

BIOLOGICAL RECONNAISSANCE REPORT

PG&E L114, L114-1, AND SP4Z SAN JOAQUIN RIVER SUBMARINE PIPELINE CROSSING DECOMMISSIONING PROJECT SACRAMENTO AND CONTRA COSTA COUNTIES, CALIFORNIA

Prepared for:
PACIFIC GAS AND ELECTRIC COMPANY

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1.0 INTRODUCTION

The purpose of this Biological Reconnaissance Report is to detail the findings of the biological reconnaissance investigation of the proposed Pacific Gas and Electric Company's (PG&E) L114, L114-1, and SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project (Project). This reconnaissance report includes a review of pertinent literature, results of reconnaissance field surveys, and a preliminary discussion of biological resources that could be impacted by the project.

Following this introduction, there is a description of the Project, followed by the methodology section, which describes field studies and analytical methods used to assess the project site. The methodology section includes a review of pertinent literature concerning special-status species, sensitive habitats, and general biological conditions; and, a description of field reconnaissance methods. The environmental setting describes abiotic and biotic conditions at the project site including climate, soils, typical habitats and associated plant and wildlife species, and special-status species reported in or near the project area.

Limitations of this report include the following:

- Surveys were conducted in January when most plant species are not typically in bloom; therefore, vegetative surveys were conducted only for the purposes of characterizing cover types.
- Surveys were conducted before the onset of breeding by most bird species
- No protocol-level surveys for special-status species were conducted for the report.
- A jurisdictional wetland delineation was not conducted.

2.0 PROJECT DESCRIPTION

2.1 LOCATION

The three pipeline crossings, Line-114, Line 114-1 and Line SP4Z, are located approximately 28 miles east of the entrance to the Carquinez Strait at San Pablo Bay and approximately 605 to 850 feet east of the Antioch Bridge. The crossings span the San Joaquin River between Sherman Island at the north landing and City of Oakley at the south landing. The maximum water depth of the crossing is approximately 45 feet using the vertical datum NAVD88.

The length of the underwater portions of these crossings are approximately 3,841 feet, shoreline to shoreline, and approximately 4,515 feet from the onshore vault at Sherman Island to the onshore vault at Oakley, California (Lauritzen Yacht Harbor). The northern side of the crossing is located in Sacramento County while the southern side of the crossing is located in Contra Costa County. The county boundary line is located at the approximate centerline of the river.

2.2 ACTION AREA

The pipeline decommissioning site extends from the lower levee access road along the north levee on Sherman Island (Sacramento County) to the south landing at the Lauritzen Yacht

Harbor in Contra Costa County. The submerged portions of the pipelines are just offshore of the shoreline northern and southern landings in water depths ranging from approximately 5 feet of water (MLLW) near the shoreline and up to approximately 45 feet of water (MLLW) in river channel. The underwater disturbance area is approximately 0.98 acre in extent (3,525 feet long by 12 feet wide). Based on an average burial deep of 5.5 feet, up to approximately 8,616 cubic yards of river bed material would be impacted temporarily by the pipeline removal.

2.3 PROPOSED ACTION

PG&E proposes to fill the onshore segments (north and south landing) of each pipeline with a cement slurry from their vault terminations out to a pre-determined point located just offshore of the shorelines where the submarine pipelines are buried under the riverbed a minimum of five feet. This cement slurry will create cement plugs in each pipeline landing. The pipeline segments within the levee will be decommissioned to comply with the controlling levee district requirements.

Offshore of each landing, but within the cement slurry plug placed in each pipeline landing, the pipelines will be cut underwater (shoreline cut points) in preparation for removing the pipeline segments within the river crossing. The pipelines will be cut within the cement plugs and at locations where the shoreline ends are buried to a depth of five feet or more under the riverbed. These onshore landing segments will be retired in place.

PG&E intends to pull the pipeline through the riverbed overburden without excavation, raise the pipe up to the derrick barge and cut the pipe, then repeat the process for the entire length of the offshore section. However, if the pipeline will not pull through the riverbed, pipelines may be excavated, raised to the deck of the derrick barge and cut into sections for a distance estimated at approximately 3,600 feet for each of the three pipelines. If the excavate-and remove-methodology is used, the pipeline removal operations may require approximately 8,616 cubic yards of excavation (based on trench no wider than 12 feet, average 5.5 feet deep, and 3,525 feet in length). However, the excavation estimate is projected as a worst-case and assumes that the pipelines are not bundled and that each pipeline will require an individual trench.

Once the pipelines are recovered, they will be cut into truckable lengths and stored on a materials barge that will be tied to the derrick barge. The pipe will be transported to shore, offloaded onto trucks, and hauled to recycling or disposal facilities depending on the characteristics of the exterior Somatic coating. Construction is anticipated to last 60 days working six 12-hour-days per week.

3.0 METHODOLOGY

3.1 LITERATURE REVIEW

Padre biologists reviewed available project information, county soil survey maps, topographic maps, National Wetland Inventory maps, and other environmental documents.

The California Natural Diversity Database (CNDDDB) was queried for records of special-status species reported within the Jersey Island North, California quadrangle (California Department of Fish and Wildlife [CDFW], 2015) (Appendix A). A list of federally listed

Threatened and Endangered species was obtained from the U.S. Fish and Wildlife Service (USFWS), which is included under Appendix A (USFWS, 2015). Special-status taxa that are known to exist or have the potential to exist on the project site were also identified through a review of relevant literature (California Native Plant Society [CNPS], 2015; Zeiner et al., 1988; 1990a, b). A review of the USFWS National Wetland Inventory (NWI) map for the Jersey Island North 7.5-minute USGS quadrangle was reviewed to identify locations of previously mapped waters and wetlands (USFWS, 2015) (Appendix A).

3.2 FIELD RECONNAISSANCE SURVEYS

Reconnaissance-level field surveys were conducted by Padre on January 15, 2015. Surveys were conducted to assess biological resources and to determine the likelihood of occurrence for special-status species and/or sensitive and regulated habitats on the site. Detection methods included direct observation with binoculars; examination and identification of tracks, scats, burrows/diggings, and carcasses/skeletal remains; and identification of vocalizations (calls and songs). No trapping or netting was performed during surveys. Plants not identified in the field were collected and returned to the lab for identification using standard taxonomic references (Baldwin, 2012). Prior to the field surveys, the CNDDDB query was reviewed to identify occurrences of special-status plant and animal species in the project vicinity. During the field surveys, vegetative cover types and significant habitat features, such as potential nest trees and potential dens or burrows, were noted. Lists of plants and wildlife associated with the various cover types were compiled and are included in Tables 1 and 2.

4.0 ENVIRONMENTAL SETTING

4.1 REGIONAL SETTING

The pipeline crossing Project is located within the Delta subsection of the Great Valley Ecological Region of California at the confluence of the Sacramento and San Joaquin Rivers. Except for the levees present on the San Joaquin and Sacramento Rivers, the subsection is a nearly level plain just about sea level. Decomposition of the organic deposits and the resulting land subsidence is the main geomorphic process. Fluvial erosion and deposition are the main geomorphic processes on and adjacent to levees.

The climate in this region includes hot dry summers and cool winters. The Project area is strongly affected by steady marine wind that blows through the Carquinez Strait. The moderating influence of the marine air is reflected in the average temperatures. At the Antioch Pump Plant meteorological station (CA0232), the average annual maximum temperature is 73.0 Degrees Fahrenheit (°F), ranging from 53.0 °F in January to 90.7 °F in July. The average minimum temperature is 47.2 °F, ranging from 35.9 °F in January to 56.7 °F in July. The average annual precipitation is 12.57 in. Over 94 percent of the precipitation occurs between October and April. The growing season is approximately 292 days, with the average date of the last frost around the first of March, and the average date of the first frost about the first of December (Welch 1977).

Table 1. Plant Species Observed at Project Site*

Common Name	Scientific Name	Growth Habit ¹	Native Status ²	Community ³	Wetland Indicator Status ⁴	Protected Status ⁵
APIACEAE (Carrot Family)						
Fennel	<i>Foeniculum vulgare</i>	H	I	1	NL	No
ASCLEPIADACEAE (Milkweed Family)						
Horseweed	<i>Conyza canadensis</i>	H	N	1	FAC	No
ASTERACEAE (Sunflower Family)						
Yellow star-thistle	<i>Centaurea solstitialis</i>	H	I	1	NL	No
Prickly lettuce	<i>Lactuca serriola</i>	H	I	1	FACU	No
Bristly ox-tongue	<i>Helminthotheca [Picris] echinoides</i>	H	I	3	FACU	No
BRASSICACEAE (Mustard Family)						
Perennial peppergrass	<i>Lepidium latifolium</i>	H	I	3	FAC	No
CHENOPODIACEAE (Goosefoot Family)						
Saltbush	<i>Atriplex</i> sp.	H	--	3	--	No
Clover	<i>Trifolium</i> sp.	H	--	1	--	No
Vetch	<i>Vicia</i> sp.	H	--	1	--	No
GERANIACEAE (Geranium Family)						
Red-stemmed filaree	<i>Erodium cicutarium</i>	H	I	1	NL	No
FABACEAE (Legume Family)						
Birdfoot trefoil	<i>Lotus corniculatus</i>	H	I	3	FAC	No
MALVACEAE (Mallow Family)						
Mallow	<i>Malva</i> sp.	H	I	4	--	No
ONAGRACEAE (Evening Primrose Family)						
Water primrose	<i>Ludwigia peploides</i>	H	I	2	OBL	No

Common Name	Scientific Name	Growth Habit ¹	Native Status ²	Community ³	Wetland Indicator Status ⁴	Protected Status ⁵
PAPAVERACEAE (Poppy Family)						
California poppy	<i>Eschscholzia californica</i>	H	N	1	NL	No
RANUNCULACEAE (Buttercup Family)						
--	--	--	--	--	--	No
ROSACEAE (Rose Family)						
Himalayan blackberry	<i>Rubus armeniacus</i>	V	I	1, 4	FACU	No
SOLANACEAE (Nightshade Family)						
Tobacco tree	<i>Nicotiana glauca</i>	T	I	4	FAC	No
VITACEAE (Grape Family)						
California wild grape	<i>Vitis californica</i>	V	N	4	FACU	No
CYPERACEAE (Sedge Family)						
Bulrush	<i>Schoenoplectus acutus</i>	H	N	2	OBL	No
JUNCACEAE (Rush Family)						
Rush	<i>Juncus</i> sp.	H	--	3	--	No
Baltic rush	<i>Juncus balticus</i>	H	N	3	FACW	No
POACEAE (Grass Family)						
Wild oat	<i>Avena fatua</i>	G	I	1	--	No
Pampas grass	<i>Cortaderia jubata</i>	G	I	4	NL	No
Bermuda grass	<i>Cynodon dactylon</i>	G	I	1, 3	FACU	No
Salt grass	<i>Distichlis spicata</i>	G	FACW	3	N	No
Rye grass	<i>Festuca perennis</i>	G	I	1	FAC	No
Mediterranean barley	<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	G	I	1	FAC	No
Common reed	<i>Phragmites australis</i>	G	I	2	FACW	No
Annual beard grass	<i>Polypogon monspeliensis</i>	G	I	3	FACW	No
PONTEDERIACEAE (Pickerel-weed Family)						
Water hyacinth	<i>Eichhornia crassipes</i>	H	I	2	OBL	No
TYPHACEAE (Cattail Family)						

Common Name	Scientific Name	Growth Habit ¹	Native Status ²	Community ³	Wetland Indicator Status ⁴	Protected Status ⁵
Narrow-leaved cattail	<i>Typha angustifolia</i>	H	N	2	OBL	No
Broad-leaved cattail	<i>Typha latifolia</i>	H	N	2	OBL	No
<p>¹Growth Habitat ²Native Status ³Community ⁴Wetland Indicator Status</p> <p>T Tree N Native 1 Non-native Grassland OBL Obligate Wetland - Almost always occurs in wetlands.</p> <p>S Shrub I Introduced 2 PEMT-Hardstem Bulrush Marsh FACW Facultative Wetland - Usually occurs in wetlands, but may occur in non-wetlands.</p> <p>H Herbaceous 3 PEM-Salt Grass FAC Facultative - Occurs in wetlands or non-wetlands.</p> <p>G Grass 4 Ruderal FACU Facultative Upland - Usually occurs in non-wetlands, but may occur in wetlands.</p> <p>UPL Obligate Upland - Almost never occurs in wetlands.</p> <p>⁵Protected Status FE – Federally Endangered Species, FT – Federally Threatened Species, SE – State Endangered Species, ST – State Threatened Species, SR – State Rare, 1A – CRPR List 1A, 1B – CRPR List 1B, 4 – CRPR List 4.</p>						

*Note: Surveys were conducted during non-blooming period (January 2015) and some plants were not identified.

Table 2. Wildlife Species Observed at Project Site

Family/Common Name	Scientific Name	Protected Status ¹	Source ²
BIRDS			
Ducks, Geese, and Swans (Anatidae)			
Greater White-fronted Goose	<i>Anser albifrons</i>	M	--
Snow Goose	<i>Chen caerulescens</i>	M	--
Canada Goose	<i>Branta canadensis</i>	M	2
Mallard	<i>Anas platyrhynchos</i>	M	2
New World Quail (Odontophoridae)			
California Quail	<i>Callipepla californica</i>	M	--
Phalacrocoracidae (Cormorants)			
Double-crested cormorant	<i>Phalacrocorax auritus</i>	M,FGWL	--
Bitterns, Herons, and Allies (Ardeidae)			
Snowy Egret	<i>Egretta thula</i>	M	--
Great Egret	<i>Ardea alba</i>	--	--
Great Blue Heron	<i>Ardea herodias</i>	M	1
Green Heron	<i>Butorides striatus</i>	M	
New World Vultures (Cathartidae)			
Turkey Vulture	<i>Cathartes aura</i>	M	2
Hawks, Kites, Eagles (Accipitridae)			
Red-tailed Hawk	<i>Buteo jamaicensis</i>	M	1,2
Rails, Gallinules, and Coots (Rallidae)			
American Coot	<i>Fulica americana</i>	M	2
Lapwings and Plovers (Charadriidae)			
Killdeer	<i>Charadrius vociferus</i>	M	1,2
Stilts and Avocets (Recurvirostridae)			
Black-necked Stilt	<i>Himantopus mexicanus</i>	M	--
Sandpipers, Phalaropes, and Allies (Scolopacidae)			
Greater Yellowlegs	<i>Tringa melanoleuca</i>	M	--
Pigeons and Doves (Columbidae)			
Mourning Dove	<i>Zenaida macroura</i>	M	2
Tyrant Flycatchers (Tyrannidae)			
Black Phoebe	<i>Sayornis nigricans</i>	M	2
Western Kingbird	<i>Tyrannus verticalis</i>	M	2
Jays and Crows (Corvidae)			
American Crow	<i>Corvus brachyrhynchos</i>	M	2
Swallows (Hirundinidae)			
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	M	--
Cave Swallow	<i>Petrochelidon fulva</i>	M	--
Mockingbirds and Thrashers (Mimidae)			

Family/Common Name	Scientific Name	Protected Status ¹	Source ²
Northern Mockingbird	<i>Mimus polyglottos</i>	M	2
Starlings (Sturnidae)			
European Starling	<i>Sturnus vulgaris</i>	--	2
Emberizids (Emberizidae)			
Song Sparrow	<i>Melospiza melodia</i>	M	--
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	M	2
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	M	2
Blackbirds (Icteridae)			
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	M	2
Western Meadowlark	<i>Sturnella neglecta</i>	M	1,2
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	M	1,2
Fringilline and Cardueline Finches and Allies (Fringillidae)			
House Finch	<i>Haemorhous mexicanus</i>	M	1,2
Lesser Goldfinch	<i>Spinus psaltria</i>	M	2
Protected Status¹			
M = Migratory Bird Treaty Act (MBTA)		CSC = California Species of Special Concern	
FE = Federally Endangered		FP = California Fully Protected Species	
FT = Federally Threatened		BCC = USFWS Birds of Conservation Concern	
SE = California State Endangered		WL = CDFW Watch List	
ST = California State Threatened			

In general, the soils within the Delta subsection are Typic and Terric Medisaprists and Cumulic Haplaquolls. Most of the soils are poorly to very poorly drained. Soil temperature regimes are thermic and moisture regimes are mostly aquic, but xeric on levees. According to Natural Resources Conservation Service (NRCS), the soil mapping unit along the south landing is Urban Land, while the soil on the north landing is Gazwell mucky clay, partially drained, 0-2 percent slopes (Tugel 1993). The Gazwell series is a very deep soil formed in alluvium from mixed rock sources underlain by decomposed hydrophytic plant remains. It occurs in backswamps along the edge of fresh water marshes. Slopes are 0 to 2 percent. It is very poorly drained and runoff is very slow. Permeability is moderate in the mineral soil and rapid in the underlying organic soil. It is classified as a fine, mixed, superactive, thermic Cumulic Endoaquolls. From 0 to 30 inches (in), the soil is a dark grayish brown (10YR 4/2) mucky clay and very dark grayish brown (10YR 3/2) when moist. This soil is described as massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many fine interstitial pores; 15 percent organic matter; moderately acid (pH 6.0) (National Cooperative Soil Survey 2003).

4.2 HABITAT TYPES

The Project is located within the lower reach of the San Joaquin River immediately upstream from the Antioch (Senator John A. Nejedly) Bridge on SR 160 and approximately 7.7 mi upstream from its confluence with the Sacramento River near Collinsville. The Project site consists of five habitat types including annual grassland, disturbed land, emergent wetland

(marsh), open water, and ruderal land. Table 3 shows the total area of each habitat type within the Project site. Most of the Project is within open water, but terrestrial segments occur along the south and north landings of the pipeline, as shown in Figures 1A and 1B. The following is a description of the habitat types occurring along the Project alignment (Figures 1A and 1B).

Table 3. Habitat Types and Acreage Within the Project Site

Cover Type	Cover Type Code	Area (Square Feet)	Acreage
Annual Grassland	AG	12,096	0.28
Disturbed Land	DS	20,582	0.47
Emergent Wetland (Marsh)	EMW	7,744	0.18
Open Water	OW	374,106	8.58
Ruderal Land	RD	10,839	0.25

Emergent Wetland (Marsh). Within the aquatic portion of the Project, water depths vary from less than four feet near the shoreline to approximately 40 feet in the river channel and currents are strong through the Project area. The shallow water portions of the Project site are covered in hardstem bulrush (*Schoenoplectus acutus*) and water hyacinth (*Eichhornia crassipes*), which dominated numerically and by areal cover. This cover type extended approximately 25 to 40 feet riverward from the levees and extended along the entire width of both the north landing and south landing foreshores (Figure 2 and Figure 3). This community accounted for approximately 0.18 acre. This cover type will not be impacted by the Project. See Table 3 and Figures 1A and 1B.

Ruderal. This community occurs in disturbed terrestrial areas along the pipeline alignment, particularly within the riprap along the north landing levee slopes and terraces, and along the pipeline alignment within the marina at the south landing amid the boat trailer storage area. This community accounted for approximately 0.25 acre. This cover type will be impacted by the Project. See Table 3 and Figures 1A and 1B.

Annual Grassland. This cover type is found along the levee slopes and is dominated by non-native grasses. Species identified included Bermuda grass (*Cynodon dactylon*), wild oat (*Avena fatua*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), clover (*Trifolium* sp.), vetch (*Vicia* sp.), horseweed (*Conyza canadensis*), and filaree (*Erodium cicutarium*) (Figure 4 and Figure 5). This community accounted for approximately 0.28 acre. This cover type will be impacted by the Project. See Table 3 and Figures 1A and 1B.

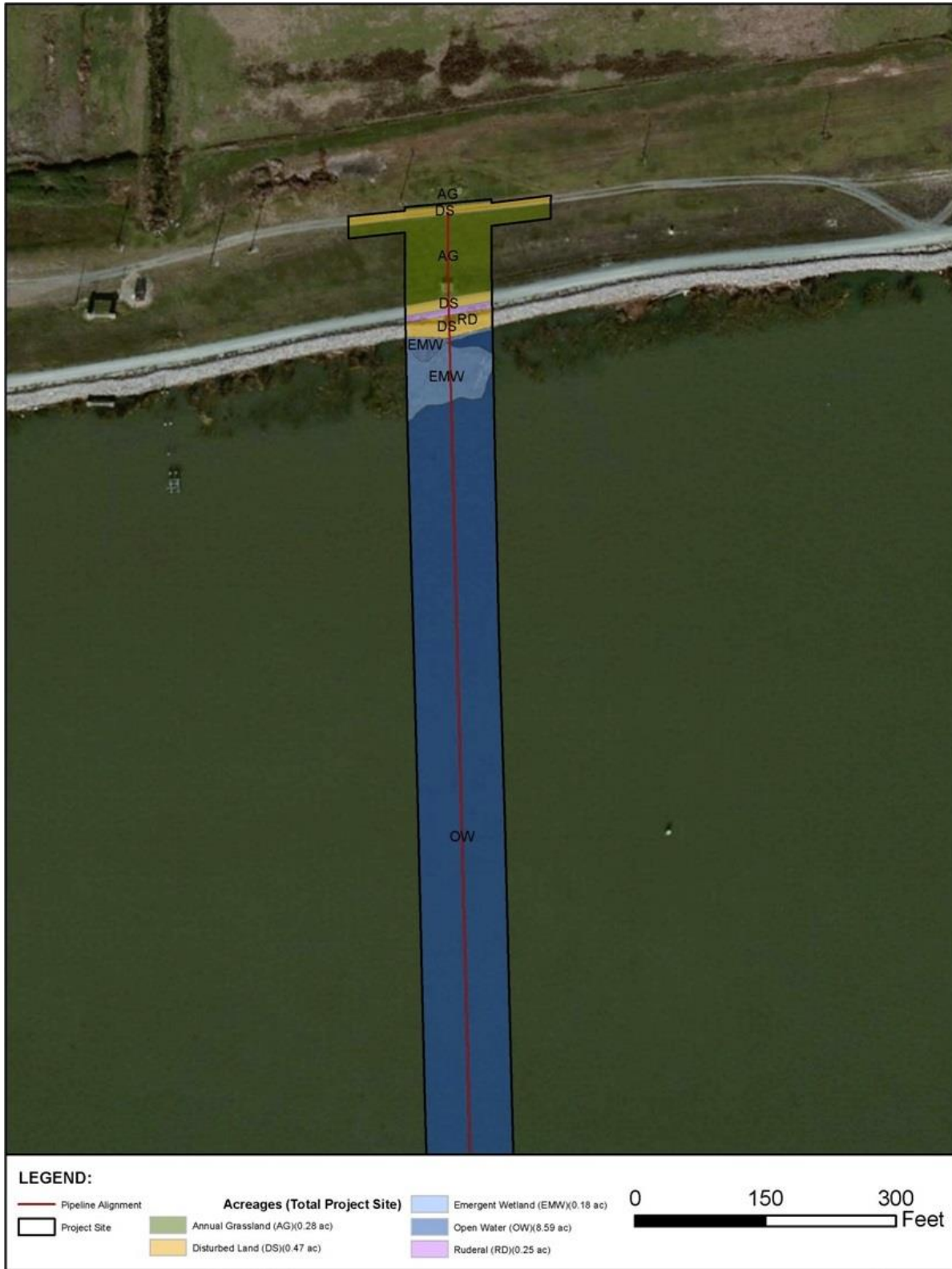


Figure 1A. Habitat Types North Landing



Figure 1B. Habitat Types South Landing



Figure 2. View of North Landing Foreshore



Figure 3. View of South Landing Foreshore



**Figure 4. View of North Slope
of Levee at North Landing. Pipeline Vault at Right.**



**Figure 5. View Along Boat Trailer
Storage Over Buried Pipeline at South Landing.**

Disturbed Land. This cover type includes areas covered in gravel or other developed structures like roads and buildings. Vegetation, if it exists, is very sparse and generally composed of hardy weedy species. This community accounted for approximately 0.47 acre. This cover type will be impacted by the Project. See Table 3 and Figures 1A and 1B.

Open Water. The majority of the project site consists of open water across the San Joaquin River. Vegetation is limited to emergent wetlands within shallow water areas along the shoreline at the north and south landings (described above). Open water constitutes 8.58 acres of the Project site. This cover type will be impacted by the Project. See Table 3 and Figures 1A and 1B.

4.3 WATERS AND WETLANDS

4.3.1 Federal Regulation

The U.S. Army Corps of Engineers (Corps) is responsible for the issuance of permits for the placement of dredged or fill material into Waters of the United States (WoUS) and wetlands pursuant to Section 404 of the Clean Water Act (CWA) (33 USC 1344). As defined by the Corps at 33 CFR 328.3(a)(3), WoUS are those waters that are used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters that are subject to the ebb and flow of the tide; tributaries, and impoundments to such waters; interstate waters including interstate wetlands; and, territorial seas. Based on the U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (2001), and guidance from the Corps and U.S. Environmental Protection Agency (EPA, 2001), the federal government no longer asserts jurisdiction over isolated waters and wetlands under Section 404 of the Clean Water Act based on the “migratory bird rule”.

The U.S. Supreme Court held that the Corps’ jurisdiction under Section 404 of the Clean Water Act (CWA) does not extend to non-navigable, isolated, intrastate waters based solely on the fact that these waters are used as habitat by migratory birds. In 2006, the Supreme Court again attempted to clarify the Corps’ jurisdiction in *Rapanos v. United States*. The test established in *Rapanos* is that only a water that possesses a “significant nexus to waters that are navigable-in-fact, or that could reasonably be so made” are subject to regulation under the Clean Water Act.

On June 5, 2007, the EPA and Corps issued joint guidance to establish the protocol for determining the presence of WoUS under the U.S. Supreme Court’s 2006 *Rapanos* decision. The guidance directs the agencies to more thoroughly document jurisdiction using a standardized form. Agencies will continue to assert jurisdiction over traditional navigable waters (TNW) and adjacent wetlands. The agencies will have jurisdiction over a water body that is not a TNW if that water body is “relatively permanent.” Jurisdiction will be asserted over tributaries that are not relatively permanent on a case-by-case basis applying a “significant nexus” analysis to determine whether there is a significant nexus between the tributary and a TNW.

Under Corps and EPA regulations, wetlands are defined as: *“those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”*

In non-tidal waters, the lateral extent of Corps jurisdiction is determined by the ordinary high water mark (OHWM), which is defined as the: “...*line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*” (33 CFR 328[e]).

The Corps is also responsible for regulating activities on, over, and under “navigable waters of the United States” pursuant to Section 10 of the Rivers and Harbors Act of 1899.

4.3.2 State Regulation

Pursuant to Section 1602 of the Fish and Game Code (F&G Code), a Lake or Streambed Alteration Agreement (LSAA) between the CDFW and state or local governmental agency, public utility, or private citizen is required before the initiation of a construction project that will: (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of a river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Pursuant to Section 401 of the CWA, the Corps cannot issue a federal permit until the State of California first issues a water quality certification to ensure that a project will comply with state water quality standards. The authority to issue water quality certifications in the Project area is vested with the Central Valley Regional Water Quality Control Board (RWQCB).

The Porter Cologne Water Quality Act of 1967, Water Code section 13000 et seq., requires the State Water Resources Control Board (SWRCB) and RWQCBs to adopt water quality criteria to protect State waters. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and non-point sources of pollution. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Pursuant to the Porter-Cologne Act, the responsibility for protection of water quality in California rests with the SWRCB. The SWRCB administers Federal and State water quality regulations for California’s ocean waters, and also oversees and funds the State’s nine RWQCBs. The RWQCBs prepare water quality control plans, establish water quality objectives, and carry out Federal and State water quality regulations and permitting duties for inland water bodies, enclosed bays, and estuaries within their respective regions. The Porter-Cologne Act gives the SWRCB and RWQCBs broad powers to protect water quality by regulating waste dischargers to water and land, and requiring cleanup of hazardous wastes.

4.3.3 Jurisdictional Waters and Wetlands

Within the Project site, the San Joaquin River is categorized as a “navigable water of the U.S.” under Section 10 of the Rivers and Harbors Act of 1899 and a WoUS pursuant to Section 404 of the CWA. Wetlands within the Project site are limited to emergent wetlands occurring in the shallow water portion of the river channel at the north and south landings. These shoreline bands of wetland habitat occur below OHWM and would constitute jurisdictional in-channel wetlands regulated under the federal CWA and the State of California. Aside from the emergent

wetland along the shoreline of the San Joaquin River within the WoUS, there is no wetland habitat within the Project site.

4.4 SPECIAL-STATUS SPECIES

4.4.1 Federal Regulation

The Federal Endangered Species Act (FESA), administered by the USFWS and the National Marine Fisheries Service (NMFS), provides protection to species listed as Threatened (FT) or Endangered (FE), or proposed for listing as Threatened (PFT) or Endangered (PFE). The Services maintain lists of species that are neither formally listed nor proposed, but could be listed in the future. These federal candidate species (FC) include taxa for which substantial information on biological vulnerability and potential threats exists, and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species.

Projects that will result in the “take” of a federally listed or proposed species (as defined by FESA Section 9) are required to consult with the Services. The objective of consultation is to determine whether the project will jeopardize the continued existence of a listed or proposed species, and to determine what mitigation measures will be required to avoid jeopardy. Consultations are conducted under Sections 7 or 10 of FESA depending on the involvement by the federal government.

Under Section 7, the Services are authorized to issue Incidental Take Permits (ITP) for the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency. A Biological Assessment is usually required as part of the Section 7 consultation to provide sufficient information for the Services to fully determine the project’s potential effect on listed species.

Section 10 consultation is conducted when there is no federal involvement in a project except compliance with FESA.

The USFWS also administers the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) and the Bald Eagle and Golden Eagle Protection Act (16 USC 668-688). The MBTA prevents the removal of trees, shrubs, and other structures containing active nests of migratory bird species that may result in the loss of eggs or nestlings. Adherence to construction windows either before the initiation of breeding activities or after young birds have fledged is a typical step to protect migratory birds and comply with the MBTA. The Bald Eagle and Golden Eagle Protection Act prohibits the taking or possession of bald and golden eagles, their eggs, or their nests without a permit from the USFWS.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a federal Fisheries Management Plan (FMP). The MSA requires federal agencies to consult with the NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (MSA §305[b][2]).

4.4.2 State Regulation

The CDFW administers a number of laws and programs designed to protect the state's fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA) (F&G Code Section 2050), which regulates the listing and take of state endangered (SE) and threatened species (ST). Under Section 2081 of CESA, CDFW may authorize an incidental take permit allowing the otherwise unlawful take of a SE or ST species.

CDFW maintains lists of Candidate-Endangered species (SCE) and Candidate-Threatened species (SCT). These candidate species are afforded the same level of protection as listed species. CDFW designates Species of Special Concern (SSC) that are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future. The SSC list is intended by CDFW as a management tool for consideration in future land use decisions.

A number of other State laws have been enacted to protect wildlife and plants. Section 3511 of the California F&G Code, for example, designates species that are afforded "Fully Protected" (FP) status. F&G Code Sections 4700 and 5515 assign the same status to specified mammals and fish. These statutes generally provide that specifically identified birds, mammals, and fish "or parts thereof may not be taken or possessed at any time and no provision of [the Fish and Game] code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird, mammal, or fish] and no permits or licenses heretofore issued shall have any force or effect" for any such purpose. For fully protected fish and mammals, the only exception to the take prohibition is that the Fish and Game Commission may authorize the collecting of such species "for necessary scientific research" (F&G Code, Sections 4700, 5515). With a proper permit, fully protected species may also be captured live and relocated "for the protection of livestock" (Section 3511). Section 3503.5 protects birds-of-prey (Falconiformes and Strigiformes), their eggs, and their nests. That statute provides that, "[I]t is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

CDFW manages the California Native Plant Protection Act (CNPPA) of 1977 (F&G Code Section 1900, et seq.), which was enacted to identify, designate, and protect rare plants. In accordance with CDFW guidelines, all California Rare Plant Rank (CRPR) 1B plants, most CRPR List 2 and 3, and some CRPR List 4 plants are considered "rare" under the Act, and potential impacts to these species are considered during a CEQA review of a proposed project. The CNPPA allows landowners, under most circumstances involving new development, to take rare plant species, provided that the owners first notify CDFW and give the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed (F&G Code Section 1913 exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way").

4.4.3 Special-Status Species Occurrence

Based on a species list obtained from the USFWS website (Document No. 150106113209), a query of the CNDDDB, and a query of the California Native Plant Society (CNPS) database CRPR System, a list of special-status species that have been reported within approximately five miles of the Project site was compiled (Figure 6 and Table 4). Table 4 provides a likelihood of occurrence analysis based on the species range, habitat requirements, and timing of inhabitation. Certain species, such as those associated with vernal pool habitats, were eliminated from these analyses due to the absence of vernal pools within the Project site. As a result, the species described below are limited to those listed species that have a potential to occur on the Project site.

Plants

Suisun Marsh aster. Suisun Marsh aster (*Symphotrichum lentum*) is a CNPS List 1B species. This species is associated with brackish and freshwater marshes of the Sacramento-San Joaquin Delta. This species blooms between May and November. There are two recorded occurrences of the species near the southern and northern segments of the Project. This species has the potential to occur in brackish or freshwater wetland habitat at the shoreline of the river in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat and is not likely to affect the Suisun Marsh aster.

Delta tule pea. Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*) is a CNPS List 1B species. This species is associated with brackish and freshwater marshes throughout the Delta and Central Valley. This species blooms between May and July. It has been documented along riverbanks at the confluence of the Sacramento and San Joaquin rivers, primarily east of the pipeline crossing locations. This species has the potential to occur in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat and is not likely to affect the Delta tule pea.

Mason's lilaepsis. Mason's lilaepsis (*Lilaeopsis masonii*), is a State-listed Rare species and a CNPS List 1B species. This species is associated with tidally influenced marsh habitats, mudflats, and levee banks in the Delta and blooms between April and November. It has been documented along the shoreline of the Sacramento and San Joaquin rivers. There are two occurrences of the species within 500 ft of the southern and northern segments of the Project. This species has the potential to occur in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat and is not likely to affect the Mason's lilaepsis.

Soft bird's-beak. Soft bird's beak (*Chloropyron molle* ssp. *Molle*) is a Federally listed Endangered species, a State-listed Rare species, and a CNPS List 1B species. It is associated with tidal brackish and salt marsh habitat and blooms between July and November. There is a 1993 occurrence of this species near the northern end of the Project site. This species has the potential to occur in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat and is not likely to affect soft bird's-beak.

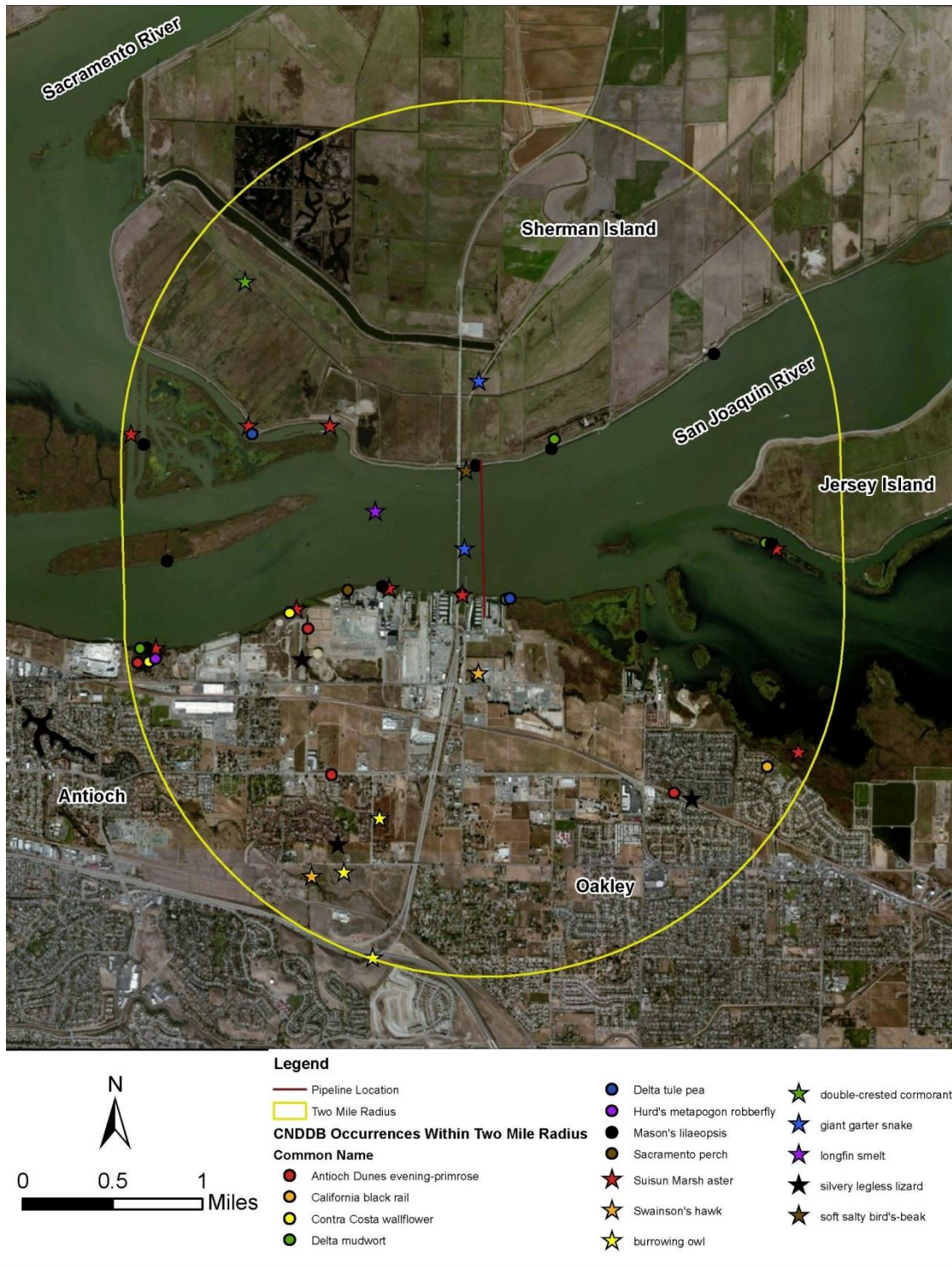


Figure 6. Special-Status Species Occurrences

Table 4. Special-Status Species Reported Within the Project Area

Species*	Status ¹	Habitat	Distance to Nearest Reported Occurrence (Occ.)	Likelihood of Occurrence
Plants				
<i>Blepharizonia plumosa</i> Big tarplant	1B	Valley and foothill grassland. Blooms from July to October at 100 to 1,650 feet mean sea level.	Occ. # 56 is approximately 5 miles south-west of southern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>California macrophylla</i> Round-leaved filaree	1B	Cismontane woodland, valley/foothill grassland. 50 to 4,000 feet mean sea level.	Occ. # 95 is approximately 6 miles south-west of southern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>Cicuta maculata</i> var. <i>bolanderi</i> Bolander's water hemlock	2B	Freshwater or brackish marshes and swamps. 0 to 600 feet msl	Occ. # 15 is approximately 1 mile south-east of the southern end of the Project site.	Moderate. Species could occur along river and adjacent to Project or within wetlands north of Project site.
<i>Chloropyron molle</i> ssp. <i>molle</i> Soft bird's-beak	FE	Found in coastal salt marshes and swamps. 0 to 10 feet mean sea level.	The buffer of Occ. # 18 from 1993 is located near the northern end of the Project site.	Moderate. Species could occur within wetlands north of Project site.
<i>Cryptantha hooveri</i> Hoover's cryptantha	1A	Valley and foothill grassland in coarse sand. 3 to 500 feet mean sea level.	Occ. # 4 was reported approximately 2 miles south-west of southern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>Eriogonum nudum</i> var. <i>psychicola</i> Antioch Dunes buckwheat	1B	Found in inland dune habitat (Antioch Dunes). 0 to 60 feet mean sea level.	Occ. # 1 is approximately 2.8 miles west of the Project site.	Absent. Project site lacks suitable habitat.
<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	1B	Found in chaparral, valley grassland, and coastal scrub communities in Contra Costa County. 900 to 1,800 feet msl	There is one historical occurrence (Occ. # 4) from more than 100 years ago located approximate 2.5 miles south-east of the southern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>Erysimum capitatum</i> ssp. <i>angustatum</i> Contra Costa wallflower	FE, SE	Found in inland dune habitat. 10 to 60 feet mean sea level.	Occ. # 4 is approximately 4 miles west of the Project site.	Absent. Project lacks suitable habitat.
<i>Eschscholzia rhombipetala</i> Diamond-petaled California poppy	1B	Found in valley and foothill grassland habitat (alkaline clay). 0 to 3,000 feet mean sea level.	There is one historical occurrence from over 100 years ago approximately 5 miles from the Project site.	Absent. Project site lacks suitable habitat.
<i>Hesperolinon breweri</i>	1B	Found in chaparral, cismontane woodland, and valley and foothill	Occ. # 32 is approximately 4.5 miles south	Absent. Project site lacks

Species*	Status ¹	Habitat	Distance to Nearest Reported Occurrence (Occ.)	Likelihood of Occurrence
Brewer's western flax		grassland habitats. 100 to 3,000 feet msl	of the southern end of the Project site.	suitable habitat.
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> Woolly rose mallow	1B	Riprap on sides of levees and within marshes and swamps at 0-400 feet mean sea level. Blooms from June through September.	Occ. # 105 is approximately 4.5 miles west of the Project site.	Moderate. Species could occur along river, in riprap on shoreline, and adjacent to Project or within wetlands north of Project site.
<i>Lasthenia conjugens</i> Contra Costa goldfield	FE	Cismontane woodlands, alkali playas, valley and foothill grasslands, and vernal pool habitats. Blooms Mar through June. 0 to 1,500 feet mean sea level.	Occ. # 34 is approximately 16 miles north-west of the northern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea	1B	Marshes and swamps (freshwater and brackish). Blooms from May-July at 0-15 feet mean sea level.	Occ. # 163 is approximately is approximately 500 feet east of the southern end of the Project.	Moderate. Species could occur along river and adjacent to Project or within wetlands north of Project site.
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	SR, 1B	Marshes and swamps (brackish or freshwater). Blooms from April-November at 0-30 feet mean sea level.	Occ. # 218 is approximately 400 feet west of the southern end of the Project. A separate occurrence (Occ. # 8) has a buffer within the northern end of the Project.	Moderate. Species could occur along river and adjacent to Project or within wetlands north of Project site
<i>Limosella australis</i> Delta mudwort	2B	Mud banks, freshwater and brackish marsh, and riparian scrub. Blooms May through August. 0 to 10 feet mean sea level.	Occ. # 63 is approximately 500 feet east of the southern end of the Project.	Moderate. Species could occur along river and adjacent to Project or within wetlands north of project site.
<i>Madia radiata</i> Showy golden madia	1B	Cismontane woodlands, valley and foothill grasslands. Blooms March through May. 75 to 7,000 feet mean sea level.	There is one historical occurrence from over 75 years ago approximately 7 miles south of the Project site.	Absent. Project lacks suitable habitat.
<i>Oenothera deltooides</i> ssp. <i>howellii</i> Antioch Dunes evening-primrose	FE, SE, 1B	Riverine sand dunes. Blooms March through September. 0 to 100 feet mean sea level.	Occ. # 10 is less than 1 mile west of the southern end of the Project site.	Absent. Project site and lacks suitable habitat.
<i>Scutellaria lateriflora</i> Side-flowering skullcap	2B	Mesic meadows and seeps and freshwater marshes. Blooms July through September. 0 to 1,500 feet	Occ. # 14 is approximately 15 miles north-east of the northern end of the Project site.	Absent. Project site lacks suitable habitat.

Species*	Status ¹	Habitat	Distance to Nearest Reported Occurrence (Occ.)	Likelihood of Occurrence
		mean sea level.		
<i>Symphotrichum lentum</i> Suisun Marsh aster	1B	Marshes and swamps (brackish and freshwater). Blooms from May-November at 0-10 feet mean sea level.	Occ. # 168 is approximately 400 feet west of the southern end of the Project. A separate occurrence (Occ. # 34) has a buffer within the northern end of the Project site.	Moderate. Species could occur along river and adjacent to Project or within wetlands north of project site.
Invertebrates				
<i>Apodemia mormo langei</i> Lange's metalmark butterfly	FE	The species is currently found only at the Antioch Dunes in the County of Contra Costa, California. It has a very close relationship with naked stemmed buckwheat (<i>Eriogonum nudum</i>) on which its eggs are deposited. The buckwheat is also an important nectar source for adults.	The whole Antioch north quadrangle, which is approximately 500 feet to the west, is listed as Occ. # 1.	Absent. Project site lacks suitable habitat.
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	FT	Occurrences of the VELB are primarily in the vicinity of moist valley oak woodlands associated with riparian corridors in the lower Sacramento River and upper San Joaquin River drainages (U.S. Fish and Wildlife Service 1984). Elderberry plants are obligate hosts for the VELB, providing a source of food and broodwood.	Occ. # 158 is approximately 22 miles south-east of the southern end of the Project site.	Absent. Project site lacks suitable habitat.
Fish				
<i>Archoplites interruptus</i> Sacramento perch	CSC	Most often found in warm reservoirs and ponds. Capable of surviving high temperatures, high salinities, high turbidity, and low water clarity. Often found in clear water among beds of aquatic vegetation, they achieve greater numbers.	Occurrence # 3 is within the waters located adjacent to the Project site.	High. Species could occur in San Joaquin River near the Project site.
<i>Pogonichthys macrolepidotus</i> Sacramento splittail	CSC	Occurs in lakes and rivers of the Central Valley and is capable of tolerating moderate levels of salinity. Commonly occur in brackish waters of Suisun Bay, Suisun Marsh and the	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.

Species*	Status ¹	Habitat	Distance to Nearest Reported Occurrence (Occ.)	Likelihood of Occurrence
		Sacramento-San Joaquin Delta.		
<i>Acipenser medirostris</i> Green sturgeon	FT	Anadromous fish species. Juveniles have been collected in the San Francisco Bay up to the lower reaches of the Sacramento and San Joaquin rivers. Spawning locations and seasons of this species are not known.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
<i>Hypomesus transpacificus</i> Delta smelt	FT, SE	Endemic to the upper Sacramento/San Joaquin Delta, it mainly inhabits the freshwater-saltwater mixing zone of the estuary, except during its spawning season, when it moves into freshwater during the early spring months from March until May.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
<i>Spirinchus thaleichthys</i> Longfin smelt	FC, ST	Endemic to Sacramento/San Joaquin Delta. Feed on zooplankton. Tolerate a wide range of salinity conditions, and are most abundant in Suisun and San Pablo Bays, but are also found in south San Francisco Bay and the open ocean.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
<i>Oncorhynchus mykiss</i> Central Valley steelhead	FT	Sacramento and San Joaquin River systems, Sacramento-San Joaquin Delta, and San Francisco Bay.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
<i>Oncorhynchus tshawytscha</i> CV spring-run chinook salmon	FT, ST	Sacramento River, Sacramento-San Joaquin Delta, and San Francisco Bay.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
<i>Oncorhynchus tshawytscha</i> Sacramento winter-run chinook salmon	FE, SE	Sacramento River, Sacramento-San Joaquin Delta, and San Francisco Bay.	This species is known to occur within Project waters.	High. Species could occur in San Joaquin River near the Project site.
Amphibians				
<i>Ambystoma californiense</i> California tiger salamander	FT, ST	Requires underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Occ. # 101 is approximately 5 miles south-west of the southern end of the Project site.	Absent. Project site lacks suitable habitat.
<i>Rana aurora draytonii</i>	FT	Found in marshes, lakes, reservoirs,	Occ. # 531 is approximately 5.5 miles	Absent. Project site lacks

Species*	Status ¹	Habitat	Distance to Nearest Reported Occurrence (Occ.)	Likelihood of Occurrence
California red-legged frog		ponds, slow parts of streams, and other usually permanent water in lowlands, foothill woodlands and grasslands. Requires areas with extensive emergent vegetation.	south-west of the southern end of the Project site.	suitable habitat.
Reptiles				
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	FT, ST	It is a slender, fast-moving, snake that inhabits the inner Coast Ranges in western and central Contra Costa and Alameda. It is typically found in open canopy chaparral and coastal scrub communities, and sometimes in grassland and oak savanna associations adjacent to the shrub habitats. Rock outcrops and talus with deep crevices and rodent burrows were important features for nightly retreats and winter hibernacula. It is a diurnal predator that seeks out and feeds almost exclusively on lizard prey	Occurrences for this species are suppressed; therefore, the entire Antioch South Quadrangle is listed as an occurrence. The Antioch South Quad is approximately 1.5 miles south of the Project site.	Absent. Project site lacks suitable habitat.
<i>Thamnophis gigas</i> Giant garter snake	FT, ST	Freshwater marshes and streams. Has adapted to drainage canals and irrigation ditches.	The buffer for Occurrence # 47 is located within the whole Project.	Moderate. Species could occur in wetlands adjacent to Project.
<i>Anninella pulchra pulchra</i> Silvery legless lizard	CSC	Occur in the Coast Range from County of Contra Costa to Mexico. Common in coastal dune, valley-foothill, chaparral, and coastal scrub habitats. Found in loose soil and leaf litter.	Occurrence # 56 is located within a mile of the Project site.	Absent. Project Site lacks suitable habitat.
<i>Emys marmorata</i> Western pond turtle	CSC	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Needs basking sites and suitable upland habitat (sandy banks or grassy open fields) for egg laying.	Occ. # 135 is approximately 3.5 miles west of the Project site.	Moderate. Species could occur in river and in adjacent wetlands and uplands.

Birds				
<i>Melospiza melodia mailliardi</i> Song sparrow ("Modesto" population)	CSC	Found in freshwater marshes dominated by tules and cattails and willow thickets with source of running water and semi-open canopy. Abundant in Delta and Butte Sink.	Occ. # 36 is approximately 5 miles north-west of the northern end of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Melospiza melodia maxillaris</i> Suisun song sparrow	CSC	Found in emergent marshes, ponds, and ditches dominated by bulrushes, cattails, and other emergent wetland plants.	Occ. # 29 is approximately 3.75 miles north-west of the northern end of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Geothlypis trichas sinuosa</i> Saltmarsh common yellowthroat	CSC	It is a small insectivorous warbler that gleans on insects on or near the ground from low herbaceous vegetation, bushes, and small trees. It breeds in fresh and brackish water marshes near the Bay between March and August in an area from Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz County on the south. After the breeding season, the species will move into saltwater marshes.	Occ. # 7 is approximately 3.75 miles north-west of the northern end of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Lanius ludovicianus</i> Loggerhead shrike	CSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Searches for prey (small birds, mammals, amphibians, reptiles, fish, carrion, etc.) from a perch at least 2 feet above ground.	Occ. # 3 is approximately 3.75 miles south-east of the southern end of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Laterallus jamaicensis coturniculus</i> California black rail	ST	It is resident in brackish and saltmarsh habitats in the Bay-Delta area. It has been documented in Mallard Island Marsh and Port Chicago Marsh, in marsh areas along the south side of Suisun Bay, Peyton Slough, Hill Slough, and Grey Goose in Suisun Bay.	Occ. # 109 is approximately 1.75 miles south-east of the southern end of the Project site.	Moderate. Species could occur in wetlands adjacent to Project.
<i>Elanus leucurus</i> White-tailed kite	FP	Rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous	Occ. # 17 is approximately 5 miles west of the Project site.	Low. Species could occur in wetlands outside of Project site.

		woodland. Found in open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.		
<i>Circus cyaneus</i> Northern harrier	CSC	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Nests on ground near marsh edge or grassland. Preys on Feeds mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and, rarely on fish.	There are no breeding occurrences of this species within 15 miles of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Agelaius tricolor</i> Tricolored blackbird	SE	Nesting colony requires open water, protected nesting substrate and foraging area with insect prey within a few km of the colony.	Occ. # 106 is approximately 10 miles north-west of the northern end of the Project site.	Low. Species could occur in wetlands outside of Project site.
<i>Athene cunicularia</i> Burrowing owl	CSC	Uses burrow sites in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Occ. # 947 is approximately 1.25 miles south of the southern end of the Project site.	Low. Species could occur in burrows along levee, but no burrows were observed nor were burrowing owls seen.
<i>Buteo swainsoni</i> Swainson's hawk	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Occ. # 1799 is located within 0.5 mile south of the southern end of the Project. This occurrence is from 2012.	Moderate. Species could occur in trees south and east of Project site.
<i>Rallus longirostris obsoletus</i> California clapper rail	FE, SE	Occurs in emergent salt and brackish water marshlands of the San Francisco Bay with abundant vegetative cover of pickleweed, Pacific cordgrass, and bulrush.	Occ. # 102 is approximately 13 miles west of the Project site.	Absent. Lack of suitable habitat.
Mammals				
<i>Lasiurus blossevillii</i> Western red bat	CSC	Range from western Canada to Central America. Roosts only in the foliage of riparian trees, primarily walnuts, oaks, willows, cottonwoods, and sycamores. Feeds on insects.	Occ. # 66 is approximately 2.25 miles south-west of the southern end of the Project site.	Absent. Lack of suitable habitat.

<p><i>Reithrodontomys raviventris</i> Salt marsh harvest mouse</p>	<p>FE, SE</p>	<p>Pickleweed is its preferred habitat, but grasslands are used when new grass affords suitable cover in spring and summer months. Requires thick perennial vegetation in the middle and upper zones of tidally influenced salt marsh and peripheral halophyte zones.</p>	<p>Occ. # 66 is approximately 4 miles west of the Project site.</p>	<p>Absent. Lack of suitable habitat.</p>
<p><i>Taxidea taxus</i> American badger</p>	<p>CSC</p>	<p>Most abundant in drier open stages of most shrub, forest and herbaceous habitats, with friable soils. Need sufficient food, friable soils and open, uncultivated ground.</p>	<p>Occ. # 398 is approximately 5 miles south of southern end of the Project site.</p>	<p>Absent. Lack of suitable habitat.</p>
<p>Protected Status¹ FE = Federally Endangered FT = Federally Threatened SE = California State Endangered ST = California State Threatened * Information from the CNDDDB, CNPS Inventory, and USFWS Species List</p> <p>California State Rare CSC = California Species of Special Concern FP = California Fully Protected Species 1A = California Rare Plant Rank 1A</p> <p>1B = California Rare Plant Rank 1B 2B = California Rare Plant Rank 2B</p>				

Delta mudwort. Delta mudwort (*Limosella australis*) is a CNPS List 2 species. It is a stoloniferous, aquatic, perennial herb in the Scrophulariaceae (snapdragon) family, and is restricted to muddy, intertidal flats and banks in brackish marshes, freshwater marshes, and riparian scrub in the Sacramento-San Joaquin Delta. It is found in association with other rare plants, especially Mason's lilaepsis, delta tule pea, and Suisun Marsh aster. It blooms May through August. There is an occurrence approximately 500 ft east of the southern end of the Project site. This species has the potential to occur in the vicinity of the pipeline crossings; however, the project will not impact shoreline habitat and is not likely to affect the Delta mudwort.

Antioch Dunes evening primrose. Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*) is a Federal- and State-listed Endangered species, and a CNPS List 1B species. This species is associated with the inland dunes habitat, and has been documented in the vicinity of the pipeline crossings. Antioch Dunes evening primrose blooms between March and September. There is an occurrence less than one mi west of the Project site. This species has the potential to occur in the general vicinity of the pipeline Project; however, it is not likely to occur onsite due to a lack of dune habitat along the alignment. The Project is not likely to affect the Antioch Dunes evening primrose.

Bolander's water hemlock. Bolander's water hemlock (*Cicuta maculata* var. *bolanderi*) is a CNPS List 2 species occurring in coastal freshwater or brackish marshes. This species is a perennial herbaceous species that blooms between July and September. There is one recorded occurrence within one mi of the Project site. This species has the potential to occur in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat and is not likely to affect Bolander's water hemlock.

Contra Costa wallflower. Contra Costa wallflower (*Erysimum capitatum* ssp. *angustatum*) is a Federal- and State-listed Endangered species and a CNPS List 1B species. This species is associated with the inland dunes habitat, and blooms between March and July. There is one occurrence of the species within four miles of the Project site. This species has the potential to occur in the general vicinity of the pipeline crossings; however, it is not likely to occur onsite due to a lack of dune habitat along the alignment. The Project is not likely to affect the Contra Costa wallflower.

Woolly rose-mallow. Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*) is a CNPS List 1B species occurring in freshwater marsh habitat, often occurring in riprap on levee banks. This is a perennial rhizomatous herbaceous species blooming between June and September. There is one recorded occurrence within five mi of the Project site. This species has the potential to occur in the vicinity of the pipeline crossings; however, the Project will not impact shoreline habitat or the riprap bank on the shoreward side of the levee and is not likely to affect the woolly rose-mallow.

Invertebrates

Lange's metalmark butterfly. Lange's metalmark butterfly (*Apodemia mormo langei*) is a Federally listed Endangered species. It occurs only where active dunes persist with low coverage of grasses and shrubs. Naked stemmed buckwheat (*Eriogonum nudum*) and California buckwheat (*Eriogonum fasciculatum*) are obligate host plants for caterpillars.

Because the site lacks any dune habitat and no host plants were observed, Lange's metalmark butterfly would not occur in the project site.

Fish

A number of special-status fish species that inhabit the Sacramento-San Joaquin Delta have the potential to occur on or near the Project site. These species include: Chinook salmon (*Oncorhynchus tshawytscha*), steelhead, (*Oncorhynchus mykiss*), green sturgeon (*Acipenser medirostris*), delta smelt (*Hypomesus transpacificus*), Sacramento splittail, (*Pogonichthys macrolepidotus*), Sacramento perch (*Archoplites interruptus*), and longfin smelt (*Spirinchus thaleichthys*). A discussion of each of these species follows.

Sacramento River winter-run Chinook salmon. Sacramento River winter-run Chinook salmon is a Federal and State-listed Endangered species. The Chinook salmon is an anadromous fish that spends the majority of its life cycle in the ocean but returns to freshwater streams to spawn.

Critical Habitat. On July 16, 1993 (50 CFR 226), the NMFS designated critical habitat for 19 evolutionary significant units (ESU) of salmon and steelhead, including the winter-run Chinook salmon. The Project site is not within critical habitat and the nearest critical habitat is within Three Mile Slough, 2.5 miles north of the Project site (NMFS 1994).

Recovery Plan. A recovery plan has not been published for the winter-run Chinook salmon.

Distribution and Range. Chinook salmon eggs and fry occur in riverine areas from sea level to 7,440 ft elevation, mean sea level (msl). Smolts are riverine and estuarine, and juveniles and adults are pelagic, although adults are riverine in their spawning migration (Goals Project 2000). The range of the Chinook salmon throughout its life cycle is from the Pacific Ocean through the Bay-estuary and the Sacramento River to Keswick Dam. Chinook salmon occur in the waters near the Project site during the estuarine and riverine stages of their life cycle.

Habitat. Habitat consists of open water with varying levels of salinity tolerable at different stages of the life cycle. Eggs develop in freshwater, larvae can tolerate salinities of up to 15 parts per thousand (ppt) at hatching, and juveniles and adults can tolerate full seawater. In addition to specific hydrologic habitat components, physical habitat requirements include instream gravel substrate, submerged cover, and continuous riparian corridors (Sasaki 1966). Estuarine habitat requires densely vegetated tidal marshes and sloughs, which provide cover and foraging areas (Goals Project 2000).

Life History. Chinook salmon eggs hatch in freshwater streams and develop as larvae in the streams. As fry, they migrate downstream, and as juveniles they occur in riverine and estuarine environments and undergo physiological, morphological, and behavioral modifications (smoltification) that allows their migration into the marine environment. As smolts and adults, they occur in the ocean until they migrate back to natal freshwater streams to spawn.

Occurrence on Project Site. The potential for winter-run Chinook salmon to occur in the vicinity of the Project site is high during certain portions of the year. The migration period for winter-run Chinook salmon is December through July with a peak in March. Estuarine

emigration, after the freshwater residency period, is between November and May. No salmon were collected during larval and juvenile sampling or tow net surveys conducted by CDFW in 2013 or 2014 from Sampling Station 809 (Jersey Point Station) or Sampling Station 804 (West Island Station) (CDFW 2013; 2014). However, winter-run Chinook salmon can be expected in the Project area between November and July during the adult migration and juvenile emigration periods. Abundance of winter-run Chinook is highest during peak migration in March (Table 5).

Central Valley spring-run Chinook salmon. Central Valley spring-run Chinook salmon is a Federal and State-listed Threatened species.

Critical Habitat. See discussion above for winter-run Chinook salmon critical habitat

Recovery Plan. A recovery plan has not been published for the Central Valley spring-run Chinook salmon.

Distribution and Range. Distribution and range is the same as winter-run Chinook salmon, see discussion above.

Habitat. Habitat is the same as winter-run Chinook salmon, see discussion above.

Life History. Life history is the same as winter-run Chinook salmon, see discussion above.

Occurrence on Project Site. The potential for spring-run Chinook salmon to occur in the vicinity of the Project site is high during certain portions of the year. Migration period for Central Valley spring-run Chinook salmon is March through July with a peak in May and June. Migration to the estuarine habitat is between November and June. No salmon were collected during larval and juvenile sampling or tow net surveys conducted by CDFW in 2013 and 2014 from Sampling Station 809 (Jersey Point Station) or Sampling Station 804 (West Island Station) (CDFW 2013; 2014). Central Valley spring-run Chinook salmon can be expected in the Project area between November and July during the juvenile and adult migration periods. Abundance of spring-run Chinook is highest during peak migration in May and June (Table 5).

Central Valley steelhead. Central Valley steelhead is a Federally listed Threatened species.

Critical Habitat. Critical habitat for the Central Valley steelhead ESU was designated on March 17, 2000 (50 CFR 226). Critical habitat occurs in the states of Washington, Oregon, Idaho, and California and includes accessible reaches of all rivers (including estuarine and tributaries) within the range of each listed ESU. The Project site is located within designated critical habitat for the Central Valley steelhead.

Recovery Plan. A recovery plan has not been published for the Central Valley steelhead.

Distribution and Range. Distribution of steelhead in the western Pacific is from Alaska to southern California. Historically, the Sacramento-San Joaquin River system supported large runs of steelhead. Currently, small steelhead runs are known to exist in many creeks and tributary streams of the San Francisco Bay area. The Sacramento and San Joaquin rivers support steelhead runs of unknown size. There is currently little or no data on status of

steelhead in many streams. Steelhead adults and smolts do forage and migrate through the San Francisco Estuary including the Project vicinity.

Habitat. Steelhead require relatively good water quality streams for spawning. Preferred in-stream habitat elements include low levels of suspended sediments and contaminants, sufficient flows, sand-gravel to gravel-cobble substrate, and deep pools with well-developed cover for rearing. The importance of estuarine or tidal wetlands for rearing and foraging within the San Francisco Estuary is not known.

Life History. Steelhead live the majority of their life cycle in the Pacific Ocean then migrate upstream to spawn between October and January. Spawning typically occurs between December and April. Eggs hatch and the young remain in freshwater for one to three years before migrating to the ocean, usually during the spring and early summer months (Goals Project 2000). Steelhead do not die after spawning and thus may spawn again the following year.

Occurrence on Project Site. The San Francisco Bay Estuary and its tributaries support steelhead. However, no steelhead were collected during larval and juvenile sampling or tow net surveys conducted by CDFW in 2013 and 2014 from Sampling Station 809 (Jersey Point Station) or Sampling Station 804 (West Island Station) (CDFW 2013; 2014). Although none were collected during these samplings, Central Valley steelhead migrate through the Delta and could be expected in the Project area with a peak migration in November (Table 5).

Delta smelt. Delta smelt is a Federal Threatened and State Endangered species. Delta smelt is a small, short-lived native fish that is found only in the Bay-Delta Estuary.

Table 5. Migration and Spawning Periods of Sensitive Fish Species Within the Delta

Common Name	Status	Abundance (Migration/Spawning)	Migrating/Spawning Seasons											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anadromous Species														
Winter-run Chinook Salmon	FE	High/Low												
Spring-run Chinook Salmon	FT	High/Low												
Fall-run Chinook Salmon	SSC	High/Low												
Late fall-run Chinook Salmon	SSC	High/Low												
Central CA Coast Coho Salmon	FT	Low/Low												
CV Steelhead	FT	High/Low												
Central CA Coast Steelhead	FT	Low/Low												
Green Sturgeon	FT	High/Low												
Resident Species														
Delta Smelt	FT	High/Low												
Sacramento Splittail	SSC	High/Low												

LEGEND:

Status:	Codes:
FE --- Federally listed Endangered	Migration period through Delta
FT --- Federally listed Threatened	Overlap of migration and spawning periods
FC --- Federal Candidate for Listing	Spawning period (depending on species, often not in Project area in Delta).
ST --- CA State Threatened	Peak migration period (high abundance in Project area).
SSC -- CA Species of Special Concern	Peak spawning period

Critical Habitat. The USFWS designated critical habitat for the delta smelt on January 18, 1995 (50 CFR, 17), and includes all waters and submerged lands below ordinary high water in Suisun Bay (including the contiguous Grizzly Bay and Honker Bay); the length of Goodyear, Suisun, Cutoff, First Mallard, and Montezuma sloughs; and the existing contiguous waters within the San Francisco Bay Delta. The Project site is located within designated critical habitat for the Delta smelt.

Recovery Plan. A recovery plan was issued for the Delta smelt on November 29, 1996.

Distribution and Range. Delta smelt are endemic to the Sacramento-San Joaquin Estuary. They have been recorded as far north as the confluence of the American and Sacramento rivers and as far south as Mossdale on the San Joaquin River. Downstream distributions seem to be limited to western Suisun Bay, although they have been recorded in San Pablo Bay during periods of high Delta outflow. Delta smelt may persist in the Napa River, a tributary to San Pablo Bay (Goals Project 2000). Delta smelt do occur in the vicinity of the pipeline remediation Project.

Habitat. Delta smelt commonly occur in the surface and shoal waters through the Delta and into Suisun Bay. They generally inhabit waters with a salinity of less than 2 ppt, although they have been recorded at salinities as high as 14 ppt (Goals Project 2000). Spawning habitat consists of rivers and dead end sloughs with shallow, fresh water, and a solid substrate for the attachment of eggs. According to Wang (1991), delta smelt spawning occurs primarily in shallow freshwater or slightly brackish water upstream of the mixing zone, in backwater sloughs, and channel edgewater. Delta smelt are known to spawn in the lower reaches of the Sacramento and San Joaquin rivers as well as various sites within the Delta in shallow waters and dead-end sloughs. Important spawning habitat includes Barker, Lindsey, Cache, Prospect, Georgiana, Beaver, Hog, and Sycamore sloughs; the Sacramento River; and tributaries of northern Suisun Bay (USFWS 1996). The center of spawning occurs around Bradford Island in the Delta and in the Sacramento River just below Rio Vista (Wang 1991). Spawning periods vary from year to year, but is generally between December and July. Rearing habitat includes the waters eastward from Carquinez Strait, including Suisun, Grizzly, and Honker Bays, Montezuma Slough and its tributary sloughs, the Sacramento River to its confluence with Three Mile Slough, and south along the San Joaquin River including Big Bend. An adequate river flow from February to August is necessary to transport larvae from upstream spawning areas to rearing habitat in Suisun Bay (USFWS 1996).

Life History. Delta smelt has low fecundity and is primarily an annual species. Spawning occurs in freshwater, and the demersal, adhesive eggs sink and attach to hard substrates. Newly hatched larvae are epipelagic and planktonic and drift downstream to the freshwater/saltwater interface. Growth is rapid through the summer and within seven to nine months, fish are sexually mature. Spawning occurs over the winter and the majority of adults die after spawning (Goals Project 2000).

Occurrence on Project Site. A CDFW spring sampling survey utilizing a 20 millimeter (mm) mesh net in the Delta, Sacramento and San Joaquin rivers, and their tributaries, documented juvenile delta smelt during the April and May sampling events near the Project site (Station 809) in 2014 (CDFW 2014). They were also reported in the June tow net surveys at

sampling site 809 in 2013 (CDFW 2013). Delta smelt larvae are not common in the Project area due to the depth, current speeds, and lack of vegetation. Consequently, the site does not provide potential spawning or rearing habitat. However, adult delta smelt may occur in the vicinity of the pipeline decommissioning Project area (Table 5).

Green sturgeon. The southern distinct population segment (DPS) of green sturgeon, which includes the population south of the Eel River (spawning in the Sacramento River), was listed as a Federal Threatened species in April of 2006 (NMFS 2006). The northern DPS spawns in the Klamath and Rogue Rivers and is not proposed for Federal listing.

Critical Habitat. The Project site is within critical habitat (Sacramento-San Joaquin Delta) that was designated in 2009 by NMFS.

Recovery Plan. A recovery plan has not been issued for the green sturgeon.

Distribution and Range. The green sturgeon is a widely distributed, ocean-oriented sturgeon found in nearshore marine waters from Baja Mexico to Canada. The green sturgeon is an anadromous species, but little is known about its biology because they are much less abundant than white sturgeon, and regarded as inferior quality for consumption. The southern DPS is distributed in streams and rivers south of the Eel River primarily in the Sacramento River.

Habitat. Juvenile green sturgeon have been collected in the San Francisco Bay and in the lower reaches of the Sacramento and San Joaquin rivers; however, details of spawning locations of this species are not known. Spawning season in the San Joaquin River is in the spring. Green sturgeon requires deep pools for spawning.

Life History. Adult green sturgeon reach sexual maturity at age 15, at which time an upstream spawning migration occurs. Green sturgeon congregate in estuaries during the summer, where it appears that they are neither breeding nor feeding. The purpose of these aggregations is not known (NMFS 2004). Migration upstream occurs in late winter to spawn in the spring.

Occurrence on Project Site. Juvenile green sturgeon occur in the San Francisco Bay and in the lower reaches of the Sacramento and San Joaquin rivers. No green sturgeon were collected during larval and juvenile sampling or tow net surveys conducted by CDFW in 2013 and 2014, respectively, from Sampling Station 809 (Jersey Point Station) (CDFW 2013; 2014). This species may occur in the Project area and has been documented in the Delta region (Table 5).

Longfin smelt. Longfin smelt is a Federal candidate species and California Threatened species. It is native to the Delta and was once abundant. The decline in longfin smelt abundance is primarily associated with the diversion of freshwater from the Delta. Another contributing factor is reproductive failure during drought years. Consecutive drought years leading to reproductive failure could result in the extirpation of longfin smelt because of their two-year life cycle (Goals Project 2000).

Critical Habitat. None

Recovery Plan. None

Distribution and Range. Longfin smelt occur in the Sacramento-San Joaquin Delta, but can range as far as the South San Francisco Bay and the open ocean. They are most abundant in Suisun Bay and San Pablo Bay.

Habitat. Adult longfin smelt, like the delta smelt, inhabit open water areas of the Delta and feed on zooplankton. They tolerate a wide range of salinity conditions,

Life History. Longfin smelt migrate upstream to spawn in brackish water between January and April. The species is known to spawn over sandy or gravelly substrate with rock or plant material to attach their adhesive eggs to when deposited.

Occurrence on Project Site. Longfin smelt spawn primarily in brackish water in the upper end of Suisun Bay and the lower and middle Delta. Longfin smelt were collected during the 2014 larval and juvenile surveys in April and May at Sampling Stations 804 and 809 (CDFW 2014), and during tow net surveys in June 2013 at Sampling Station 804 and 809 (CDFW 2013). This species may occur in the Project area and has been documented in the Delta region (Table 5).

Sacramento splittail. Sacramento splittail is a California Species of Special Concern.

Critical Habitat. None

Recovery Plan. None

Distribution and Range. Sacramento splittail most commonly occur in the brackish waters of Suisun Bay, Suisun Marsh, and the Sacramento-San Joaquin Delta; however, in wet years they occur as far down as San Pablo Bay and San Francisco Bay (Goals Project 2000).

Habitat. The Sacramento splittail is endemic to lakes and rivers of the Central Valley, and is capable of tolerating moderate levels of salinity. The loss of floodplain and wetlands used for spawning, rearing, and foraging habitat is the primary reason for splittail decline. Migration barriers are also a contributing factor (Goals Project 2000). High flows and floodplain inundation are key factors in increasing splittail abundance.

Life History. The spawning period for splittail begins in late January and early February and lasts through July (Wang 1986), with most spawning occurring from February through April. Preferred spawning substrate consists of freshwater submerged vegetation within inundated floodplains.

Occurrence of Project Site. Spawning can range from the lower Sacramento and San Joaquin rivers down to Montezuma Slough (Wang 1986). No splittails were collected during larval and juvenile sampling or tow net surveys conducted by CDFW in 2014 from Sampling Stations 809 (Jersey Point Station) or 804 (West Island Station) (CDFW 2014), but were collected at station 804 during tow net surveys in 2013 (CDFW 2013). This species may occur in the Project area and has been documented in the Delta region (Table 5).

Sacramento perch. The Sacramento perch is a California Species of Special Concern. It is the only native western member of the Centrarchid (sunfish) family.

Critical Habitat. None

Recovery Plan. None

Distribution and Range. The Sacramento perch once flourished in the marshes and rivers of California prior to the channelization of the Delta and the introduction of non-native sunfish in the late 19th Century. When the habitat was altered and the non-native sunfish were introduced, the numbers of Sacramento perch declined severely in the Central Valley and Delta. Today they are rare in their native waters, but still exist in Clear Lake and Alameda Creek/Calaveras Reservoir, as well as in some farm ponds and reservoirs. They have been introduced throughout the state including the upper Klamath basin, upper Pit River watershed, Walker River watershed, Mono Lake watershed, and Owens River watershed, and may exist in Sonoma Reservoir in the Russian River watershed (University of California 2015). The Sacramento perch, unlike the introduced sunfish, do not protect their nests and were replaced in the ecosystem by the bass, crappie, and bluegill. However, Sacramento perch may still spawn in some Delta sloughs

Habitat. Sacramento perch are most often found in warm reservoirs and ponds where summer temperature range from 64-82 °F, although they are capable of surviving high temperatures, high salinities (up to 17 ppt), high turbidity, and low water clarity. Sacramento perch are often found in clear water among beds of aquatic vegetation, but are most abundant in turbid lakes with little vegetation absent of plants (University of California 2015).

Life History. Sacramento perch generally spawn from March through early August when temperatures exceed 64 °F. Male perch guard their nests and the embryos for several days. The emergent larvae are planktonic for one to two weeks.

Occurrence on Project Site. Sacramento perch were not collected during the 2014 larval and juvenile surveys at Sampling Station 804 or 809 (CDFW 2014), nor during the tow net surveys in 2013 (CDFW 2013). This species may occur in the Project area and has been documented in the Delta region (Table 5).

Amphibians

There are no special-status amphibians potentially occurring in the Project site due to lack of suitable habitat (see Table 4).

Reptiles

Giant garter snake. Giant garter snake (*Thamnophis gigas*) is a Federal and State-listed Threatened species. It was listed by the USFWS on October 20, 1993. The giant garter snake (GGS) was listed as threatened in by the State of California in 1971.

Critical Habitat. Critical habitat has not been established for the giant garter snake (GGS).

Recovery Plan. A draft recovery plan was established in 1999 and a 5-year review was conducted in 2006.

Distribution and Range. Historically, the reported range of the GGS included the Central Valley from the vicinity of Sacramento and Antioch southward to Buena Vista Lake near Bakersfield in Kern County (Hansen and Brode 1980). The present known distribution extends from just south of Chico in Butte County southward to the vicinity of Burrell in Fresno County. Recent telemetry studies in the Natomas Basin conducted by Wylie and Casazza (2000) reported little, if any, use of non-rice agricultural lands. During the summer, GGS were found in canals and sloughs and in rice fields 91 and 9 percent of the time, respectively. Prior to the flooding of rice fields in the spring, GGS were found in sloughs 93 percent of the time, field roads 6 percent, and rice fields 1 percent. They further noted that particular parcels of upland pasture in the Natomas area did not support GGS.

Habitat. The USFWS has determined that essential habitat components consist of the following: (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter. The GGS inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period.

Life History. Sexual maturity for GGS averages three years for males and five years for females. Brood size is variable, ranging from 10 to 46 young, with a mean of 23. Young immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Although growth rates are variable, GGS young typically double in size within the first year. The breeding season extends through March and April, and females give birth to live young from late July through early September.

Occurrence on Project Site. Potential GGS habitat occurs on Sherman Island just outside the northern limits of the Project in the wetlands and channels. Two occurrences have been reported within 1.5 mi of the Project, the closest was in 2010 near the north end of the SR

160 Bridge, approximately 0.3 mi from the Project. The terrestrial portion of the Project site does not contain suitable habitat for GGS.

California silvery legless lizard. California silvery legless lizard (*Anniella pulchra pulchra*) is a California Species of Special Concern.

Critical Habitat. None.

Recovery Plan. None.

Distribution and Range. It occurs in the Coast Ranges from the Delta south to the Mexico border. The range of the silvery legless lizard also includes the floor of the San Joaquin Valley, the western slope of the Sierra Nevada, and the mountains of southern California but occurrences in these areas are spotty.

Habitat. The California silvery legless lizard prefers sites with moist warm loose soil with plant cover in sparsely vegetated areas in beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. It uses leaf litter rocks, boards, driftwood, and logs for cover.

Occurrence on Project Site. There is an occurrence of the legless lizard within one mile of the Project; however, this occurrence is from 1975 and the exact location and current status of the occurrence is unknown. The only recent occurrence of silvery legless lizard is within the East Bay Regional Park's legless lizard preserve at the Big Break Regional Park over 1.5 mi east of the southern landing of the Project site. The legless lizard has the potential to occur within inland dune habitat in the vicinity of the pipeline, but the project site does not contain suitable habitat for the silvery legless lizard.

Western pond turtle. Western pond turtle (*Emys marmorata*) is a California Species of Special Concern.

Critical Habitat. None.

Recovery Plan. None.

Distribution and Range. The western pond turtle occurs in open water habitats throughout much of California.

Habitat. Western pond turtles prefer slack or slow water habitats with dense stands of submergent or emergent vegetation for food and cover, and with abundant basking habitat. Presence of nearby nesting sites and lack of exotic predators are also good habitat components (Goals Project 2000). It can be found in streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities, but requires upland sites for nesting and over-wintering. Stream habitat must contain large, deep pool areas (6 ft) with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats

Life History. Nests are excavated in a variety of soil types from sandy banks to very hard, compacted soils with sparse grass and forb cover, and can be sited a considerable distance from the waterbody (up to 0.25 mi). Nesting has been recorded in a variety of cover types including pastures, grasslands, chaparral, and coastal scrub. The turtle does not typically nest in riparian area. The female lays between 3 and 11 eggs from March to August in 4 in

deep nests. Eggs generally hatch between 70 and 126 days. Turtles sexually mature at about eight years.

Occurrence on Project Site. The closest occurrence to the Project is approximately 3.5 mi. Although not observed onsite, the rock riprap on the levee could offer basking site for this species.

Birds

California black rail. California black rail (*Laterallus jamaicensis*), is a California Threatened species.

Critical Habitat. None

Recovery Plan. None

Distribution and Range. Historically, this species could be found from central California south to Baja. The northern part of San Pablo Bay, the Carquinez Strait, and Suisun Bay contain the greatest numbers of birds. Fewer black rails are found in the Delta, and they are very rare in the South Bay (Goals Project 2000). There is also a distinct Sierra Nevada population located in Yuba, Nevada, Butte, and Placer Counties.

Habitat. The California black rail is a permanent resident of saline, brackish, and freshwater marshes containing dense tall growths of emergent vegetation. It is found more commonly in coastal marshes and sloughs where it prefers a dense canopy of pickleweed (*Salicornia* spp.) and bulrush (Spautz et. al, 2005). They also prefer vegetation around the periphery of the marsh for cover during the highest tides (Goals Project 2000).

Life History. The breeding season for California black rail is generally February through August. Nests are placed above ground level under heavy cover and are accessed from a side entrance (Spautz and Nur 2002).

Occurrence on the Project Site. The nearest recorded occurrence (Occ. # 109) of this species is approximately 1.75 mi southeast of the Project site (CDFW 2015).

Swainson's hawk. Swainson's hawk (*Buteo swainsoni*) is a State-listed Threatened species.

Critical Habitat. None.

Recovery Plan. None.

Distribution and Range. Swainson's hawk is a long distance migrator. The nesting grounds occur in northwestern Canada, the western U.S., and Mexico. Most populations migrate to wintering grounds in the open pampas and agricultural areas of Mexico, Argentina, Uruguay, and southern Brazil. A small group of Swainson's hawks are known to spend the entire fall and winter in the Delta. They forage in agricultural fields in the Delta and roost in a group of eucalyptus trees along the Mokelumne River.

Habitat. Swainson's hawk requires nesting trees and adequate foraging habitat to assure successful nesting. In the Central Valley, Swainson's hawks use solitary trees, small groves, or strips of riparian woodland adjacent to open grasslands or agricultural field. The

majority of nests are located in, or within one mi of riparian forests. Foraging habitat includes native grasslands, lightly grazed pastures, alfalfa and other hay crops, tomatoes, beets, and a combination of row crops, where they prey on California voles, valley pocket gophers, deer mice, California ground squirrels, passerine birds, and insects (crickets, beetles, grasshoppers).

Life History. Swainson's hawks are monogamous. Nest construction and courtship begins in late February and early March and continues through April. The clutch (generally 3-4 eggs) is laid in early April to early May, but can occur later. Incubation lasts approximately 35 days. Both parents participate in the brooding of eggs and young. The young fledge approximately 44 days after hatching and remain with their parents until they depart the nesting range in fall.

Occurrence on the Project Site. A Swainson's hawk nest site (Occurrence No. 1799) was reported within 0.5 mi of the southern end of the Project in 2012.

Mammals

There are no special-status mammals potentially occurring in the Project site due to lack of suitable habitat (see Table 4).

5.0 CONCLUSION

Based on the literature review and field surveys conducted for this project, sensitive biological resources including jurisdictional WoUS, wetlands, and special-status species have the potential to occur on the project site.

Jurisdictional WoUS (San Joaquin River, approximately 8.58 acres) and wetlands (emergent wetlands/marsh, approximately 0.18 acre) occur within the San Joaquin River crossing portion of the Project site. The San Joaquin River and shoreline wetlands would be regulated under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA. In addition to the federal regulations, these are considered Waters of the State and would be regulated by Section 1602 of the F&G Code and the Porter-Cologne Water Quality Control Act. The jurisdictional waters and wetlands are regulated by the Corps, CDFW, and RWQCB. Project activities within this portion of the project site would require regulatory permits from the agencies prior to implementation of the project. Outside of the San Joaquin River and shoreline wetlands there is no other wetland habitat within the Project site.

Special-status species may occur on the project site. Special-status plant species with a moderate likelihood of occurrence on the site include Bolander's water hemlock, soft bird's-beak, woolly rose mallow, Delta tule pea, Mason's lilaeopsis, Delta mudwort, and Suisun marsh aster. Additionally, wildlife species with a high potential of occurrence onsite include fish species such as Sacramento perch, green sturgeon, Delta smelt, longfin smelt, Sacramento splittail, Central Valley steelhead, Central Valley spring-run Chinook salmon, and Sacramento winter-run Chinook salmon. Other wildlife species with a moderate likelihood of occurrence on or immediately adjacent to the project site include giant garter snake, western pond turtle, California black rail, and Swainson's hawk. Protocol surveys to conclusively determine presence/absence of species with a moderate likelihood of occurrence (plant species, special-status bird nesting occurrences) are recommended prior to implementation of project activities. Avoidance and minimization measures will be implemented to reduce project impacts to species known to occur or with potential for occurrence within the project site (fish species, GGS, western pond turtle).

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APPENDIX A ENVIRONMENTAL DATA



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



January 6, 2015

Document Number: 150106113209

Richard Meredith
Padre Associates Inc.
555 University Avenue Suite 110
Sacramento, CA 95825

Subject: Species List for Line-114

Dear: Mr.

We are sending this official species list in response to your January 6, 2015 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 06, 2015.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found [here](#).

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested**

Document Number: 150106113209

Current as of: January 6, 2015

Quad Lists

Listed Species

Invertebrates

- Branchinecta lynchi*
vernal pool fairy shrimp (T)
- Desmocerus californicus dimorphus*
valley elderberry longhorn beetle (T)
- Elaphrus viridis*
delta green ground beetle (T)
- Incisalia mossii bayensis*
San Bruno elfin butterfly (E)
- Lepidurus packardii*
vernal pool tadpole shrimp (E)

Fish

- Acipenser medirostris*
green sturgeon (T) (NMFS)
- Hypomesus transpacificus*
Critical habitat, delta smelt (X)
delta smelt (T)
- Oncorhynchus mykiss*
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)
- Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- Ambystoma californiense*
California tiger salamander, central population (T)
- Rana draytonii*
California red-legged frog (T)

Reptiles

- Thamnophis gigas*
giant garter snake (T)

Birds

- Rallus longirostris obsoletus*
California clapper rail (E)

Plants

- Cordylanthus mollis ssp. mollis*
soft bird's-beak (E)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)

Quads Containing Listed, Proposed or Candidate Species:

JERSEY ISLAND (480C)

County Lists

Contra Costa County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta longiantenna
Critical habitat, longhorn fairy shrimp (X)
longhorn fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Incisalia mossii bayensis
San Bruno elfin butterfly (E)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Speyeria callippe callippe
callippe silverspot butterfly (E)

Syncaris pacifica
California freshwater shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
Critical habitat, delta smelt (X)

delta smelt (T)

Oncorhynchus kisutch

coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii

California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus

Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas

giant garter snake (T)

Birds

Charadrius alexandrinus nivosus

western snowy plover (T)

Coccyzus americanus occidentalis

Western yellow-billed cuckoo (T)

Pelecanus occidentalis californicus

California brown pelican (E)

Rallus longirostris obsoletus

California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni

California least tern (E)

Strix occidentalis caurina

northern spotted owl (T)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Amsinckia grandiflora
large-flowered fiddleneck (E)

Arctostaphylos pallida
pallid manzanita (=Alameda or Oakland Hills manzanita) (T)

Calochortus tiburonensis
Tiburon mariposa lily (T)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Chorizanthe robusta var. robusta
robust spineflower (E)

Clarkia franciscana
Presidio clarkia (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Holocarpha macradenia
Critical habitat, Santa Cruz tarplant (X)
Santa Cruz tarplant (T)

Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Neostapfia colusana
Colusa grass (T)

Oenothera deltooides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Pentachaeta bellidiflora
white-rayed pentachaeta (E)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Streptanthus niger
Tiburon jewelflower (E)

Suaeda californica
California sea blite (E)

Trifolium amoenum
showy Indian clover (E)

Proposed Species

Plants

Cordylanthus mollis ssp. mollis
Critical habitat, soft bird's-beak (PX)

Sacramento County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
Critical habitat, valley elderberry longhorn beetle (X)
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Incisalia mossii bayensis
San Bruno elfin butterfly (E)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (T)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Arctostaphylos myrtifolia
Ione manzanita (T)

Calystegia stebbinsii
Stebbins's morning-glory (E)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Ceanothus roderickii
Pine Hill ceanothus (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Eriogonum apricum var. apricum
Ione buckwheat (E)

Eriogonum apricum var. prostratum
Irish Hill buckwheat (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Fremontodendron californicum ssp. decumbens
Pine Hill flannelbush (E)

Galium californicum ssp. sierrae
El Dorado bedstraw (E)

Lasthenia conjugens
Contra Costa goldfields (E)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Orcuttia tenuis

Critical habitat, slender Orcutt grass (X)
slender Orcutt grass (T)

Orcuttia viscida

Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Senecio layneae

Layne's butterweed (=ragwort) (T)

Sidalcea keckii

Keck's checker-mallow (=checkerbloom) (E)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should

determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

[More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be April 06, 2015.



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: BIOS selection

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks										Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extrap.	Extrap.				
<i>Ambystoma californiense</i> California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	50 50	1112 S:1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	
<i>Anniella pulchra pulchra</i> silvery legless lizard	G3G4T3T4Q S3	None None	CDFW_SSC-Species of Special Concern USFS_S-Sensitive	10 80	94 S:7	0	2	0	0	1	4					4	3	6	1	0
<i>Anthicus antiochensis</i> Antioch Dunes anthicid beetle	G1 S1	None None		20 20	6 S:1	0	0	0	0	1	0					1	0	0	1	0
<i>Apodemia mormo langei</i> Lange's metalmark butterfly	G5T1 S1	Endangered None	XERCES_C1-Critically Impaired	10 10	1 S:1	0	0	0	0	0	1					0	1	1	0	0
<i>Archopites interruptus</i> Sacramento perch	G2G3 S1	None None	AFS_TH-Threatened CDFW_SSC-Species of Special Concern	5 5	5 S:1	0	0	0	0	0	1					1	0	1	0	0
<i>Ardea herodias</i> great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	10 10	132 S:1	0	0	0	0	0	1					1	0	1	0	0
<i>Athene cunicularia</i> burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	7 235	1862 S:29	2	11	8	1	3	4					3	26	26	2	1
<i>Blepharizonia plumosa</i> big tarplant	G2 S2	None None	Rare Plant Rank - 1B:1 SB_RSABG-Rancho Santa Ana Botanic Garden		48 S:3	0	0	0	0	1	2					3	0	2	1	0
<i>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	0 50	2394 S:6	1	0	3	0	1	1					0	6	5	0	1



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks										Population Status			Presence	
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.				
<i>California macrophylla</i> round-leaved filaree	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	200 200	155 S:2	0	0	0	0	1	1	0	0	0	1	1	1	1	0	0
<i>Chloropyron molle ssp. molle</i> soft salty birds-beak	G2T1 S1	Endangered Rare	Rare Plant Rank - 1B.2	10 10	27 S:1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
<i>Cicuta maculata var. bolanderi</i> Bolander's water-hemlock	G5T3T4 S2	None None	Rare Plant Rank - 2B.1		17 S:1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	G2 S2.1	None None			30 S:1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
<i>Coelus gracilis</i> San Joaquin dune beetle	G1 S1	None None	BLM_S-Sensitive IUCN_VU-Vulnerable	10 10	11 S:1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
<i>Cryptantha hooveri</i> Hoover's cryptantha	GH SH	None None	Rare Plant Rank - 1A	30 30	3 S:1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0
<i>Efferia antiochi</i> Antioch effertian robberfly	G1G2 S1S2	None None		20 20	4 S:1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
<i>Elanus leucurus</i> white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	20 110	158 S:4	0	3	1	0	0	0	0	0	0	0	1	3	4	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	0 10	1137 S:6	0	2	1	1	0	2	1	0	0	0	1	5	6	0	0
<i>Eriogonum nudum var. psychicola</i> Antioch Dunes buckwheat	G5T1 S1	None None	Rare Plant Rank - 1B.1	17 17	1 S:1	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0
<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	G2 S2	None None	Rare Plant Rank - 1B.1		6 S:1	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0



Summary Table Report
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Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks										Population Status			Presence	
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extrap.	Extrap.				
<i>Erysimum capitatum</i> var. <i>angustatum</i> Contra Costa wallflower	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	10 20	4 S:3	0	0	3	0	0	0	0	0	0	0	1	2	3	0	0
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	G1 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	30 30	10 S:1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0
<i>Eucerceris ruficeps</i> redheaded sphecid wasp	G1G3 S1S2	None None		30 30	3 S:1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0
<i>Fritillaria agrestis</i> stinkbells	G3 S3	None None	Rare Plant Rank - 4.2	75 75	32 S:1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	G5T2 S2	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	6 7	111 S:2	0	2	0	0	0	0	0	0	0	0	0	2	2	0	0
<i>Hesperolinon breweri</i> Brewer's western flax	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		25 S:1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> woolly rose-mallow	G5T2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden	0 0	173 S:1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
<i>Hygrotus curvipes</i> curved-foot hygrotus diving beetle	G1 S1	None None		25 25	21 S:1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
<i>Hypomesus transpacificus</i> Delta smelt	G1 S1	Threatened Endangered	AFS_TH-Threatened IUCN_EN-Endangered	0 5	27 S:3	0	1	0	0	0	2	0	0	0	0	0	3	3	0	0
<i>Ialostatus middlekauffi</i> Middlekauff's shieldback katydid	G1G2 S1	None None	IUCN_CR-Critically Endangered	20 20	1 S:1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
<i>Lanlus ludovicianus</i> loggerhead shrike	G4 S4	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	10 10	97 S:1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extrtp.					
<i>Lasiurus blossevillei</i> western red bat	G5	None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority	15	119 S:1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
	S3	None		15																	
<i>Lasthenia conjugens</i> Contra Costa goldfields	G1	Endangered	Rare Plant Rank - 1B.1	50	33 S:1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	S1	None		50																	
<i>Lateralus jamaicensis coturniculus</i> California black rail	G3G4T1	None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	5	241 S:3	0	0	0	1	0	2							2	3	0	0
	S1	Threatened		7																	
<i>Lathyrus jepsonii var. jepsonii</i> Delta tulle pea	G5T2	None	Rare Plant Rank - 1B.2 SB_Berry/SB-Berry Seed Bank SB_RSABG-Rancho Santa Ana Botanic Garden	1	131 S:11	0	1	3	1	0	6							6	11	0	0
	S2	None		10																	
<i>Lilaeopsis masonii</i> Mason's lilaepsis	G2	None	Rare Plant Rank - 1B.1	-10	197 S:34	2	13	6	2	0	11							17	34	0	0
	S2	Rare		10																	
<i>Limosella australis</i> Delta mudwort	G4G5	None	Rare Plant Rank - 2B.1	0	59 S:12	0	6	4	1	0	1							7	12	0	0
	S2	None		5																	
<i>Madia radiata</i> showy golden madia	G2	None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	250	52 S:1	0	0	0	0	0	1							0	1	0	0
	S2	None		250																	
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	G4T2	Threatened		305	145 S:7	1	5	0	0	0	1							6	7	0	0
	S2	Threatened		915																	
<i>Melospiza melodia</i> song sparrow ("Modesto" population)	G5	None	CDFW_SSC-Species of Special Concern	0	92 S:2	0	0	0	0	0	2							0	2	0	0
	S3?	None		30																	
<i>Melospiza melodia maxillaris</i> Suisun song sparrow	G5T2	None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	6	36 S:2	0	2	0	0	0	0							2	2	0	0
	S2	None		7																	



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extrap.	Extrap.	
<i>Metapogon hurdi</i> Hurd's metapogon robberfly	G1G3 S1S3	None None		15 15	3 S:1	0	0	0	0	1	0	1	0	0	0	1	0
<i>Myrmosula pacifica</i> Antioch multilid wasp	GH SH	None None		20 20	3 S:1	0	0	0	0	0	1	1	0	0	1	0	0
<i>Oenothera deltoides ssp. howellii</i> Antioch Dunes evening-primrose	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	10 50	10 S:6	0	0	3	1	1	1	1	5	5	1	1	0
<i>Oncorhynchus mykiss irideus</i> steelhead= Central Valley DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened		31 S:1	0	0	0	0	0	1	1	1	1	0	0	0
<i>Perdita scitula antiochensis</i> Antioch andrenid bee	G1T1 S1	None None		18 20	2 S:2	0	0	0	0	1	1	2	0	0	1	0	1
<i>Phalacrocorax auritus</i> double-crested cormorant	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	-10 -10	37 S:1	0	0	0	0	0	1	1	0	1	0	0	0
<i>Philanthus nasalis</i> Antioch spicid wasp	G1 S1	None None		20 20	4 S:1	0	0	0	0	1	0	1	0	0	0	0	1
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered		136 S:1	0	0	0	0	0	1	1	0	0	1	0	0
<i>Sphecodogastra antiochensis</i> Antioch Dunes halictid bee	G1 S1	None None	XERCES_C1-Critically Impertiled	25 25	1 S:1	0	0	0	0	0	1	1	0	0	1	0	0
<i>Spirinchus thaleichthys</i> longfin smelt	G5 S1	Candidate Threatened	CDFW_SSC-Species of Special Concern	0 0	45 S:2	0	0	0	0	0	2	0	2	2	0	0	0
<i>Stabilized Interior Dunes</i> Stabilized Interior Dunes	G1 S1.1	None None		20 20	2 S:1	0	0	0	0	0	1	1	0	0	1	0	0
<i>Symphotrichum lentum</i> Suisun Marsh aster	G2 S2	None None	Rare Plant Rank - 1B.2	0 10	173 S:26	2	7	6	3	0	8	8	18	26	0	0	0
<i>Thamnophis gigas</i> giant garter snake	G2 S2	Threatened Threatened	IUCN_VU-Vulnerable	-9 25	345 S:3	0	0	1	1	0	1	1	2	3	0	0	0



CNPS
California Native Plant Society

Inventory of Rare and Endangered Plants - 7th edition interface

v7-14dec 12-13-14

Status: search results - Fri, Jan. 2, 2015, 14:15 ET b

[QUADS_123] =~ m/481D|464A|464B|480B|480C|463B|481A|481E Search

Tip: +Lathyrus +"coastal dunes" returns only those Lathyrus in coastal dunes. Note the "+" and quotes.[all tips and help][search history]

Your Quad Selection: Antioch North (481D) 3812117, Antioch South (464A) 3712187, Clayton (464B) 3712188, Rio Vista (480B) 3812126, Jersey Island (480C) 3812116, Brentwood (463B) 3712186, Birds Landing (481A) 3812127, Denverton (481B) 3812128, Honker Bay (481C) 3812118

Hits 1 to 50 of 64




























Requests that specify topo quads will return only Lists 1-3.













To save selected records for later study, click the ADD button.

ADD checked items to Plant Press check all check none

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
	<input type="checkbox"/>	1	<u>Amsinckia grandiflora</u>	large-flowered fiddleneck	Boraginaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Arctostaphylos auriculata</u>	Mt. Diablo manzanita	Ericaceae	List 1B.3
	<input type="checkbox"/>	1	<u>Arctostaphylos manzanita ssp. laevigata</u>	Contra Costa manzanita	Ericaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Astragalus tener var. tener</u>	alkali milk-vetch	Fabaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Atriplex cordulata var. cordulata</u>	heartscale	Chenopodiaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Atriplex depressa</u>	brittlescale	Chenopodiaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Atriplex joaquinana</u>	San Joaquin spearscale	Chenopodiaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Blepharizonia plumosa</u>	big tarplant	Asteraceae	List 1B.1
	<input type="checkbox"/>	1	<u>California macrophylla</u>	round-leaved filaree	Geraniaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Calochortus pulchellus</u>	Mt. Diablo fairy-lantern	Liliaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Campanula exigua</u>	chaparral harebell	Campanulaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Centromadia parryi ssp. congdonii</u>	Congdon's tarplant	Asteraceae	List 1B.1
	<input type="checkbox"/>	1	<u>Centromadia parryi ssp. parryi</u>	pappose tarplant	Asteraceae	List 1B.2
	<input type="checkbox"/>	1	<u>Chloropyron molle ssp. hispidum</u>	hispid bird's-beak	Orobanchaceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Chloropyron molle ssp. molle</u>	soft bird's-beak	Orobanchaceae	List 1B.2
	<input checked="" type="checkbox"/>	1	<u>Cicuta maculata var. bolanderi</u>	Bolander's water-hemlock	Apiaceae	List 2B.1
	<input checked="" type="checkbox"/>	1		Suisun thistle	Asteraceae	

			<u>Cirsium hydrophilum</u> var. <u>hydrophilum</u> 🌿			List 1B.1
	<input type="checkbox"/>	1	<u>Cordylanthus nidularius</u> 🌿	Mt. Diablo bird's-beak	Orobanchaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Cryptantha hooveri</u> 🌿	Hoover's cryptantha	Boraginaceae	List 1A
	<input type="checkbox"/>	1	<u>Delphinium californicum</u> ssp. <u>interius</u> 🌿	Hospital Canyon larkspur	Ranunculaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Didymodon norrisii</u>	Norris' beard moss	Pottiaceae	List 2B.2
	<input type="checkbox"/>	1	<u>Downingia pusilla</u> 🌿	dwarf downingia	Campanulaceae	List 2B.2
	<input type="checkbox"/>	1	<u>Eriastrum erterae</u>	Lime Ridge eriastrum	Polemoniaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Eriogonum nudum</u> var. <u>psychicola</u>	Antioch Dunes buckwheat	Polygonaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Eriogonum truncatum</u> 🌿	Mt. Diablo buckwheat	Polygonaceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Erysimum capitatum</u> var. <u>angustatum</u> 🌿	Contra Costa wallflower	Brassicaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Eschscholzia rhombipetala</u> 🌿	diamond-petaled California poppy	Papaveraceae	List 1B.1
	<input type="checkbox"/>	1	<u>Fritillaria liliacea</u> 🌿	fragrant fritillary	Liliaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Grimmia torenii</u>	Toren's grimmia	Grimmiaceae	List 1B.3
	<input type="checkbox"/>	1	<u>Helianthella castanea</u> 🌿	Diablo helianthella	Asteraceae	List 1B.2
	<input type="checkbox"/>	1	<u>Hesperolinon breweri</u> 🌿	Brewer's western flax	Linaceae	List 1B.2
	<input checked="" type="checkbox"/>	1	<u>Hibiscus lasiocarpus</u> var. <u>occidentalis</u>	woolly rose-mallow	Malvaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Isocoma arguta</u> 🌿	Carquinez goldenbush	Asteraceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Juglans hindsii</u> 🌿	Northern California black walnut	Juglandaceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Lasthenia conjugens</u> 🌿	Contra Costa goldfields	Asteraceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Lathyrus jepsonii</u> var. <u>jepsonii</u> 🌿	Delta tule pea	Fabaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Legenere limosa</u> 🌿	legenere	Campanulaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Lessingia hololeuca</u> 🌿	woolly-headed lessingia	Asteraceae	List 3
	<input checked="" type="checkbox"/>	1	<u>Lilaeopsis masonii</u> 🌿	Mason's lilaeopsis	Apiaceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Limosella australis</u>	Delta mudwort	Scrophulariaceae	List 2B.1
	<input type="checkbox"/>	1	<u>Madia radiata</u> 🌿	showy golden madia	Asteraceae	List 1B.1
	<input type="checkbox"/>	1	<u>Malacothamnus hallii</u> 🌿	Hall's bush-mallow	Malvaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Monolopia gracilens</u> 🌿	woodland woolythreads	Asteraceae	List 1B.2
	<input type="checkbox"/>	1	<u>Myosurus minimus</u> ssp. <u>apus</u> 🌿	little mousetail	Ranunculaceae	List 3.1

	<input type="checkbox"/>	1	<u>Navarretia gowenii</u> 	Lime Ridge navarretia	Polemoniaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Navarretia leucocephala</u> ssp. <u>bakeri</u> 	Baker's navarretia	Polemoniaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Navarretia nigelliformis</u> ssp. <u>radians</u> 	shining navarretia	Polemoniaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Neostapfia colusana</u> 	Colusa grass	Poaceae	List 1B.1
	<input checked="" type="checkbox"/>	1	<u>Oenothera deltoides</u> ssp. <u>howellii</u> 	Antioch Dunes evening-primrose	Onagraceae	List 1B.1
	<input type="checkbox"/>	1	<u>Phacelia phacelioides</u> 	Mt. Diablo phacelia	Boraginaceae	List 1B.2

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press check all check none

Selections will appear in a new window.

For more results click below:





Inventory of Rare and Endangered Plants - 7th edition interface

v7-14dec 12-13-14

Status: search results - Fri, Jan. 2, 2015, 14:16 ET b

{QUADS_123} =~ m/481D|464A|464B|480B|480C|463B|481A|481E Search

Tip: Terms prefixed by "+" are required, and by "-" excluded. [\[all tips and help.\]](#) [\[search history\]](#)

Your Quad Selection: Antioch North (481D) 3812117, Antioch South (464A) 3712187, Clayton (464B) 3712188, Rio Vista (480B) 3812126, Jersey Island (480C) 3812116, Brentwood (463B) 3712186, Birds Landing (481A) 3812127, Denverton (481B) 3812128, Honker Bay (481C) 3812118

Hits 51 to 64 of 64

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press check all check none

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
	<input type="checkbox"/>	1	<u>Plagiobothrys hystriculus</u>	bearded popcorn-flower	Boraginaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Potamogeton zosteriformis</u>	eel-grass pondweed	Potamogetonaceae	List 2B.2
	<input type="checkbox"/>	1	<u>Sagittaria sanfordii</u>	Sanford's arrowhead	Alismataceae	List 1B.2
	<input type="checkbox"/>	1	<u>Sanicula saxatilis</u>	rock sanicle	Apiaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Senecio aphanactis</u>	chaparral ragwort	Asteraceae	List 2B.2
	<input type="checkbox"/>	1	<u>Sidalcea keckii</u>	Keck's checkerbloom	Malvaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Streptanthus albidus</u> ssp. <u>peramoenus</u>	most beautiful jewel-flower	Brassicaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Streptanthus hispidus</u>	Mt. Diablo jewel-flower	Brassicaceae	List 1B.3
	<input type="checkbox"/>	1	<u>Stuckenia filiformis</u> ssp. <u>alpina</u>	slender-leaved pondweed	Potamogetonaceae	List 2B.2
	<input checked="" type="checkbox"/>	1	<u>Symphyotrichum lentum</u>	Suisun Marsh aster	Asteraceae	List 1B.2
	<input type="checkbox"/>	1	<u>Trifolium hydrophilum</u>	saline clover	Fabaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Triquetrella californica</u>	coastal triquetrella	Pottiaceae	List 1B.2
	<input type="checkbox"/>	1	<u>Tropidocarpum capparideum</u>	caper-fruited tropidocarpum	Brassicaceae	List 1B.1
	<input type="checkbox"/>	1	<u>Viburnum ellipticum</u>	oval-leaved viburnum	Adoxaceae	List 2B.3

To save selected records for later study, click the ADD button.

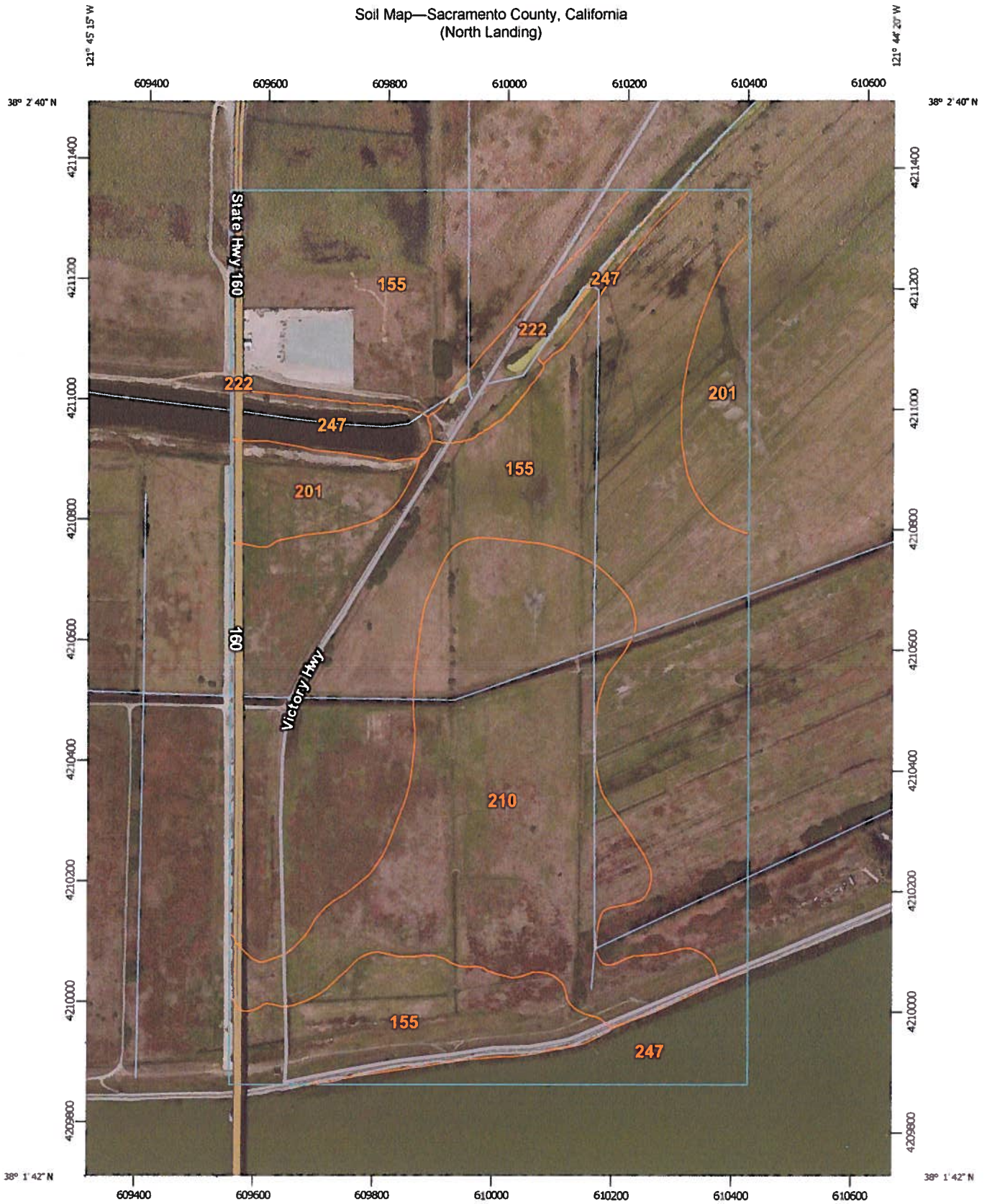
ADD checked items to Plant Press check all check none

Selections will appear in a new window.

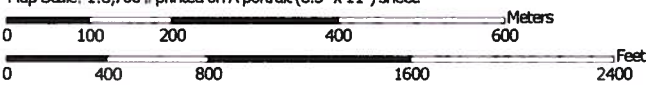
For more results click below:



Soil Map—Sacramento County, California
(North Landing)



Map Scale: 1:8,700 if printed on A portrait (8.5" x 11") sheet.







































Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Soil Map—Sacramento County, California
(North Landing)

MAP LEGEND

Area of Interest (AOI)		Spill Area
 Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
 Soil Map Unit Polygons		Wet Spot
 Soil Map Unit Lines		Other
 Soil Map Unit Points		Special Line Features
Special Point Features	Water Features	
 Blowout	 Streams and Canals	
 Borrow Pit	Transportation	
 Clay Spot	 Rails	
 Closed Depression	 Interstate Highways	
 Gravel Pit	 US Routes	
 Gravelly Spot	 Major Roads	
 Landfill	 Local Roads	
 Lava Flow	Background	
 Marsh or swamp	 Aerial Photography	
 Mine or Quarry		
 Miscellaneous Water		
 Perennial Water		
 Rock Outcrop		
 Saline Spot		
 Sandy Spot		
 Severely Eroded Spot		
 Sinkhole		
 Slide or Slip		
 Sodic Spot		

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
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 12, Nov 28, 2013

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

Date(s) aerial images were photographed: May 12, 2010—Apr 29, 2012

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

Sacramento County, California (CA067)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
155	Gazwell mucky clay, partially drained, 0 to 2 percent slopes	195.9	61.3%
201	Rindge mucky silt loam, partially drained, 0 to 2 percent slopes	20.2	6.3%
210	Sailboat variant silty clay loam, partially drained, 0 to 2 percent slopes	72.5	22.7%
222	Scribner clay loam, partially drained, 0 to 2 percent slopes	9.4	3.0%
247	Water	21.5	6.7%
Totals for Area of Interest		319.5	100.0%

Line-114

Jan 2, 2015

U.S. Fish and Wildlife Service
National Wetlands Inventory



- Wetlands**
- Freshwater Emergent
 - Freshwater Forested/Shrub
 - Estuarine and Marine Deepwater
 - Estuarine and Marine
 - Freshwater Pond
 - Lake
 - Riverine
 - Other
- Riparian**
- Herbaceous
 - Forested/Shrub
- Riparian Status**
- Digital Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks: