

# Memo

**To:** George Booth - Sacramento County  
**From:** Lynn Hermansen and Eric Htain  
**cc:** Jeffrey Twitchell  
**Date:** January 23, 2020  
**Re:** Biological Resources Assessment for the Community of Courtland  
Small Communities Flood Risk Reduction Feasibility Study  
Sacramento County, CA  
GEI Project 1800758

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GEI Consultants, Inc. (GEI) is assisting the Sacramento County Department of Water Resources in conducting a feasibility study to evaluate structural and non-structural actions to reduce the risk of flooding to the Courtland study area. The feasibility study is being funded under the California Department of Water Resources (DWR) Small Communities Flood Risk Reduction Program. As part of this feasibility study, GEI conducted a biological resources assessment to identify potential biological resources constraints within the study area. This Technical Memorandum summarizes the findings of the biological resources constraints assessment.

## Project Location and Setting

The Courtland study area is located in Sacramento County, California, along the east bank of the Sacramento River within areas covered by Reclamation Districts 755 and 551 (Pearson District). The study area is bordered to the north and west by the Sacramento River, by Snodgrass Slough to the east, and by the Delta Meadows State Park to the south. The study area comprises approximately 9,200 acres, including 8.5 miles along the east bank of the Sacramento River, approximately 6 miles of levee along Snodgrass Slough, and approximately 1.4 miles of cross levee adjacent to the Delta Meadows State Park (**Figure 1**). Major roadways in the study area include CA-160, River Road located on the east bank of the Sacramento River, Lambert Road bisecting the northern portion of the study area, and Twin Cities Road bisecting the southern portion of the study area.

Land use supports urban and residential development, and agriculture. Urban and residential development includes the historic town of Courtland, and the unincorporated communities of Vorden and Paintersville. Courtland is the largest residential area with 373 residents (California Hometown Locator 2019) and is situated along the Sacramento River. Vorden and Paintersville are also located adjacent to the Sacramento River to the south of Courtland. Agricultural uses include orchards (such as pears, apples, and cherries), vineyards, alfalfa, grain, and miscellaneous row crops.

## Methodology

Information on the biological resources known or with potential to occur in the project area and vicinity is based on information obtained by reviewing historical aerial photographs and biological resources databases, including the U.S. Fish and Wildlife Service [(USFWS) Information, Planning, and Consultation System; USFWS 2018], National Marine Fisheries Service [(NMFS) California Species List; NMFS 2018] California Department of Fish and Wildlife (CDFW) California Natural Diversity

Database [(CNDDDB); CNDDDB 2018] and the California Native Plant Society (CNPS) online inventory of rare and endangered plants (CNPS 2018). These sources were queried for the Courtland U.S Geological Survey 7.5-minute quadrangle, within which the study area is located, and the eight surrounding quadrangles: Clarksburg, Florin, Bruceville, Liberty Island, Saxon, Isleton, Thornton, and Rio Vista. Copies of the database results are provided in **Appendix A**.

The U.S. Fish and Wildlife Service National Wetland Inventory (NWI) was reviewed to identify any sensitive aquatic features that may have been previously mapped within the study area (NWI 2018). The Natural Resource Conservation Service (NRCS) Web Soil Survey (NRCS 2018) was also queried for the study vicinity and is depicted in **Figure 2**.

In 2012, RD 551 developed a Five-Year Plan (Plan) to outline an anticipated repair and improvements schedule for flood protection around the study area (MBK 2012). The Plan describes a federal/state plan of flood control project levee on the west side and a non-state plan of flood control project levee on the east side of the study area. A non-project levee, as defined by the Plan, means a local flood control levee in the Delta that is not a project facility under the State Water Resources Law of 1945, as shown in the Department of Water Resources Sacramento-San Joaquin Delta Atlas (DWR 1995).

A habitat assessment was prepared for the Plan by the California Department of Fish and Wildlife in 2006. The habitat assessment included a baseline of habitat values on and around the RD 551 levees and mapping of habitat types in the same area. The assessment and mapping were restricted to the area on and immediately adjacent to the levees and therefore captured primarily riparian, shrub scrub, and some wetland habitat types. GEI reviewed the Plan and additional existing databases, documents, and maps to establish an environmental baseline condition for the entire Courtland study area. GEI Restoration Ecologist Lynn Hermansen and Biologist Devin Barry conducted a reconnaissance survey in November 2018 to record the site conditions in and around the study area. The survey included photographing the extent of the study area and mapping or confirming previous maps of the general vegetation communities and other biological resources in the study area to verify the information presented in the Plan and update or revise the information if necessary. Based on the review of the database and literature searches and reconnaissance survey, GEI prepared Tables 1 and 2 in **Appendix A** which describe the potential for special-status species to occur within the Courtland study area.

## **Biological Resources**

Elevations in the study area vary from approximately -12 to 27.5 feet National Geodetic Vertical Datum (NGVD 88), with the highest elevations located on the non-project levee along Snodgrass Slough. The interior elevations range from 12 feet at the Sacramento River levee toe to -12 feet below sea level towards the center interior of the study area (MBK 2012).

According to the Natural Resource Conservation Service, seven soil types are included within the study area (**Figure 2**). All soils are typically associated with floodplain alluvial processes and are primarily silty clay loam in texture. Soil types include primarily valpac loam with patches of scribner clay loam, egbert clay, tinnin loamy sand, gazwell mucky clay, laugenour loam, and fluvaquents.

According to the NWI database, riverine, freshwater forested/shrub wetland, and emergent wetland features are found in the study area. The Sacramento River is the primary aquatic feature within the study area, located adjacent to the western boundary of the study area. Snodgrass Slough, situated on the east boundary of the study area drains the Stone Lake National Wildlife Refuge and flows into the Delta Meadows Slough/State Park at the southeastern boundary of the study area. Irrigation ditches

that have been cut across agricultural land throughout the study area provide drainage to the property owners, but water must be pumped from the island into adjacent waterways including Snodgrass Slough.

## **Vegetation Communities**

Vegetation classifications include a crosswalk between Central Valley Riparian Mapping Project (CVRMP) and the U. S. National Vegetation Classification Standard (NVCS), whereby habitat is defined by CVRMP and the associated vegetation included in the NVCS (Geographic Information Center 2012; USNVCS 2017, respectively). Extensive mapping of habitats was completed for the Central Valley Flood Protection Plan (CVFPP), including habitats in the study area, under the CVRMP. Habitat classifications in this memorandum are consistent with the classifications for the CVRMP. However, vegetation classifications follow the NVCS standard, which is applicable for future environmental analyses to support CEQA and permitting efforts. The crosswalk combines the two standards so that the information provided below can be used to inform both planning and environmental analysis efforts. According to the crosswalk, there are nine vegetation communities in the study area (**Figure 3**).

### Cropland

Within the interior of study area, cropland dominates the landscape, including corn (*Zea mays*), alfalfa (*Medicago sativa*), and other miscellaneous row crops.

### Orchard and Vineyard

Landside vegetation adjacent to the levee in the agricultural landscape is typically orchard and vineyard, including pear (*Pyrus communis*) and grape (*Vitis* spp.).

### Other Natural

Intermixed between Orchard and Vineyard, and Cropland, along the levee slopes both waterside and landside, includes grasses including johnsongrass (*Sorghum haepense*), and rip-gut brome (*Bromus diandrus*), native trees and shrubs, forbs including sweet fennel, (*Foeniculum vulgare*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), poison-hemlock (*Conium maculatum*), milk thistle (*Silybum marianum*), and other naturalized trees such as eucalyptus (*Eucalyptus* spp.) and Mexican fan palms (*Washingtonia robusta*).

### Riparian Forest

Within the study area, riparian forest habitats were identified primarily along meadows, sloughs and around open water bodies. Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), boxelder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), and black willow (*Salix gooddingii*) are the dominant species in this habitat.

### Riparian Scrub

Narrow patches of riparian scrub were identified along the waterside of the levees throughout the study area and predominately includes California mugwort (*Artemisia douglasiana*) and common buttonbush (*Cephalanthus occidentalis*). Intermixed within patches of riparian scrub also includes hydrophytic vegetation such as scouringrush horsetail (*Equisetum hyemale*) and common rush (*Juncus effusus*).

### Marsh

Linear patches of tidal and non-tidal marsh are present along the outer boundaries of the study area. Freshwater emergent vegetation including hardstem bulrush (*Schoenoplectus acutus*), broadleaf cattail (*Typha latifolia*), and nonnative Himalayan blackberry (*Rubus armeniacus*) dominate marsh habitats.

### Seasonal Wetland

Patches of seasonal wetland were identified within the study area using NWI aerial imagery but were not observed due to access constraints. Vegetation typical of seasonal wetlands in the Delta include tall cyperus (*Cyperus eragrostis*), cocklebur (*Xanthium strumarium*), marsh purslane (*Ludwigia peploides*), and hardstem bulrush (Hickson and Wolf 2007).

### Urban

Urban landscape areas within the study area includes ground covered by residential lawns, ornamental plantings, and small structures (e.g., retaining walls, planters, stairs, boat docks) along the levee landside. These areas are characterized by a mix of ornamental and native species.

### Aquatic

The Sacramento River and Snodgrass Slough are the primary aquatic features within the study area. There are areas of floating vegetation on the surface of the river, especially surrounding boat docks. Species include water primrose (*Ludwigia peploides*) and water hyacinth (*Eichhornia crassipes*).

## **Special-Status Species**

Review of the database resources mentioned above show that 29 special-status plant species and 32 special-status wildlife species are documented or have potential to occur in the study area, as shown on **Tables 1** and **2** in **Appendix A**. **Figure 4** depicts CNDDDB occurrences of special-status plant and wildlife species within 1 mile of the study area.

Five special-status plant species, bristly sedge (*Carex comosa*), Bolander's water-hemlock (*Cicuta maculate* var. *bolanderi*), woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*), delta mudwort (*Limosella australis*), and Sanford's arrowhead (*Sagittaria sanfordii*), are known to occur in the study area (**Table 1**). There are an additional 8 special-status plant species, large-flowered fiddleneck (*Amsinkia grandiflora*), watershield (*Brasenia schreberi*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*), marsh skullcap (*Scutellaria galericulata*), side-flowering skullcap (*Scutellaria lateriflora*), and Suisun Marsh aster (*Symphotricum lentum*), with moderate potential to occur in the vicinity.

Wildlife species known to occur in the study area are western pond turtle (*Emys marmorata*), giant gartersnake (*Thamnophis gigas*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), American peregrine falcon (*Falco peregrinus anatum*), and Modesto song sparrow (*Melospica melodia*). Northern harrier (*Circus cyaneus*) and Mexican free-tailed bat (*Tadarida brasiliensis*) also have a high potential to occur but has not been previously documented and reported through CNDDDB. An additional eight special-status wildlife species, tricolored blackbird (*Agelaius tricolor*), grasshopper sparrow (*Ammodramus savannarum*), burrowing owl (*Athene cunicularia*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), yellow-headed blackbird (*xanthocephalus xanthocephalus*), western red bat (*Lasiurus blossevillii*), riparian brush rabbit

(*Sylvilagus bachmani riparius*), and American badger (*Taxidea taxus*), have a moderate potential to occur in the vicinity (**Table 2**).

The study area supports suitable habitat for five special-status fish species. The following fish species are considered to have a high potential to occur: green sturgeon—southern Distinct Population Segment (DPS) (*Acipenser medirostris*), California Central Valley steelhead DPS (*Oncorhynchus mykiss irideus*), Chinook Salmon—Sacramento River winter-run, Chinook Salmon—Central Valley spring-run (*Oncorhynchus tshawytscha*), and Delta smelt (*Hypomesus transpacificus*).

Designated USFWS and NMFS critical habitat and Essential Fish Habitat (EFH) occur within the Sacramento River and border the study area. Critical habitat for five species is present in the study area: green sturgeon DPS, California Central Valley DPS steelhead, Sacramento River chinook salmon, Central Valley chinook salmon, and Delta smelt. The study area also provides EFH for groundfish and chinook salmon.

## Findings and Recommendations

Based on review of existing documents, databases, and literature searches, in combination with a reconnaissance field visit of the study area, the study area contains several sensitive vegetation communities and habitat for several special-status species. Sensitive vegetation communities in the study area include riparian forest, riparian scrub, marsh, seasonal wetland, and open water (aquatic). The majority of these sensitive vegetation communities are present on the water side of the levees surrounding the study area. Seasonal wetlands occur both on the water side of the levees surrounding the study area and in patches within the interior study area near sloughs and ditches. Project activities that have the potential to affect these vegetation communities may require additional studies and environmental permits.

The study area contains habitats that support known occurrences of five special-status plant species and 13 special-status wildlife species; these habitats have the potential to support eight additional special-status plant species and 10 special-status wildlife species. In addition, the Sacramento River and Snodgrass Slough are considered critical habitat and Essential Fish Habitat (EFH) for several fish species.

Implementation of the project is expected to require compliance with environmental regulations including preparation of a document under the California Environmental Quality Act (CEQA) and regulatory permits including Clean Water Act Section 404 and 401 permits, a permit under Section 10 of the Rivers and Harbors Act of 1899, approvals under the federal Endangered Species Act and California Endangered Species Act, and a Streambed Alteration Agreement from the California Department of Fish and Wildlife.

Prior to coordination with regulatory agencies on the specific compliance document and permits needed for the project, GEI recommends conducting the following studies:

- A wetland delineation of the study area, in accordance with the 1987 USACE Wetland Delineation Manual and Sacramento District standards; and
- Focused habitat classification and assessments to determine the potential impacts of the project on special-status species.

## References

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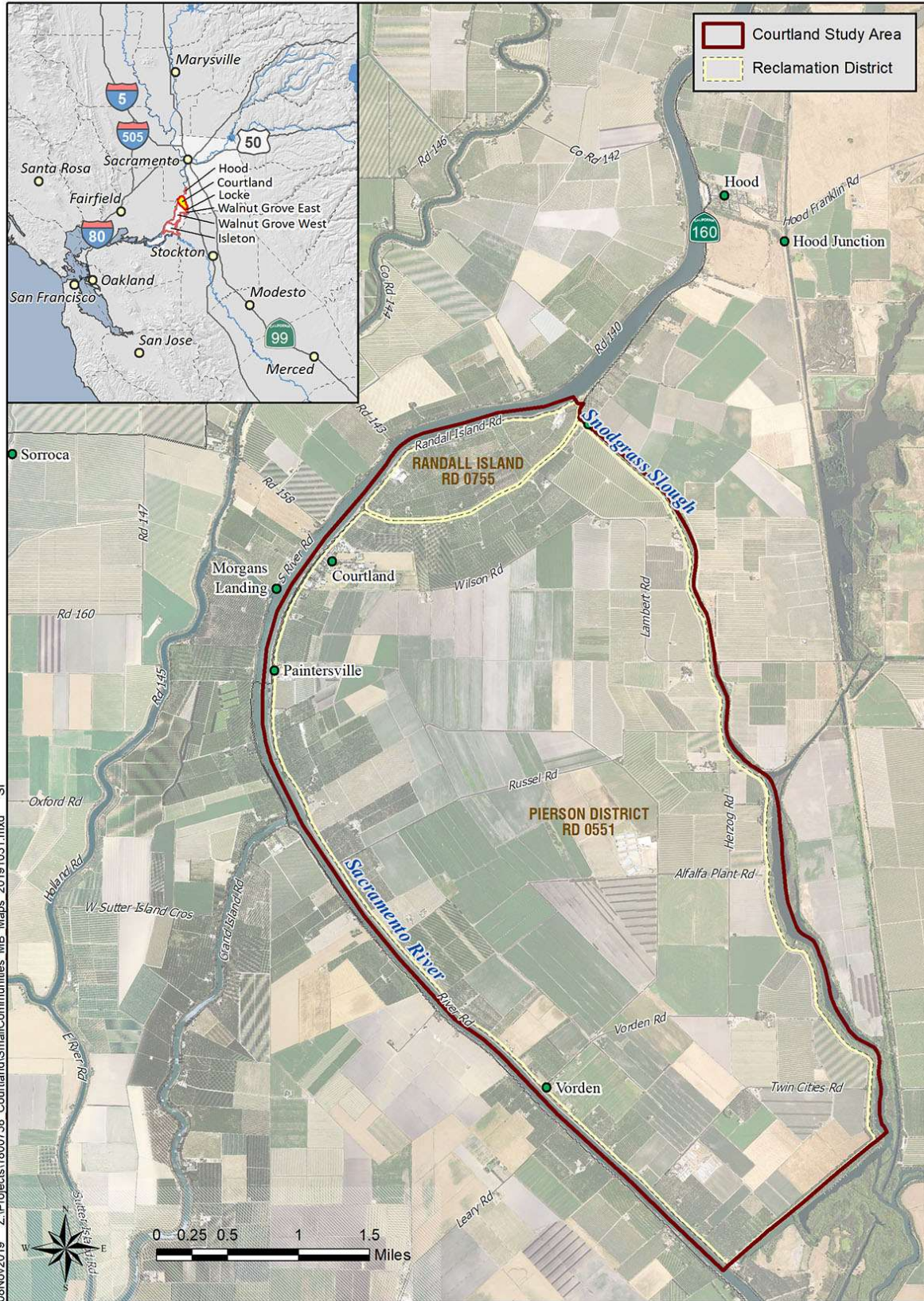
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# Figures

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Figure 1. Courtland Study Area

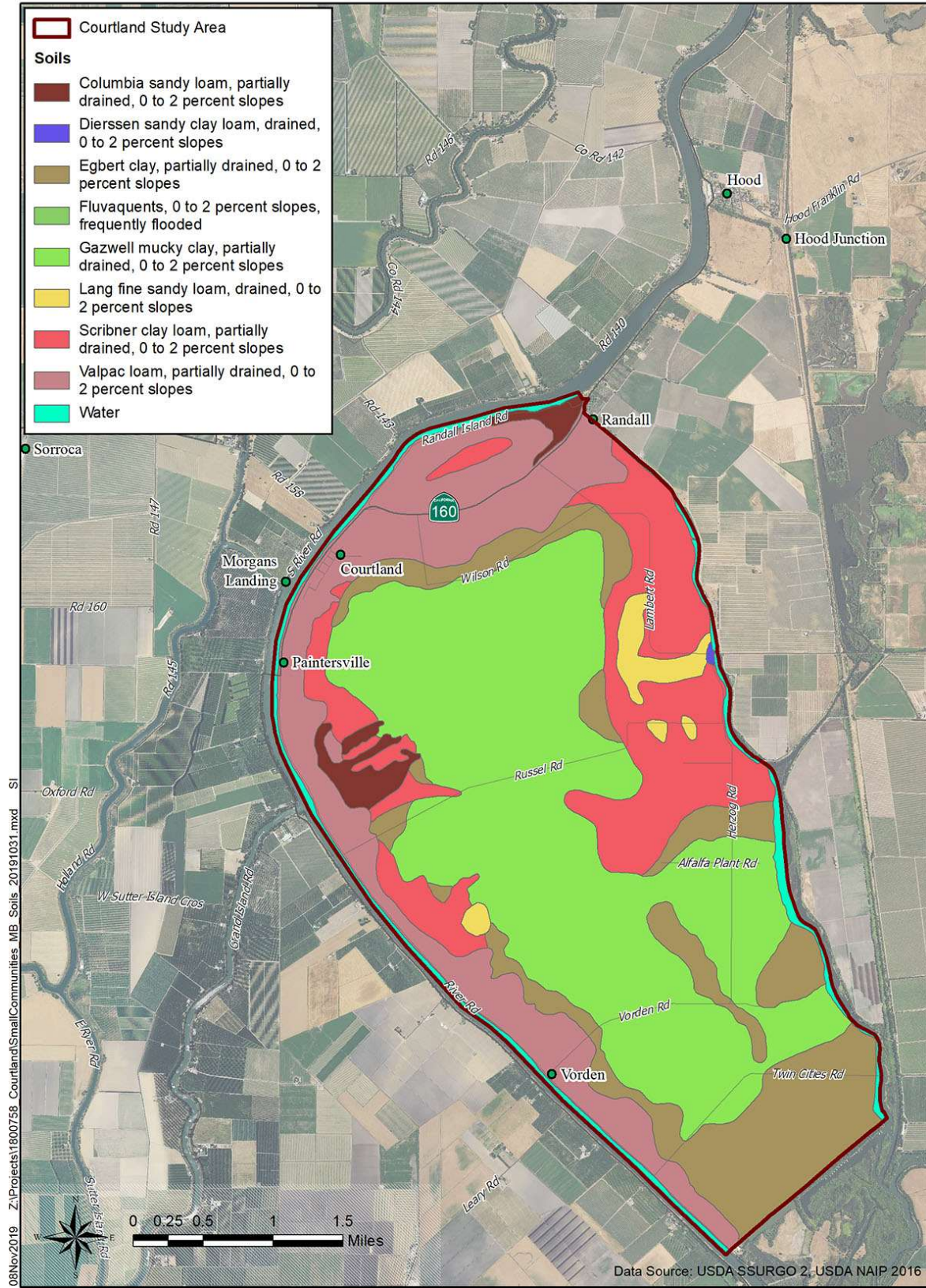


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Source: GEI Consultants, Inc., 2019



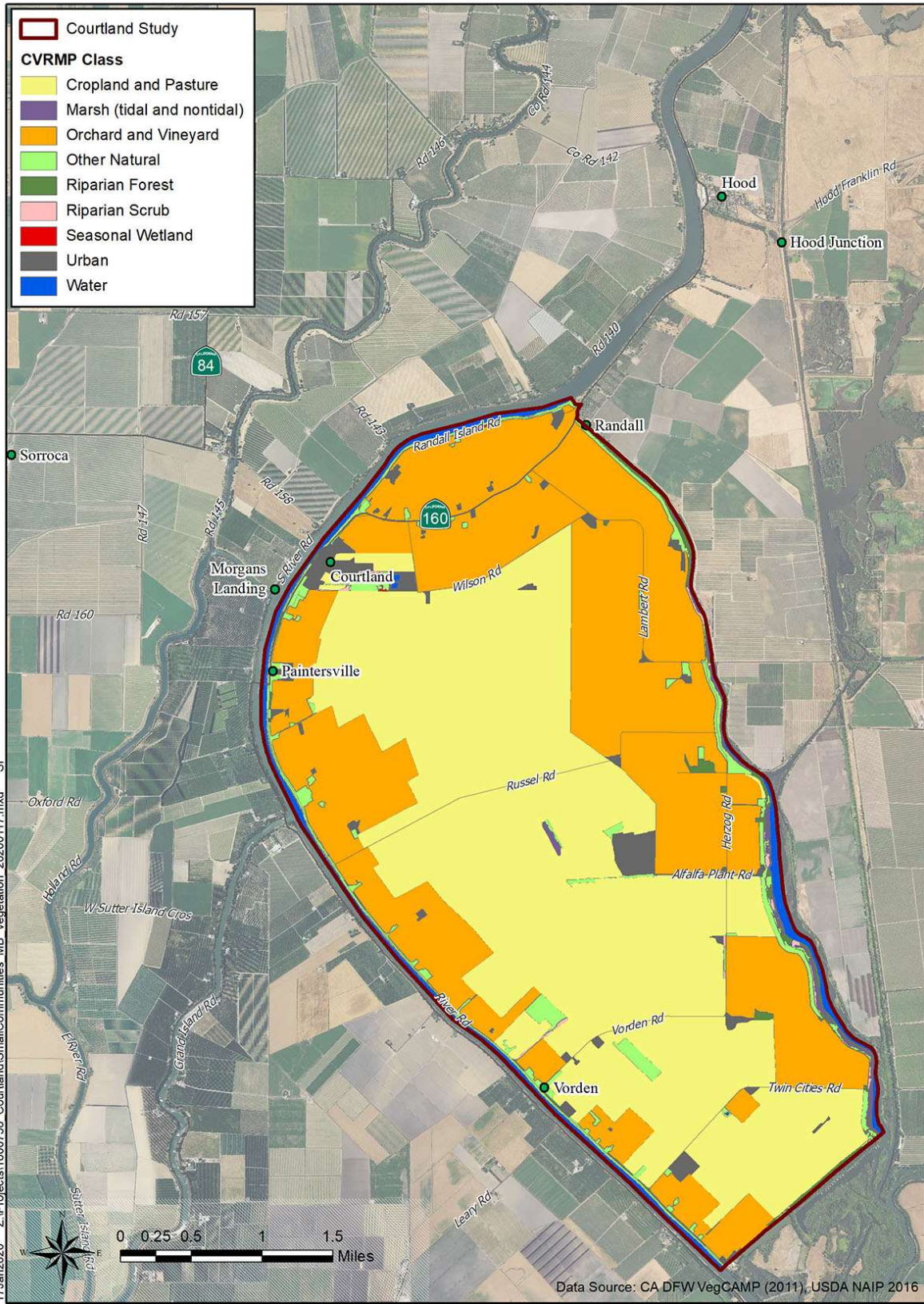
**Figure 2. Community of Courtland Soils Map**



Source: GEI Consultants, Inc., 2019



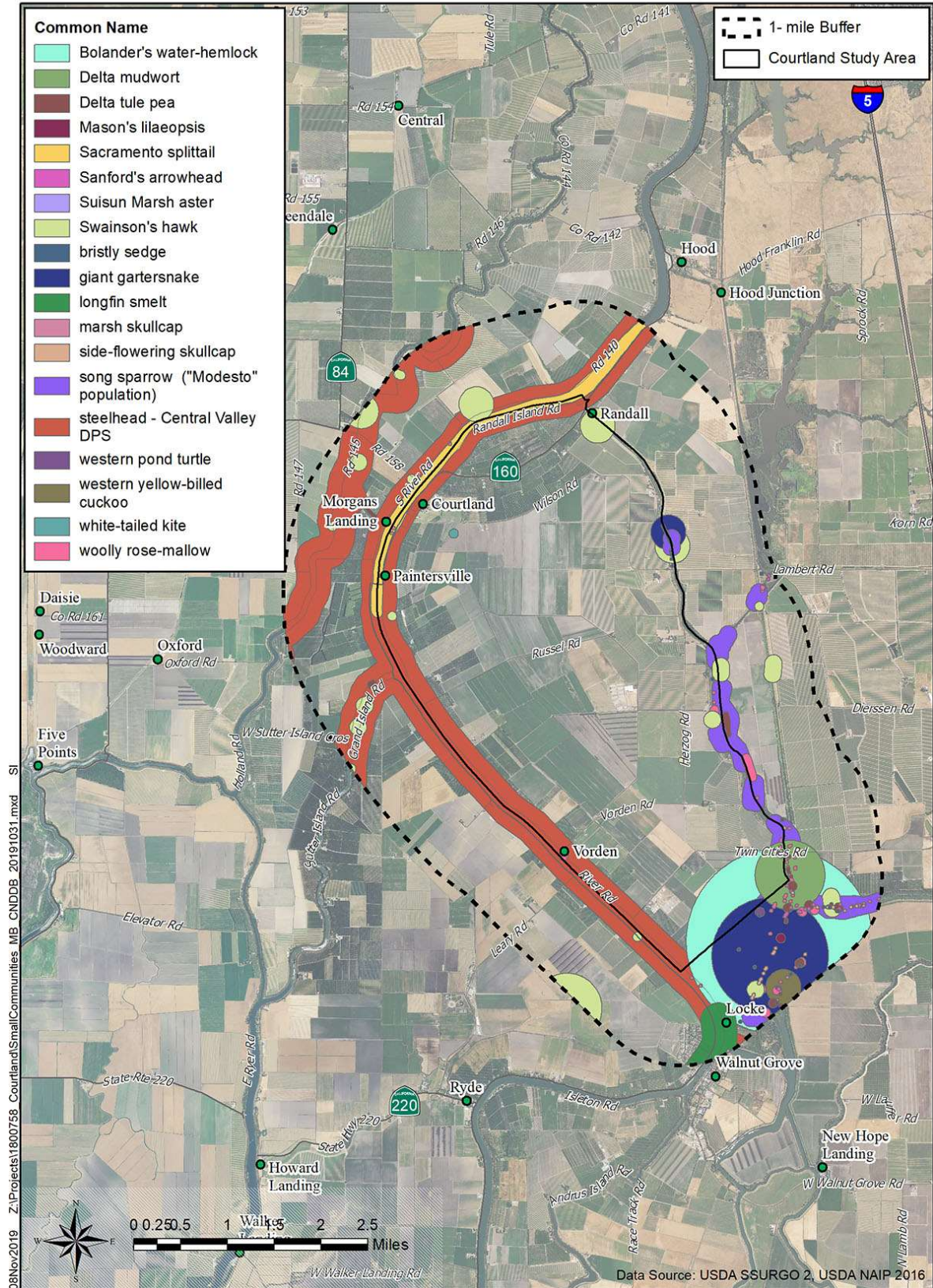
Figure 3. Community of Courtland Vegetation Map



Source: GEI Consultants, Inc., 2019



**Figure 4. Courtland Special Status Species per CNDDB**



Source: GEI Consultants, Inc., 2019

## **Appendix A. Database Results**

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**Table 1. Special-Status Plant Species Occurrence Potential within the Study Area**

Species	Blooming Period	Status <sup>1</sup>			Habitat Associations	Potential for Occurrence in the Study Area
		Federal	State	CRPR		
Large-flowered fiddleneck <i>Amsinkia grandiflora</i>	April - May	FE	–	1B.1	Valley and grassland and foothill woodland; grassy slopes below 300 meters.	Moderate; suitable habitat present in the study area.
Watershield <i>Brasenia schreberi</i>	June - Sept	–	–	2B.3	Marshes and swamps.	Moderate; suitable habitat in the study area.
Bristly sedge <i>Carex comosa</i>	May - Sept	–	–	2B.1	Coastal prairie; marshes and swamps, valley and foothill grassland.	High; suitable habitat in the study area; known to occur within study area.
Bolander's water-hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	July - Sept	–	–	2B.1	Marshes and swamps; Coastal, fresh or brackish water.	High; suitable habitat in the study area; known to occur within study area.
Dwarf downingia <i>Downingia pusilla</i>	March - May	–	–	2B.2	Valley and foothill grassland in mesic soils; vernal pools.	Low; suitable habitat in the study area; however, suitable soil lacking in study area.
Jepson's coyote-thistle <i>Eryngium jepsonii</i>	April - Aug	–	–	1B.2	Valley and foothill grassland in moist clay soils; vernal pools.	Low; marginally suitable habitat present in the study area.
Woolly rose-mallow <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	June - Sep	–	–	1B.2	Freshwater wetlands, wet banks, marshes; often in riprap on levee slopes.	High; rip rap and other suitable habitat present in the study area; known to occur within the study area.
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	May - Sep	–	–	1B.2	Coastal and estuarine marshes, freshwater marsh slopes, and tidal river banks.	Moderate; suitable habitat present in study area.
Legenere <i>Legenere limosa</i>	April - Jun	–	–	1B.1	Vernal pools; shallow, acidic clays.	Low; suitable clay present; however, suitable habitat may be absent from study area.
Mason's lillaeopsis <i>Lillaeopsis masonii</i>	April - Nov	–	–	1B.1	Brackish and freshwater marshes and streambanks; regularly inundated tidal zones, on mud-banks and flat along erosional creek banks, sloughs, and rivers.	Moderate; suitable habitat present in study area.
Delta mudwort <i>Limosella australis</i>	May - Aug	–	–	2B.1	Muddy or sandy intertidal flats, brackish water.	High; suitable habitat present in study area; known to occur within study area.



**Table 1. Special-Status Plant Species Occurrence Potential within the Study Area**

Species	Blooming Period	Status <sup>1</sup>			Habitat Associations	Potential for Occurrence in the Study Area
		Federal	State	CRPR		
Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	April - July	–	–	1B.1	Mesic soils; cismontane woodland, meadows and seeps, valley and foothills grassland, vernal pools	Moderate; suitable habitat present in study area.
Bearded popcornflower <i>Plagiobothrys hystriculus</i>	April - May	–	–	1B.1	Vernal swales; valley and foothill grassland, vernal pool margins	Low; marginally suitable habitat present in the study area.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	May - Nov	–	–	1B.2	Slow-moving or standing freshwater ponds, marshes, and ditches.	High; suitable habitat present in study area; known to occur within study area.
Marsh skullcap <i>Scutellaria galericulata</i>	June - Sept	–	–	2B.2	Meadows and seeps, marshes and swamps, lower montane coniferous forest.	Moderate; suitable habitat present in the study area.
Side-flowering skullcap <i>Scutellaria lateriflora</i>	July - Sept	–	–	2B.2	Meadows and seeps, marshes and swamps.	Moderate; suitable habitat present in the study area.
Suisun Marsh aster <i>Symphyotricum lentum</i>	April - Nov	–	–	1B.2	Brackish or freshwater marshes and along streambanks and sloughs.	Moderate; suitable habitat present in the study area.

<sup>1</sup> Status Definitions

Federal Listing Categories (U.S. Fish and Wildlife Service)

- FT = Threatened
- FE = Endangered
- = No status

State Listing Categories (California Department of Fish and Wildlife)

- ST = Threatened
- SE = Endangered
- = No status

California Rare Plant Ranks

- 1B = Plants rare, threatened, or endangered in California and elsewhere
- 2B = Plants rare, threatened, or endangered in California, but more common elsewhere

Extensions:

- .1 = Seriously threatened in California (>80% of occurrences threatened/high degree and immediacy of threat)
- .2 = Moderately threatened in California (20–80% of occurrences threatened/moderate degree and immediacy of threat)
- .3 = Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats)

Sources: CDFW CNDDDB 2019; CNPS Inventory 2019; USFWS Environmental Consultation Online System 2019, adapted by GEI Consultants, Inc. in 2019

**Table 2. Special-Status Wildlife Species with Potential to Occur in or Adjacent to the Study Area**

Species	Status <sup>1</sup>		Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State		
<b>Invertebrates</b>				
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	–	Closely associated with elderberry, which is an obligate host for the beetle larvae.	Low; elderberry shrubs were not observed in and adjacent to the study area.
Delta green ground beetle <i>Elaphrus viridis</i>	T	–	Open habitats in grassland-playa pool matrix, along edges of pools, trails, roads and ditches.	Low; suitable habitat is present in the study area; however, habitat conditions are poor.
<b>Fish</b>				
Green Sturgeon—southern DPS <i>Acipenser medirostris</i>	T	--	Anadromous; Estuaries and bays; spawn in deep pools or “holes” in large, turbulent, freshwater river mainstems.	High; suitable habitat present in study area; known to occur within study area.
Sacramento perch <i>Archoplites interruptus</i>	–	SSC	Heavily vegetated water of slough and lakes throughout the Central Valley.	High; suitable habitat present in study area; known to occur within study area.
Delta smelt <i>Hypomesus transpacificus</i>	T	E	Semi-anadromous; typically restricted to the Delta and the lower Sacramento River downstream of Isleton.	Low; survey area approximately 15 miles upstream of Isleton.
California Central Valley DPS Steelhead <i>Oncorhynchus mykiss irideus</i>	T	–	Anadromous; typically found in the Sacramento-San Joaquin Delta.	High; suitable habitat present in study area; known to occur within study area.
Chinook Salmon— Sacramento River winter–run ESU ( <i>Oncorhynchus tshawytscha</i> )	E	--	Anadromous; typically found in deep, large streams.	High; suitable habitat present in study area; known to occur within study area.
Chinook Salmon—Central Valley spring–run ESU ESU ( <i>Oncorhynchus tshawytscha</i> )	T	–	Anadromous; typically found in deep, large streams.	High; suitable habitat present in study area; known to occur within study area.
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	–	SSC	Backwaters and pools of rivers, lakes, slow-moving waters and slough of main rivers and Delta.	High; suitable habitat present in study area; known to occur within study area.

**Table 2. Special-Status Wildlife Species with Potential to Occur in or Adjacent to the Study Area**

Species	Status <sup>1</sup>		Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State		
Longfin smelt <i>Spirinchus thaleichthys</i>	–	T	Anadromous; typically found in the San Francisco Estuary and the Sacramento-San Joaquin Delta.	High; suitable habitat present in study area; known to occur within study area.
<b>Reptiles</b>				
Western pond turtle <i>Emys marmorata</i>	–	SSC	Permanent or nearly permanent water bodies in various habitats, including ponds, marshes, rivers, streams, and ditches.	High; suitable habitat present in study area; known to occur within study area.
Giant garter snake <i>Thamnophis gigas</i>	T	T	Open water and emergent vegetation in marshes, sloughs, and other aquatic habitats; also requires open upland habitat for basking and underground refuge.	High; suitable habitat present in study area; known to occur within study area.
<b>Birds</b>				
Tricolored blackbird <i>Agelaius tricolor</i>	–	SSC	Nests and forages in wetlands with cattails, bulrushes, and willows, and occasionally agricultural fields.	Moderate; suitable habitat present in and adjacent to the study area, but no known nesting colonies in the vicinity.
Grasshopper sparrow <i>Ammodramus savannarum</i>	–	SSC	Open grasslands and prairies with patchy shrub cover.	Moderate; suitable habitat is present on and adjacent to the study area.
Burrowing owl <i>Athene cunicularia</i>	–	SSC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with natural or artificial burrows or friable soils.	Moderate; suitable habitat is present in and adjacent to the study area.
Swainson's hawk <i>Buteo swainsoni</i>	–	T	Nests in riparian forest and scattered trees; forages in grasslands and agricultural fields.	High; suitable habitat present in study area; known to occur within study area.
Northern harrier <i>Circus cyaneus</i>	–	SSC	Nests and forages in grasslands, agricultural fields, and marshes; nests on the ground in patches of dense, often tall, vegetation in undisturbed areas.	High; grasslands and marsh habitat in and adjacent to undeveloped portions of the study area provide suitable foraging yet marginal nesting habitat.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	T	E	Wooded riparian habitat with dense cover and water nearby; dense thickets along streams and marshes.	Moderate; marginal quality foraging habitat for migrant individuals is present adjacent to the study area; known occurrence of migrant approximately 1 mile south of study area.

**Table 2. Special-Status Wildlife Species with Potential to Occur in or Adjacent to the Study Area**

Species	Status <sup>1</sup>		Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State		
White-tailed kite <i>Elanus leucurus</i>	–	FP	Savanna, open woodland, marshes, and cultivated fields. Nests in isolated trees, or at edge of forest.	High; suitable habitat present in study area; known to occur within study area.
American peregrine falcon <i>Falco peregrinus anatum</i>	–	FP	Open country near water where shorebirds feed. May nest in high cliffs near rivers, wetlands, lakes, and human-made structures; forages in grasslands, open woodland, and agricultural areas.	High; suitable habitat present in study area; known to occur within study area.
California black rail <i>Laterallus jamaicensis coturniculus</i>	–	T	Wet meadows and shallow freshwater to saltwater marshes with dense vegetation.	Low; marginally suitable habitat adjacent to the study area.
Modesto Song sparrow <i>Melospiza melodia</i>	–	SSC	Nests and forages in dense vegetation in marsh, riparian forest and scrub, and along irrigation and drainage canals.	High; suitable habitat present in study area; known to occur within study area.
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	–	SSC	Deep-water wetlands, forages in surrounding grassland and croplands; typically associated with cattails and bulrushes.	Moderate; grasslands and croplands in and adjacent to undeveloped portions of the study area provide suitable foraging yet marginal nesting habitat
<b>Mammals</b>				
Western red bat <i>Lasiurus blossevillii</i>	–	SSC	Roosts in broad leaved trees, especially cottonwood and willows from sea level up through foothills and lower mountains. Forages in grasslands, shrublands, open woodland and forests, and croplands.	Moderate; suitable roosting habitat in and adjacent to the study area.
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	E	E	Riparian thickets of willows, wild rose bushes, blackberry, coyote brushes and wild grape vines.	Moderate; marginally suitable habitat within the study area.
Mexican free-tailed bat <i>Tadarida brasiliensis</i>	–	SSC	Roosts in caves, in structures such as ceiling or walls, hollows of trees, and beneath fronds of palm trees.	High; suitable habitat present in study area.

**Table 2. Special-Status Wildlife Species with Potential to Occur in or Adjacent to the Study Area**

Species	Status <sup>1</sup>		Habitat Associations	Potential for Occurrence in the Project Area
	Federal	State		
American badger <i>Taxidea taxus</i>	–	SSC	Grasslands, shrublands, and other open habitats.	Moderate; suitable habitat present in the study area, but more suitable and less disturbed habitat is present elsewhere in the region.

Notes: CDFW = California Department of Fish and Wildlife; CNDDDB = California Natural Diversity Database; ESU = NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service

<sup>1</sup> Status Definitions:

Federal Listing Categories (NMFS/USFWS)

- T = Threatened
- E = Endangered
- SC = Species of concern
- = No status

State Listing Categories (CDFW)

- T = Threatened
- E = Endangered
- R = Rare
- SSC = Species of special concern
- FP = Fully Protected
- = No status

CDFW California Rare Plant Ranks

- 1B = Plants rare, threatened, or endangered in California and elsewhere
- 2B = Plants rare, threatened, or endangered in California, but more common elsewhere

Extensions:

- .1 = Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
- .2 = Fairly endangered in California (20–80% of occurrences are threatened)

Sources: CDFW CNDDDB 2019; CNPS Inventory 2019; USFWS Environmental Consultation Online System 2019, adapted by GEI Consultants, Inc. in 2019