampling Date: 1/12/24
Applicant/Owner: SMUD State: CA Sampling Point: WP-2
Investigator(s): S. Henke R. Shreckengost Section, Township, Range:
Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): LRR-C Lat: 38.483177° N Long: 121.297841° W Datum: WGS84
Soil Map Unit Name: Redding loam, 2 to 8 percent slope NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil X, or Hydrology ____ significantly disturbed? Y Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? N (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: Roadside disturbance impact soil character, may be contaminated with fill.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5ft r)			
1. Limnanthes douglassii	5	Y	OBL
2. Eryngium vaseyi	3	Y	FACW
3. Festuca perennis	2	N	FAC
4. Hypochaeris glabra	2	N	UPL
5. Leontodon saxatilis	2	N	FACU
6.			
7.			
8.			
	14	= Total Cover	
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 31 % Cover of Biotic Crust 55

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
*Plant id is tentative for L. douglasii, all possible Limnanthes spp are obl or FACW. WIS of FACW or OBL does not alter the assessment of the vegetation qualifying for the dominance test.

SOIL

Sampling Point: WP-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
0-6	10YR 4/3	85	5YR 4/6	15	C	M/PL	Si CL	thin layer of organics gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ~~✓ Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: roadbase or shallow aquitard

Depth (inches): 6"

Hydric Soil Present? Yes X No ___

Remarks:

Prominent redox present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 0"

Water Table Present? Yes X No ___ Depth (inches): 3"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

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

NA

Remarks:

Surface water in reg plot not where soil pit was investigated.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Wagul Solar City/County: Sacramento Sampling Date: 1/12/24
Applicant/Owner: SMUD State: CA Sampling Point: VP-2
Investigator(s): SH, RS Section, Township, Range:
Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Convex Slope (%): 5
Subregion (LRR): C Lat: 38.483233°N Long: 121.297833°W Datum: WGS 84
Soil Map Unit Name: Redding loam NWI classification: NA
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? N Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? Y (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: Roadside

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5ft r)			
1. Erodium botrys	65	Y	FACU
2. Hypochaeris glabra	15	N	UPL
3. Briza minor	10	N	FAC
4. Bromus hordeaceus	10	N	FACU
5.			
6.			
7.			
8.			
	98	= Total Cover	
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 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 10	x 3 = 30
FACU species 75	x 4 = 300
UPL species 15	x 5 = 75
Column Totals: 100 (A)	405 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Berm

SOIL

Sampling Point: VP-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	7.5YR4/4	100	—				SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 4"

Hydric Soil Present? Yes ____ No X

Remarks:

No redox, road fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

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

NA

Remarks:

NA

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Wagg II Solar City/County: Sacramento Sampling Date: 1/11/24

Applicant/Owner: SMUD State: CA Sampling Point: WP-3

Investigator(s): S. Henke, R. Shreckenfost Section, Township, Range:

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

Subregion (LRR): LRR-C Lat: 38.481574°N Long: 121.270171°W Datum: WGS84

Soil Map Unit Name: San Joaquin silt loam, 0 to 3 percent slopes NWI classification: N/A

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? N Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? N (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: Depressional area

VEGETATION

Tree Stratum (Use scientific names.) 20x20ft	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
Total Cover: 0			
Sapling/Shrub Stratum 10x10ft			
1. NA			
2.			
3.			
4.			
5.			
Total Cover: 0			
Herb Stratum 5ft r			
1. Ranunculus bonariensis	60	Y	OBL
2. Eleocharis macrostachya	15	N	OBL
3. Elymus caput medusae	2	N	UPL
4. Festuca perennis	1	N	FAC
5. Hypochaeris glabra	1	N	UPL
6. Geranium molle	1	N	UPL
7. Lythrum hyssopifolia	1	N	OBL
8.			
Total Cover: 80			
Woody Vine Stratum 10ft x 10ft			
1. NA			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: WP-3

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
0-2	10YR 2/2	100	—				CL	
2-8	7.5YR 3/4	40	5YR 4/6	60	C	M/PL	SiC	
8-13	5YR 4/6	80	7.5YR 4/3	20	D	PL	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____ NA

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks: N/A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0-13

Wetland Hydrology Present? Yes X No ____

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

NA

Remarks: Recent rain fall (yesterday)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Waegell Solar City/County: Sacramento Sampling Date: 1/11/24
Applicant/Owner: SMUD State: CA Sampling Point: UP-3
Investigator(s): S. Henke, R. Streckenbach Section, Township, Range:
Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): 3
Subregion (LRR): LRR-C Lat: 38.481634 °N Long: 121.270209 °W Datum: WGS 84
Soil Map Unit Name: San Joaquin silt loam 0-3% NWI classification: NA
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? N Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____
Hydric Soil Present? Yes X No _____
Wetland Hydrology Present? Yes _____ No X
Is the Sampled Area within a Wetland? Yes _____ No X

Remarks: Slightly higher elevation than adjacent depression

VEGETATION

Tree Stratum (Use scientific names.) 20x20 ft	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum 10x10 ft			
1. NA			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum 5 ft r			
1. Hordeum marinum	35	Y	FAC
2. Elymus caput-medusae	30	Y	UPL
3. Festuca perennis	30	Y	FAC
4. Geranium molle	1	N	UPL
5. Ranunculus bonariensis	1	N	OBL
6.			
7.			
8.			
Total Cover:	97		
Woody Vine Stratum 10x10 ft			
1. NA			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: UP-3

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
0-2	7.5YR2.5/2	100					CL	
2-11	7.5YR4/4	90	5YR4/6	10	C	M/PL	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- X Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: NA

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 11

Water Table Present? Yes ___ No X Depth (inches): 11

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 11

Wetland Hydrology Present? Yes ___ No X

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

NA

Remarks: Soil is damp

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Wagtail Solar City/County: Sacramento Sampling Date: 1/12/24

Applicant/Owner: SMUD State: CA Sampling Point: WP-4

Investigator(s): S.H, RS, BC Section, Township, Range:

Landform (hillslope, terrace, etc.): field, valley Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): C Lat: 38.467899 ° N Long: 121.272770 ° W Datum: WGS84

Soil Map Unit Name: San Joaquin-Galt complex leveled 0 to 1% Slope NWI classification: NA

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? N Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation X, Soil ____, or Hydrology X naturally problematic? Y (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:
A field that has been routinely and historically irrigated, disced, planted or otherwise managed.

VEGETATION

Tree Stratum (Use scientific names.) NA	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: 0			
Sapling/Shrub Stratum NA			
1.			
2.			
3.			
4.			
5.			
Total Cover: 0			
Herb Stratum 5ft			
1. Cyperus eragrostis	50	Y	FACW
2. Panicum capillare	50	Y	FACU
3. Rumex crispus	5	N	FAC
4. Setaria parviflora	5	N	FAC
5.			
6.			
7.			
8.			
Total Cover: 100			
Woody Vine Stratum NA			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 =
FACW species 50	x 2 = 100
FAC species 10	x 3 = 30
FACU species 50	x 4 = 200
UPL species	x 5 =
Column Totals: 110 (A)	330 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: WP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	7.5YR 5/6	5			CL	
5-14	7.5YR 4/4	80	10YR 4/2	20	D	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

red roots

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 14"

Water Table Present? Yes X No ___ Depth (inches): 13"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 7"

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Surface water present to south

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Waegell Solar City/County: Sacramento Sampling Date: 1/12/24
Applicant/Owner: SMUD State: CA Sampling Point: VP-4
Investigator(s): SH, RS, BC Section, Township, Range:
Landform (hillslope, terrace, etc.): field, valley Local relief (concave, convex, none): none Slope (%): 1
Subregion (LRR): C Lat: 38.468001° N Long: 121.272851° W Datum: WGS84
Soil Map Unit Name: San Joaquin - Galt complex, leveled 0 to 1% slope NWI classification: NA
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? N Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation X, Soil ____, or Hydrology X naturally problematic? Y (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: a field with historical and routine irrigation, disced, planted and otherwise managed.

VEGETATION

Tree Stratum (Use scientific names.) NA	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum NA			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum 5 PFT			
1. Setaria parviflora	25	Y	FAC
2. Panicum capillare	25	Y	FACU
3. Cyperus eragrostis	20	Y	FACW
4. Festuca perennis	5	N	FAC
5. Hordeum marinum	20	Y	FAC
6. Lotus corniculatus	1	N	FAC
7. Geranium molle	1	N	UPL
8. Rumex crispus	2	N	FAC
Total Cover:	100		
Woody Vine Stratum NA			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: UP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	100%	—				CL	
10-13	7.5YR 4/4	80%						mottled matrix
11	10YR 4/3	20%	—					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ✓ ~~Vernal Pools (F9)~~

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No redox white roots

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 13

Water Table Present? Yes _____ No X Depth (inches): 13

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 13

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

Damp soils, saturation visiable though due to irrigation in dry season

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 04/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: WAEGELL City/County: Rancho Cordova Sampling Date: 05/07/2024
Applicant/Owner: SMUD State: CA Sampling Point: WP-5
Investigator(s): SHANNON HENIKE + RENEE RICHARDSON + BRE COONEY Section, Township, Range: —
Landform (hillside, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): C Lat: 38.495924 Long: 121.270080 Datum: WGS 84
Soil Map Unit Name: San Joaquin-Durixeralfs complex 0-1% Slope NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Irrigated cropland that recieves routine discing. Depressional feature

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: Ø)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø =Total Cover		
Sapling/Shrub Stratum (Plot size: Ø)			
1.			
2.			
3.			
4.			
5.			
	Ø =Total Cover		
Herb Stratum (Plot size: 5' (ft) r)			
1. Cyperus Braegrostis	19	Yes	FACW
2. Festuca Perennis	12	Yes	FAC
3. Hordeum Marium	3	NO	FAC
4. * Plagiobothys sp.	1	NO	FAC
5. Eleocharis Microstachya	20	Yes	OBL
6. Rumex Crispus	3	NO	FAC
7. Poa annua	2	NO	FAC
8.			
	60 =Total Cover		
Woody Vine Stratum (Plot size: Ø)			
1.			
2.			
	Ø =Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust Ø

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: Litter covering the ground.
*Plagiobothrys was not identifiable. Assumed FAC at minimum

SOIL

Sampling Point: WP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	95	10YR 5/8	5	C	PL	L	Organic material
1-8	10YR 3/2	80	7.5YR 5/8	20	C	M	L	OM, prominent redox
8-16	10YR 3/2	70	7.5YR 4/6	30	C	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____ NA

Hydric Soil Present? Yes ✓ No ___

Remarks:

Review of aerial imagery indicates this area is routinely disced.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 16

Water Table Present? Yes ___ No X Depth (inches): 16

Saturation Present? Yes ___ No X Depth (inches): 16

(includes capillary fringe)

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Irrigated cropland

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 04/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: WAEGELL City/County: Rancho Cordova Sampling Date: 05/07/2024
Applicant/Owner: SMWD State: CA Sampling Point: VP-5
Investigator(s): SHANNON HENKE, RENEE RICHARDSON, ERE CREW Section, Township, Range:
Landform (hillside, terrace, etc.): valley Local relief (concave, convex, none): Convex Slope (%): 2
Subregion (LRR): C Lat: 38.495971 Long: -121.270192 Datum: WGS84
Soil Map Unit Name: San Joaquin-Durixeralfs complex 0 to 1% slope NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes X	No ___	

Remarks: Irrigated crop land with depressional feature to east and Frye creek to west.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 0)			
1.			
2.			
3.			
4.			
	0 =Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1.			
2.			
3.			
4.			
5.			
	0 =Total Cover		
Herb Stratum (Plot size: 5)			
1. Festuca Perennis	80	Y	FAC
2. Avena fatua	5	N	UPL
3. Bromus diandrus	5	N	UPL
4. Bromus commutatus	10	N	UPL
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 0)			
1.			
2.			
	0 =Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species 80	x 3 = 240
FACU species ___	x 4 = ___
UPL species 20	x 5 = 100
Column Totals: 100 (A)	340 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: UP-5

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
0-1	10YR 3/2	100					L	
1-6	7.5YR 3/3	65	5YR 3/4	35	C	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

Shovel refused @ 6". Review of historical imagery indicates the area is not routinely disced

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): 6
Water Table Present?	Yes ___	No X	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): 6

Wetland Hydrology Present? Yes X No ___

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

Remarks: Irrigated cropland just to the east.

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX
Approval Expires:

Project ID #: OHWM-1 | Site Name: Waegell - power lines | Date and Time: 1/10/24 1:45pm

Location (lat/long): | Investigator(s): S. Henke R. Shreckengost

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [ ] land use maps
- [ ] aerial photos
- [ ] topographic maps
- [x] Other: NWI, NHD

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?

NA

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Intermittent stream widens near culvert and convey under road, South wider due to culvert compared to upstream, not representative, but do not have access to north. Modified due to road

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:**
  - [x] *on the bank:*
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [x] **Mudcracks:**
- [x] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ *to* _____
  - [ ] *upper limit of sand-sized particles*
  - [x] *silt deposits:* plugs culvert

Vegetation Indicators

- [x] **Change in vegetation type and/or density:**

Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

- [x] *vegetation absent to:* patchy in bed
- [ ] *moss to:*
- [ ] *forbs to:*
- [x] *graminoids to:* bank to floodplain / valley
- [ ] *woody shrubs to:*
- [ ] *deciduous trees to:*
- [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

NA

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

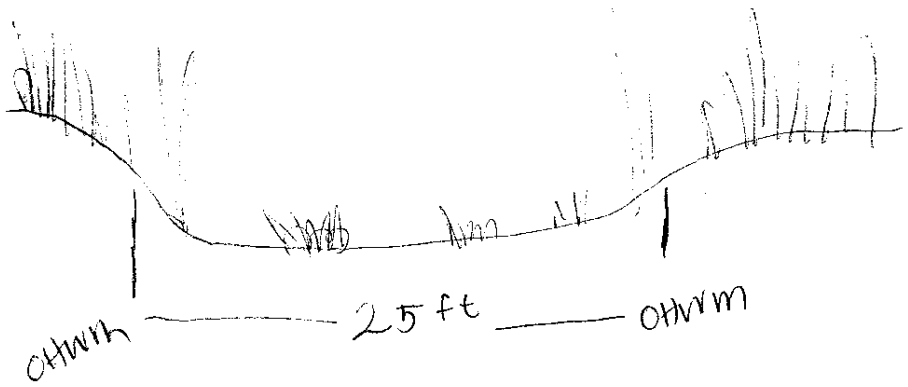
If yes, describe and attach information to datasheet:

Project ID #: OHWM-1

Step 5 Describe rationale for location of OHWM

Break in slope, change in plant species composition

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☒ No If no, explain why not: In AGO

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: OHWM-2 | Site Name: Waegell Powerlines | Date and Time: 1/11/24 11am

Location (lat/long): 38.496324°N/121.270240°W | Investigator(s): SH, RS

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [ ] land use maps
- [ ] aerial photos
- [ ] topographic maps
- [ ] Other: NWI, NDH

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

no recent extreme event

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Fence, road and culvert may impact flow. Cattle/grazing disturbance may influence channel shape/erosion. Frye Creek Intermittent per NHD

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:**
  - [x] *on the bank:*
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:**

Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

- [ ] *vegetation absent to:*
- [ ] *moss to:*
- [x] *forbs to:* tar weed not in channel
- [ ] *graminoids to:*
- [ ] *woody shrubs to:*
- [ ] *deciduous trees to:*
- [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Presence of culvert

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

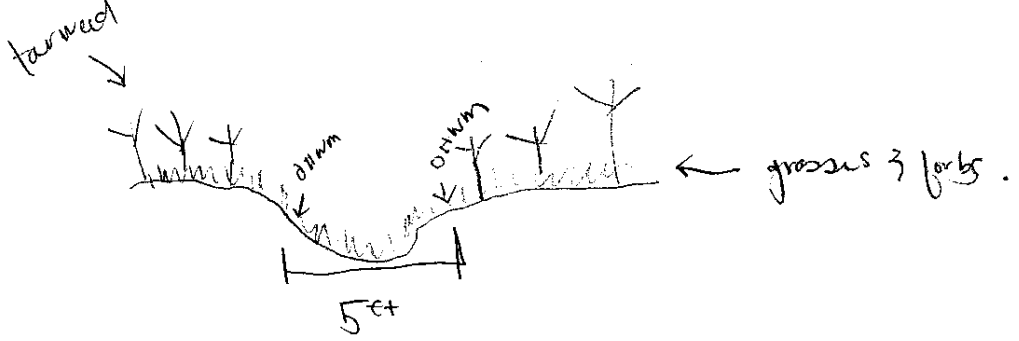
If yes, describe and attach information to datasheet:

Project ID #: OHWM-2

Step 5 Describe rationale for location of OHWM

Break in slope, change in vegetation composition

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☒ No If no, explain why not: AGO -

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX
Approval Expires:

Project ID #: Wagtail Solar | Site Name: OHWM-3-Laguna Creek | Date and Time: 01/10/2024 1300

Location (lat/long): 38.485011, -121.260789 | Investigator(s): Renee Rimpson, Bre Conley

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?
Recent rain events, otherwise normal conditions

Step 2 Site conditions during field assessment
First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc. OHWM established by change in slope + vegetation. At this specific pond, 2 creeks converge around an island.
OHWM-3 Laguna Creek

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.
OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.
OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [ ] **Break in slope:**
  - [x] *on the bank:*
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:**
  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***
  - [x] *vegetation absent to:* Bank
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [x] *graminoids to:* Floodplain
  - [ ] *woody shrubs to:*
  - [x] *deciduous trees to:* Upland
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:
Water present to top of bank

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: OHWM-3

Step 5 Describe rationale for location of OHWM

Steep bank cut

staining on bridge piers

Additional observations or notes

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☒ No If no, explain why not: in AGO

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description

Appendix D: Custom Soil Report

United States Department of Agriculture

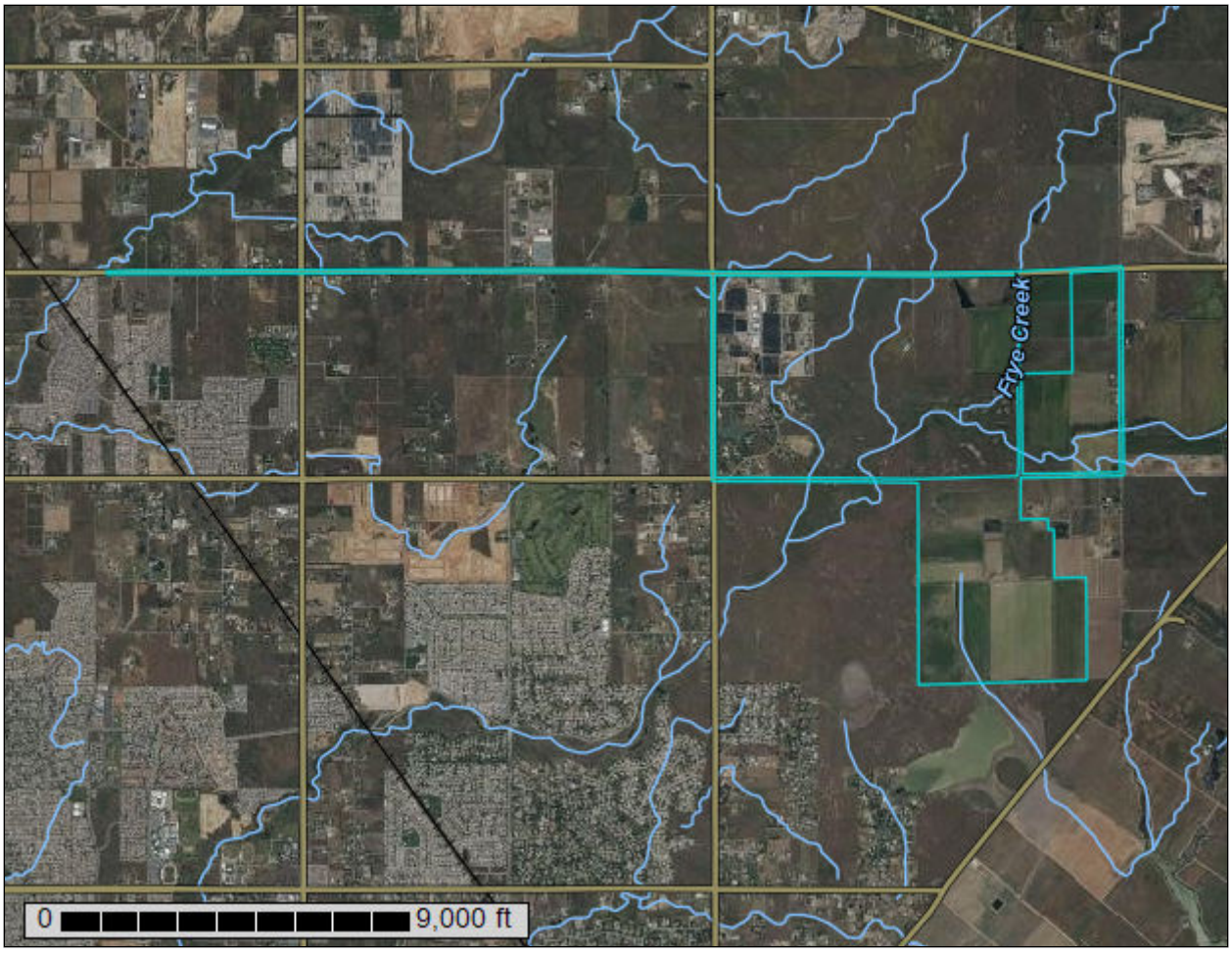
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sacramento County, California

SMUD Oveja Ranch Solar Project



July 17, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

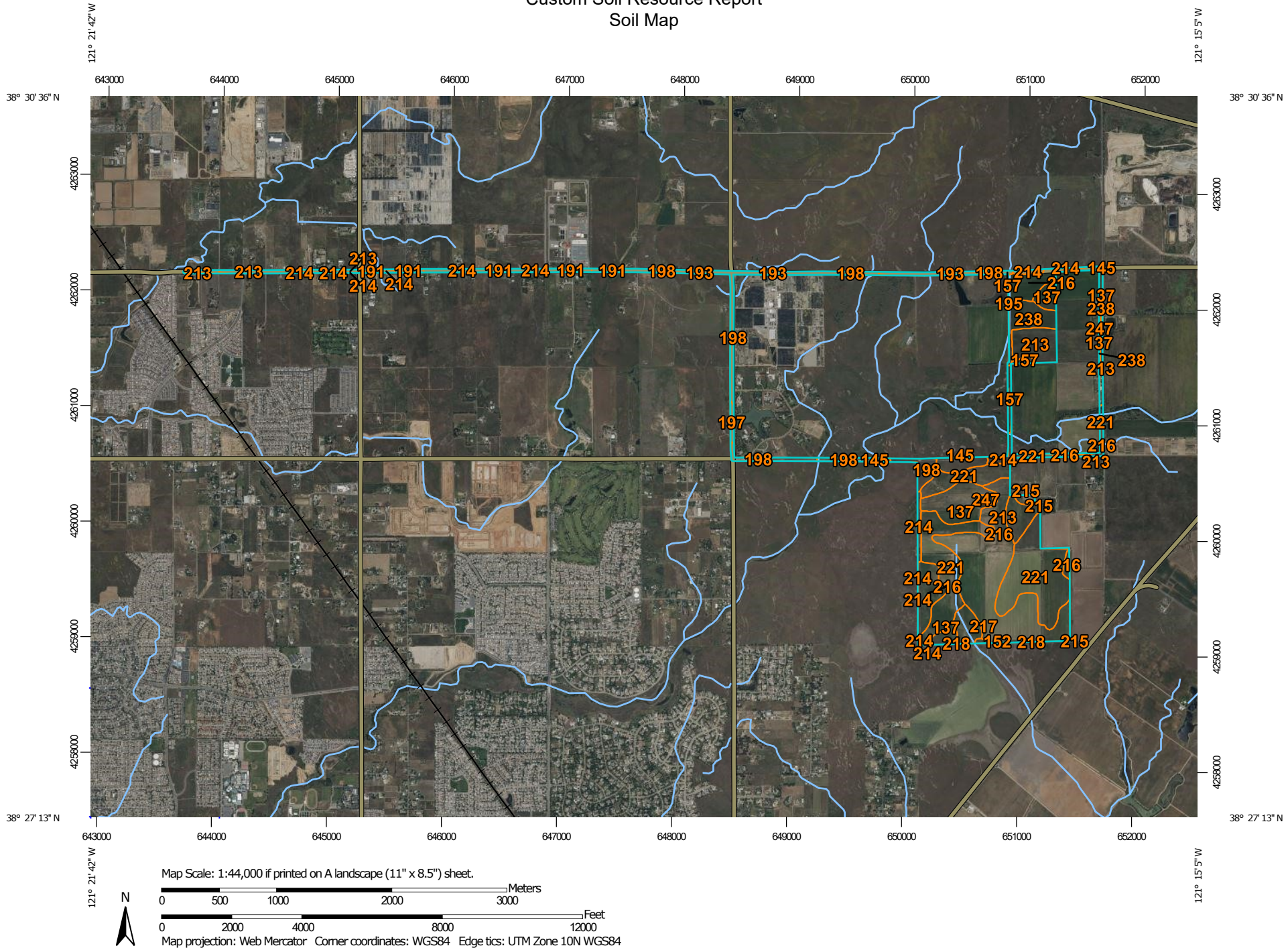
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 23, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
137	Durixeralfs, 0 to 1 percent slopes	55.3	8.6%
145	Fiddyment fine sandy loam, 1 to 8 percent slopes	13.3	2.1%
152	Galt clay, 0 to 1 percent slopes, MLRA 17	0.9	0.1%
157	Hedge loam, 0 to 2 percent slopes	9.6	1.5%
191	Red Bluff loam, 0 to 2 percent slopes	8.6	1.3%
193	Red Bluff-Redding complex, 0 to 5 percent slopes	9.6	1.5%
195	Red Bluff-Xerarents complex, 0 to 2 percent slopes	0.0	0.0%
197	Redding loam, 2 to 8 percent slopes	2.6	0.4%
198	Redding gravelly loam, 0 to 8 percent slopes, MLRA 17	41.6	6.5%
213	San Joaquin silt loam, leveled, 0 to 1 percent slopes	57.3	8.9%
214	San Joaquin silt loam, 0 to 3 percent slopes	21.7	3.4%
215	San Joaquin silt loam, 3 to 8 percent slopes	3.7	0.6%
216	San Joaquin-Durixeralfs complex, 0 to 1 percent slopes	196.2	30.5%
217	San Joaquin-Galt complex, leveled, 0 to 1 percent slopes	14.9	2.3%
218	San Joaquin-Galt complex, 0 to 3 percent slopes	0.1	0.0%
221	San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes	178.9	27.8%
238	Xerarents-San Joaquin complex, 0 to 1 percent slopes	25.7	4.0%
247	Water	3.0	0.5%
Totals for Area of Interest		**643.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sacramento County, California

137—Durixeralfs, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhmd
Elevation: 20 to 150 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Durixeralfs and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Durixeralfs

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 20 inches: clay loam
H3 - 20 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Galt

Percent of map unit: 6 percent

Landform: Terraces
Hydric soil rating: Yes

Redding
Percent of map unit: 6 percent
Hydric soil rating: No

Xerarents
Percent of map unit: 6 percent
Hydric soil rating: No

Unnamed, very shallow loamy
Percent of map unit: 2 percent
Hydric soil rating: No

145—Fiddyment fine sandy loam, 1 to 8 percent slopes

Map Unit Setting
National map unit symbol: hhmn
Elevation: 50 to 280 feet
Mean annual precipitation: 19 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition
Fiddyment and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fiddyment

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile
H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 15 inches: loam
H3 - 15 to 28 inches: sandy clay loam
H4 - 28 to 40 inches: indurated
H5 - 40 to 44 inches: weathered bedrock

Properties and qualities
Slope: 1 to 8 percent
Depth to restrictive feature: 28 to 40 inches to duripan; 40 to 44 inches to paralithic bedrock
Drainage class: Well drained

Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD047CA - LOAMY CLAYPAN
Hydric soil rating: No

Minor Components

Andregg

Percent of map unit: 3 percent
Hydric soil rating: No

Orangevale

Percent of map unit: 3 percent
Hydric soil rating: No

Redding

Percent of map unit: 3 percent
Hydric soil rating: No

Xerarents

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, deeper

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, unloam subsoil

Percent of map unit: 2 percent
Hydric soil rating: No

152—Galt clay, 0 to 1 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8cj
Elevation: 10 to 140 feet
Mean annual precipitation: 12 to 21 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Galt and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galt

Setting

Landform: Basin floors on fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from igneous, metamorphic and sedimentary rock over cemented alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 5 inches: clay
Bss1 - 5 to 13 inches: clay
Bss2 - 13 to 22 inches: clay
Bss3 - 22 to 32 inches: clay
2Bkqm - 32 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 5 to 32 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XD001CA - CLAYEY
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Dierssen

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

San joaquin

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

157—Hedge loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhn1
Elevation: 20 to 140 feet
Mean annual precipitation: 18 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hedge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hedge

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 23 inches: loam
H3 - 23 to 31 inches: clay loam
H4 - 31 to 38 inches: loam
H5 - 38 to 44 inches: cemented
H6 - 44 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 38 to 44 inches to duripan
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C/D
Ecological site: R017XD081CA - LOAM STREAM TERRACE
Hydric soil rating: No

Minor Components

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Hicksville

Percent of map unit: 3 percent
Hydric soil rating: No

Kimball

Percent of map unit: 3 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, unloam subsoil

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, occasional flooded

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, shallow to harpan

Percent of map unit: 1 percent
Hydric soil rating: No

191—Red Bluff loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhp4
Elevation: 200 to 800 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Red bluff and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 25 inches: clay loam
H3 - 25 to 68 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Minor Components

Redding
Percent of map unit: 6 percent
Hydric soil rating: No

Xerorthents
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, steeper slopes
Percent of map unit: 2 percent
Hydric soil rating: No

193—Red Bluff-Redding complex, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: hhp6
Elevation: 100 to 1,500 feet
Mean annual precipitation: 14 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition
Red bluff and similar soils: 45 percent
Redding and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 25 inches: clay loam
H3 - 25 to 43 inches: clay loam
H4 - 43 to 68 inches: gravelly clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Description of Redding

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 20 inches: gravelly loam
H3 - 20 to 28 inches: gravelly clay loam
H4 - 28 to 66 inches: indurated

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches; 28 to 66 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XD090CA - GRAVELLY LOAMY
Hydric soil rating: No

Minor Components

Corning
Percent of map unit: 5 percent
Hydric soil rating: No

Hicksville
Percent of map unit: 4 percent
Hydric soil rating: No

Xerorthents
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, hardpan below 40 inches
Percent of map unit: 1 percent
Hydric soil rating: No

195—Red Bluff-Xerarents complex, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hhp8
Elevation: 0 to 2,500 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Red bluff and similar soils: 50 percent
Xerarents and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 25 inches: clay loam
H3 - 25 to 43 inches: clay loam
H4 - 43 to 68 inches: gravelly clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Description of Xerarents

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Xerorthents

Percent of map unit: 5 percent

Hydric soil rating: No

Unnamed, gravelly clay surface
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, steeper slopes
Percent of map unit: 2 percent
Hydric soil rating: No

Redding
Percent of map unit: 1 percent
Hydric soil rating: No

197—Redding loam, 2 to 8 percent slopes

Map Unit Setting
National map unit symbol: hhpb
Elevation: 100 to 1,500 feet
Mean annual precipitation: 22 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 230 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition
Redding and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redding

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile
H1 - 0 to 7 inches: loam
H2 - 7 to 20 inches: loam
H3 - 20 to 28 inches: clay loam
H4 - 28 to 66 inches: indurated

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches; 28 to 66 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XD090CA - GRAVELLY LOAMY
Hydric soil rating: No

Minor Components

Corning

Percent of map unit: 6 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, hardpan below 40 inches

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, steeper slopes

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, gentler slopes

Percent of map unit: 1 percent
Hydric soil rating: No

198—Redding gravelly loam, 0 to 8 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8bl
Elevation: 20 to 420 feet
Mean annual precipitation: 19 to 28 inches

Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Redding and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redding

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from igneous, metamorphic and sedimentary rock over clayey alluvium derived from igneous, metamorphic and sedimentary rock over cemented alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A1 - 0 to 8 inches: gravelly loam
A2 - 8 to 15 inches: gravelly loam
A3 - 15 to 19 inches: gravelly loam
Bt - 19 to 22 inches: clay
2Bqm1 - 22 to 24 inches: cemented gravelly material
2Bqm2 - 24 to 35 inches: cemented gravelly material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches; 20 to 39 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: About 15 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XD090CA - GRAVELLY LOAM
Hydric soil rating: No

Minor Components

Keyes

Percent of map unit: 10 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread

Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Corning

Percent of map unit: 3 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Vernal pools
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

213—San Joaquin silt loam, leveled, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhpv
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam

H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Bruella

Percent of map unit: 3 percent
Hydric soil rating: No

Durixeralfs

Percent of map unit: 3 percent
Hydric soil rating: No

Galt

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Hedge

Percent of map unit: 2 percent
Hydric soil rating: No

Kimball

Percent of map unit: 2 percent
Hydric soil rating: No

Xerarents

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, rarely flooded

Percent of map unit: 1 percent
Hydric soil rating: No

214—San Joaquin silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hhpw
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Minor Components

Galt
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Bruella
Percent of map unit: 4 percent
Hydric soil rating: No

Hedge
Percent of map unit: 3 percent
Hydric soil rating: No

Kimball
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, rarely flooded
Percent of map unit: 1 percent
Hydric soil rating: No

215—San Joaquin silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: hhpx
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
San joaquin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam

H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Minor Components

Columbia

Percent of map unit: 4 percent
Landform: Drainageways
Hydric soil rating: Yes

Hedge

Percent of map unit: 4 percent
Hydric soil rating: No

Kimball

Percent of map unit: 4 percent
Hydric soil rating: No

Galt

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, rarely flooded

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, steeper slopes

Percent of map unit: 1 percent
Hydric soil rating: No

216—San Joaquin-Durixeralfs complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhpy
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

San joaquin and similar soils: 55 percent
Durixeralfs and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Description of Durixeralfs

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 20 inches: clay loam
H3 - 20 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Galt

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Kimball

Percent of map unit: 4 percent
Hydric soil rating: No

Xerarents

Percent of map unit: 2 percent
Hydric soil rating: No

217—San Joaquin-Galt complex, leveled, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhpz
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 45 percent
Galt and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 20 inches: clay loam
H3 - 20 to 46 inches: indurated
H4 - 46 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 46 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: No

Description of Galt

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 19 inches: clay
H3 - 19 to 38 inches: clay
H4 - 38 to 60 inches: cemented

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 38 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 4 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Durixeralfs

Percent of map unit: 4 percent
Hydric soil rating: No

Xerarents

Percent of map unit: 4 percent
Hydric soil rating: No

Kimball

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, rarely flooded

Percent of map unit: 1 percent
Hydric soil rating: No

218—San Joaquin-Galt complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hhq0
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 45 percent
Galt and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Description of Galt

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 13 inches: clay
H2 - 13 to 32 inches: clay
H3 - 32 to 60 inches: cemented

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 32 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R017XD001CA - CLAYEY
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 10 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Unnamed, rarely flooded

Percent of map unit: 5 percent
Hydric soil rating: No

221—San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhq3
Elevation: 0 to 2,500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 45 percent
Xerarents and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: No

Description of Xerarents

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Galt

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

Sailboat

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Durixeralfs
Percent of map unit: 2 percent
Hydric soil rating: No

Kimball
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, rarely flooded
Percent of map unit: 1 percent
Hydric soil rating: No

238—Xerarents-San Joaquin complex, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hhqn
Elevation: 0 to 2,500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Xerarents and similar soils: 65 percent
San joaquin and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerarents

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 60 inches: variable

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 30 inches: loam
H3 - 30 to 35 inches: clay loam
H4 - 35 to 60 inches: indurated
H5 - 60 to 67 inches: stratified loamy coarse sand to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 35 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Sailboat
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Durixeralfs
Percent of map unit: 2 percent
Hydric soil rating: No

Red bluff
Percent of map unit: 2 percent
Hydric soil rating: No

Redding
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, rarely flooded
Percent of map unit: 1 percent
Hydric soil rating: No

247—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix E: Plant Species List

Scientific Name	Common Name	Wetland Indicator Status
Abutilon theophrasti	Velvet leaf	UPL
Achyrachaena mollis	blow wives	FAC
Alisma lanceolatum	Water plantain	OBL
Ammannia coccinea	Red ammannia	OBL
Amsinckia menziesii	Common fiddleneck	UPL
Anthemis cotula	Mayweed	FACU
Apiastrum angustifolium	Mock parsley	UPL
Apium graveolens	Garden celery	N/A
Andropogon virginicus	Broomsedge bluestem	FAC
Asclepias fascicularis	Narrow-leaf milkweed	FAC
Avena barbata	Slim oat	UPL
Avena fatua	Wild oat	N/A
Avena sativa	Cultivated oat	UPL
Brodiaea sp.	Brodiaea	N/A
Brassica nigra	Black mustard	UPL
Briza minor	Little quaking grass	FAC
Bromus carinatus	California brome	N/A
Bromus diandrus	Ripgut brome	UPL
Bromus hordeaceus	Soft chess	FACU
Bromus rubens	Red brome	UPL
Calocedrus decurrens	Incense cedar	N/A
Cardamine oligosperma	Bittercress	FAC
Carduus pycnocephalus	Italian thistle	FACU
Castilleja attenuata	Valley tassels	UPL
Centaurea solstitialis	Yellow starthistle	UPL
Centromadia fitchii	Spikeweed	FACU
Chlorogalum pomeridianum var. *pomeridianum*	Common soaproot	N/A
Cichorium intybus	Chicory	FACU
Cirsium vulgare	Bullthistle	FACU
Conium maculatum	Poison hemlock	FAC
Convolvulus arvensis	Field bindweed	N/A
Crassula tillaea	Mediterranean pygmy weed	FACU
Crataegus monogyna	Hawthorn	N/A
Croton setiger	Turkey-mullein	UPL
Cynodon dactylon	Bermuda grass	FACU

Scientific Name	Common Name	Wetland Indicator Status
Cyperus difformis	Variable flatsedge	OBL
Cyperus eragrostis	Tall cyperus	FACW
Dactylis glomerata	Orchardgrass	FACU
Daucus carota	Queen Anne's lace	UPL
Dittrichia graveolens	Stinkwort	N/A
Downingia bicornuta	Bristled downingia	OBL
Eleocharis macrostachya	Spike rush	OBL
Elymus caput-medusae	Medusa head	UPL
Epilobium brachycarpum	Willowherb	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Erigeron canadensis	Canada horseweed	FACU
Erodium botrys	Long-beak stork's-bill	FACU
Erodium cicutarium	Red stork's-bill	UPL
Erodium moschatum	Greenstem filaree	N/A
Eryngium vaseyi	Coyote thistle	FACW
Eryngium castrense	Great valley coyote-thistle	OBL
Eucalyptus globulus	Blue gum	UPL
Eucalyptus polyanthemos	Silver dollar gum	UPL
Euphorbia sp.	Spurge	N/A
Festuca perennis	Italian rye grass	FAC
Foeniculum vulgare	Fennel	N/A
Fraxinus latifolia	Oregon ash	FACW
Galium aparine	Common bedstraw	FACU
Geranium dissectum	Dissected geranium	UPL
Geranium molle	Crane's bill geranium	N/A
Hedypnois rhagadioloides	Crete weed	UPL
Helminthotheca echioides	Bristly ox-tongue	UPL
Hirschfeldia incana	Mustard	UPL
Holocarpha virgata	Narrow tarplant	UPL
Hordeum marinum ssp. *gussoneanum*	Barley	FAC
Hordeum murinum	Wall barley	FACU
Hypericum perforatum ssp. *perforatum*	Klamathweed	FACU
Hypochaeris glabra	Smooth cat’s ear	UPL
Iris pseudacorus	Yellowflag iris	OBL
Juglans hindsii	Northern California black walnut	FAC
Juncus bufonius	Dwarf rush	N/A
Juncus effusus	Lamp rush	FACW

Scientific Name	Common Name	Wetland Indicator Status
Juncus phaeocephalus	Brown headed rush	FACW
Juncus xiphioides	Irisleaf rush	OBL
Lactuca serriola	Prickly lettuce	FACU
Leontodon saxatilis	Hawkbit	FACU
Lepidium latifolium	Perennial pepperweed	FAC
Lepidium nitidum	Shining pepper grass	FAC
Limnanthes alba ssp. *alba*	Typical white meadowfoam	FACW
Logfia gallica	Narrowleaf cottonrose	N/A
Lotus corniculatus	Bird's-foot trefoil	FAC
Ludwigia peploides	Floating water primrose	OBL
Lupinus bicolor	Miniature lupine	N/A
Lythrum hyssopifolia	Hyssop loosestrife	OBL
Matricaria discoidea	pineapple weed	FACU
Malva parviflora	Cheeseweed mallow	FAC
Marrubium vulgare	White horehound	FACU
Medicago polymorpha	Burclover	FACU
Muhlenbergia rigens	Deergrass	FAC
Oryza sativa	Domestic rice	OBL
Panicum capillare	Old witch grass	FACU
Paspalum dilatatum	Dalis grass	FAC
Phalaris aquatica	Reed canarygrass	FACU
Plagiobothrys stipitatus	Great valley popcornflower	FACW
Plantago coronopus	Cut leaf plantain	FAC
Plantago lanceolata	Ribwort	FAC
Pinus sp.	Pines	N/A
Poa annua	Annual bluegrass	FAC
Polygonum aviculare	Prostrate knotweed	FAC
Populus fremontii	Fremont cottonwood	FAC
Prunus dulcis	Domestic almond	UPL
Psilocarphus brevissimus	Woolly marbles	FACW
Psilocarphus tenellus	slender woolly-marbles	OBL
Quercus lobata	Valley oak	FACU
Raphanus sativus	Wild radish	UPL
Ranunculus bonariensis var. *trisepalus*	Vernal pool buttercup	OBL
Ranunculus muricatus	Prickly buttercup	FACW
Rosa sp.	Rose	N/A
Rubus armeniacus	Himalayan blackberry	FAC

Scientific Name	Common Name	Wetland Indicator Status
Rumex acetosella	Common sheep sorrel	FAC
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddleleaf dock	FACW
Sagittaria sanfordii[2]	Sanford's arrowhead	OBL
Salix gooddingii	Goodding's black willow	FACW
Salix lasiolepis	Arroyo willow	FACW
Salsola tragus	Russian thistle	FACU
Schinus molle	Peruvian pepper tree	FACU
Schinus terebinthifolius	Brazilian pepper tree	UPL
Schoenoplectus acutus var. *occidentalis*	Common Tule	OBL
Setaria parviflora	Marsh bristlegrass	FAC
Setaria pumila	Yellow bristlegrass	FAC
Silene gallica	Common catchfly	N/A
Silybum marianum	Milk thistle	UPL
Sisyrinchium bellum	Western blue-eyed-grass	FACW
Sonchus arvensis	Field Sow-Thistle	FACU
Sonchus sp.	Sow-thistle	N/A
Spergula arvensis	Corn spurry	N/A
Torilis arvensis	Field hedge parsley	UPL
Heteromeles arbutifolia	Toyon	N/A
Torilis arvensis	Field hedge parsley	N/A
Trichostema lanceolatum	Vinegarweed	FACU
Tragopogon pratensis	Meadow salsify	UPL
Trifolium alexandrinum	Egyptian clover	UPL
Trifolium angustifolium	narrow-leaved clover	UPL
Trifolium dubium	Little hop clover	UPL
Trifolium hirtum	Rose clover	UPL
Trifolium hybridum	Alsike clover	FAC
Trifolium repens	White clover	FACU
Trifolium tomentosum	Woolly clover	UPL
Typha angustifolia	Narrow leaf cattail	OBL
Vicia sativa	Garden vetch	FACU
Vicia villosa	Hairy vetch	UPL
Vitis californica	California wild grape	FACU
Washingtonia robusta	Mexican fan palm	FACW

[2] Sandford's arrowhead is sensitive plant species that has a California Native Plant Society (CNPS) California Rare Plant Rank of 1B.2. It was observed in agricultural ditch (AD-28) during the July 10, 2024 survey.

Scientific Name	Common Name	Wetland Indicator Status
Wyethia angustifolia	Narrow leaved mule ears	FACU
Xanthium spinosum	Spiny cocklebur	FACU
Zeltnera muehlenbergii	Monterey centaury	FAC

Notes:
[1] Wetland Indicator Status
N/A = Not listed
FAC = Facultative
FACU = Facultative Upland
FACW = Facultative Wetland
N/A = not applicable
OBL = Obligate
UPL = Upland

Appendix F: Representative Photographs

Photo 1. Roadside ditch (RS-1) along Florin Road, a developed landcover type. View east, January 10, 2024.

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Photo 2. Ephemeral stream (ES-1) appears to be manmade and is surrounded by valley grassland landcover. View north, January 10, 2024

Photo 3. Seasonal wetland (SW-1) is a depressional feature that was inundating during the site visit. View northwest, January 10, 2024.

Photo 4. Perennial stream (PS-1) is located on the south side of Florin Road and flows south. View south, January 10, 2024**.**

Photo 5. Ephemeral stream (ES-2a) is on the north side of Florin Road and is surrounded by valley grassland habitat. View north, January 10, 2024.

Photo 6. Seasonal wetland (SW-3a) is on the south side of Florin Road is reported by the NHD as an artificial path that flows north into an ephemeral stream. January 10, 2024.

Photo 7. Freshwater marsh (FM-1) occurs along the north side of Florin Road east of the intersection of Excelsior Road. It is dominated by narrow leaf cattail. View east, January 10, 2024.

Photo 8. Gerber Creek is an intermittent stream (IS-1a) that occurs along the north side of Florin Road east of the intersection of Excelsior Road. It is associated with OHWM Data Form 1. View northeast, January 10, 2024.

Photo 9. Ephemeral stream (ES-3) surrounded by valley grassland and is on the north side of Florin Road. View northwest, January 12, 2024.

Photo 10. Frye Creek is and intermittent stream (IS-2) that occurs in the 69 kV portion of the study area and is conveyed under Florin Road. View of the northern segment (IS-2a) which is associated with OHWM Data Form 2. View north, January 11, 2024.

Photo 11. Vernal pool (VP-4a) is a gentle depression and occurs on the north side of Florin Road in the powerlines portion of the study area. View northeast, January 12, 204.

Photo 12. Laguna Creek is a perennial stream (PS-2b) after it is conveyed under Eagle Nest Road and continues to flows west. Upland riparian habitat dominated by valley oak, occurs is along the banks. View west, January 10,2024.

Photo 13. Vernal pool (VP-32) occurs in the northeastern corner of the South Property. It supports vernal pool buttercup and spikerush and is associated with Wetland Determination Data Sheet WP-3. View northwest, January 11, 2024.

Photo 14. Pond and open water (OW-1) habitat on South Property. It supports freshwater marsh along its margin (FM-6). View west, January 10, 2024.

Photo 15. Agricultural ditch (AD-2b) conveys irrigation water to cropland and irrigated pastures on the South Property. It supports hydrophytic vegetation including narrow leaf cattail, lamp rush, and blackberry thickets are along the bank in the background. View east, January 11, 2024.

Photo 16. Hydrophytic vegetation occurs near leaky irrigation pipe in agricultural fields. Cropland landcover is in the background. View west, January 10, 2024.

Photo 17. Large agricultural ditch (AD-3) conveys irrigation water for agricultural use on the South Property. Water is typically present year around and supports a fringe of hydrophytic vegetation along its margins. View southwest, January 10, 2024.

Photo 18. Cropland land cover where tall cyperus is dominant and is transitioning to seasonal wetland (SW-11) land cover to the left. View northwest, January 12, 2024.

Photo 19. Seasonal wetland (SW-11) within a cropland which was dominated by old witch grass and tall cyperus and associated with Wetland Determination Data Sheet WP-4. View southeast, January 10, 2024.

Photo 20. Swale (S-1) south of Florin Road in the northwestern portion of the powerlines of the study area. It does not support a bed or a bank. View south, May 7, 2024.

Photo 21. Intermittent stream (IS-3a) flows south and occurs on the north side of Gerber Road in the southwest portion of the powerlines of the study area. Freshwater marsh (FM-9) is in view on its eastern bank (left). View north, February 16, 2024.

Photo 22. Laguna Creek, a perennial stream, flows though the southern portion of the powerlines of the study area. It supports freshwater marsh (FM-10) within the OHWM in this location and is composed of dallis grass, lamp rush, irisleaf rush, spikerush, and narrow leaf cattail. View northeast, February 16, 2024.

Photo 23. Seasonal wetland (SW-18) occurs in an irrigated pasture in the North Property. This feature is likely the result of ongoing agricultural practices, does not appear to be persistent through time, and therefore may not be potentially jurisdictional. View north, May 23, 2024.

Photo 24. Laguna Creek (PS-2c) where it intersects the powerline portion of the study area between the North and South Properties. Freshwater marsh (FM-8) dominated by common tule is along the banks. View east, July 10, 2024.