APPENDIX D

South County Infrastructure Project
Biological Resources Technical Report

OLIVEHURST PUBLIC UTILITY DISTRICT SOUTH COUNTY INFRASTRUCTURE PROJECT

BIOLOGICAL TECHNICAL REPORT

YUBA COUNTY, CALIFORNIA

Project No. 2002-6911

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1.0 INTRODUCTION

The purpose of this report is to detail the findings of the biological reconnaissance surveys of the proposed Olivehurst Public Utility District (OPUD) South County Infrastructure Project Site in the community of Olivehurst in Yuba County, California. This Biological Technical Report includes a review of pertinent literature, a review of regulatory requirements, results of reconnaissance field surveys, and a preliminary analysis of general impacts of project implementation on biological resources.

Following this introduction, there is a description of the OPUD South County Infrastructure Project (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 the regulatory requirements; a review of literature concerning special-status species, sensitive habitats, and general biological conditions; and a description of field reconnaissance survey 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. The final section details the anticipated impacts of project implementation along with suggested general mitigation measures to reduce project impacts to less than significant levels.

2.0 PROJECT DESCRIPTION

OPUD provides urban water and wastewater services within and adjacent to the community of Olivehurst in an unincorporated area of Yuba County (Figure 1). OPUD is proposing to expand its water and sewer systems to accommodate planned urban development within the recently annexed South Yuba County Service Area. The proposed Project is intended to provide water and sewer conveyance system improvements, including improvements to assist in the mitigation of sanitary sewer overflows (SSO) within the existing service area of historic Olivehurst, upgrades to the existing wastewater treatment plant, and construction of a water plant as part of a five component Project identified as the South County Infrastructure Project. Following are the five components of the proposed Project:

- Wastewater Pipeline SSO Reduction Measures
- Wastewater Treatment Plant Upgrades
- Wastewater Pipelines in the South County Service Area
- Water Plant and Distribution Pipelines
- Wheatland Wastewater Pipeline Connector

2.1 WASTEWATER PIPELINE SSO REDUCTION MEASURES (COMPONENT 1)

All facilities associated with wastewater Pipeline SSO Reduction Measures are located within the existing urbanized community of Olivehurst. Pipelines associated with Component 1 would be constructed within paved travel lanes of existing roadways. Two new pump stations would be constructed (PS-1 and PS-26) and an existing pump station (PS-2) would be fitted with upgraded equipment.

The identified collection system improvements are intended to reduce the hydraulic grade line in the Old Olivehurst sewage collection system, thereby reducing the possibility of overflows during peak rainfall events. SSO components to be constructed with implementation of the proposed project include:

- Increase the capacity of Pump Station 1 (PS-1), decommission and remove the existing pump station and replace with a new pump station at the same general location
- Construct a new 16-inch diameter force main from the new PS-1 to 14th Avenue
- Re-equip the existing PS-2 and revise the downstream piping from PS-2 so that flow will be diverted to a new PS-26 at McGowan Parkway and Mary Avenue.
- Replace the existing 8-inch force main in poor condition with a 12-inch force main on McGowan Parkway from PS-2 to PS-26.
- Abandon the existing 8-inch force main within McGowan Parkway from PS-26 to Donald Drive.
- Construct a new PS-26, sized to divert sewage from the existing 8-inch diameter gravity collector sewer in McGowan Parkway into the project pipeline.

2.2 WASTEWATER TREATMENT PLANT UPGRADES (COMPONENT 2)

Improvements and modifications to OPUD's wastewater treatment plant would take place within the existing plant site located at the westerly terminus of Mary Avenue. OPUD is implementing modifications to their wastewater collection system to provide SSO relief and accept wastewater from the City of Wheatland. An increase in Average Dry Weather Flows (ADWF) capacity would not be provided as part of the South County Infrastructure Project, because the WWTP has sufficient ADWF capacity to handle near term flow increases. However, peak wet weather flows (PWWF) are expected to increase as a result of SSO mitigation described above.

The improvements are required to increase the PWWF capacity of the WWTP, and to upgrade and replace existing equipment. The SSO mitigation improvements will result in up to 3.0 mgd of additional PWWF being conveyed to the WWTP during periods of significant rainfall. Increasing the amount of wastewater that the collection system can convey to the WWTP will result in lower hydraulic grade lines in the collection system, thereby resulting in fewer SSO events. WWTP improvements consist of the addition of new equipment, modification and upgrades to existing equipment, and the addition of a concrete lined Emergency Storage Basin at the south end of the plant site to act as an equalization basin that will store increased flows that occur during significant storms. A dewatering pump station will also be added in this area to allow for sending stored secondary effluent back to plant headworks. All of the proposed improvements would be within the developed and disturbed footprint of the existing WWTP.

2.3 WASTEWATER PIPELINES IN THE SOUTH COUNTY SERVICE AREA (COMPONENT 3) AND WHEATLAND WASTEWATER PIPELINE CONNECTOR (COMPONENT 5)

Facilities to be constructed within Components 3 and 5 are located primarily in an undeveloped area south of the existing community of Olivehurst. Pipelines would be constructed primarily within the paved travel lanes of existing roadways. These components consist of sewer pipelines, pump stations, and lift stations required to provide a backbone wastewater collection and transmission system to serve future demands for the South County Services Area consistent with the Yuba County General Plan and to convey City of Wheatland wastewater to the Olivehurst WWTP.

Wastewater system improvements include force mains and gravity sewer pipelines ranging in size from 8 to 30 inches in diameter. The size of the sewer conveyance system is based on the demands from the service area and the City of Wheatland. Some private facilities (e.g., Pacific Gas and Electric [PG&E] yard, Hard Rock Fire Mountain Casino, and Toyota Amphitheatre) are currently served by an on-site wastewater disposal system or another WWTP. Plans for connecting these proposed facilities to the OPUD's sewer collection system are assumed for sizing, but they may not connect until a later date. The estimated wastewater ADWF for the South County Service Area at buildout and City of Wheatland contributions is 5.0 mgd. This amount includes 1.5 mgd ADWF for the City of Wheatland.

Pipelines associated with Components 1, 3, and 5 are summarized in Table 1.

Table 1. Wastewater Pipeline Summary

Type	Size Range (inches)	Overall Length (feet)	Overall Length (miles)	Number of Pump Stations	Number of Lift Stations	Number of Crossings	
						Roadway	*Waterway*
Force Main	6 - 30	44,440	8.4	5	n/a	3	5
Sanitary Sewer	8 - 24	23,130	4.4	n/a	3	2	5
Total Length of Wastewater Pipelines	n/a	65,570	12.8	n/a	n/a	n/a	n/a

Source: Jacobs/MHM/Planning Partners 2023.

The vertical alignment of trench installed pipelines within roadways would maintain a minimum of 48 inches from the top of pipe to the pavement surface. Trench depths would range from 60 inches to 22 feet. All pipeline alignments would provide for a one-foot separation from the pipe edge to any existing utility being crossed while maintaining the minimum cover. Any existing utilities would be surveyed and potholed by the design engineer/team to determine the proposed vertical alignment and crossing method. At culvert crossing locations where trench installed pipeline is proposed within the paved roadway or shoulder, the pipeline will be installed under shallow culverts within the trench in the paved roadway without disturbance to the culvert or the waterway it conveys. For large waterway crossings, trenchless methods are proposed.

2.3.1 Pipeline Crossings

Trenchless installations at roadway and waterway crossings would be achieved using attachment to an existing bridge where possible, such as the wastewater crossing on McGowan Parkway Bridge across SR 70. Horizontal directional drill (HDD) or pipe ramming/auger bore trenchless installation methods are proposed where bridge attachment is not feasible. Table 2 outlines the trenchless stream and roadway pipeline crossing methodology proposed for wastewater pipeline crossings in Component 3 and water pipeline crossings in Component 4. Following is a brief summary of the trenchless pipeline installations and existing site conditions at the crossing locations:

<u>McGowan Parkway at SR 70 Crossing (Sewer Force Main)</u>

At this location the pipeline will be installed under SR 70 using HDD techniques. The HDD entry location, exit location and HDD workspace, including the pipe string location occur entirely within paved roadway of McGowan Parkway and an adjacent parking lot within an urban developed area (Figure 2D)

<u>Olive Avenue to Rancho Road at SR 65 Crossing (Sewer Force Main)</u>

At this location the pipeline will be installed under SR 65 using HDD techniques. The HDD entry location is located in upland annual grasslands adjacent to Olive Avenue. The HDD exit location is on the paved roadway and unpaved shoulder of Rancho Road. The pipe string staging area extends from a paved cul-de-sac into an undeveloped disturbed area between a residence and the railroad track with seasonally wet depressions (Figure 2E).

Rancho Road at Reeds Creek Crossing (Sewer Force Main and Water Main)

At this location the wastewater and water pipelines will be installed under Reeds Creek using HDD techniques. The HDD entry locations on both sides of Rancho Road are within an unpaved roadside area with roadside ditches and depressions that are seasonally inundated northwest of the Reeds Creek crossing. The HDD exit locations and pipe string staging areas on both sides of Rancho Road are within upland annual grasslands southeast of the Reeds Creek crossing (Figure 2F).

Rancho Road at Hutchinson Creek Crossing (Sewer Force Main and Water Main)

At this location the wastewater and water pipelines will be installed under Hutchinson Creek using HDD techniques. The HDD Entry locations on both sides of Rancho Road are within upland annual grassland areas with some tree cover. The HDD exit location and pipe string laydown area on the southwest side of Rancho Road is within upland annual grassland with Eucalyptus (*Eucalyptus globulus*) tree cover. The HDD exit location and pipe string laydown area northeast of Rancho Road is primarily within upland annual grasslands. There is a roadside ditch at this location, but it does not support seasonal inundation or wetland vegetation (Figure 2G).

Rosser Road to Shimer Road at SR 65 Crossing (Sewer Force Main)

At this location the wastewater pipeline will be installed under SR 65 using HDD techniques. The HDD entry location is within an unpaved area adjacent to Rosser Road and the HDD workspace is located in cattle grazed pastureland. Portions of this pasture northwest of the workspace appear to be wet meadow pastureland; however, the pasture was not surveyed due to access constraints. The HDD exit location and pipe string staging area are within a paved roadway (Shimer Road) (Figure 2H).

Rancho Road at Kimball Creek Crossing (Sewer Force Mains and Water Main)

At this location the wastewater and water pipelines will be installed under Kimball Creek using HDD techniques. The HDD entry locations on both sides of Rancho Road are within an unpaved roadside area with roadside ditches and depressions that are seasonally inundated northwest of the Kimball Creek crossing. The HDD exit location on the northeast side of Rancho Road is within an unpaved roadside area that is upland annual grassland. The pipe string staging area is primarily within upland annuals grassland with an adjacent seasonally wet depression. The HDD exit location and pipe string laydown area on southwest side of Rancho Road is within an upland annual grassland area and the road shoulder (Figure 2J).

Rancho Road at Virginia Road Crossing (Sewer Force Mains and Water Main)

At this location the wastewater and water pipelines will be installed under Virginia Creek using pipe ramming/auger bore techniques. The bore launch shafts and receiving shafts are within the paved roadway and unpaved shoulder for both trenchless crossings at this location. There are wet depressions within roadside ditches that are seasonally inundated on both sides of Rancho Road at this location (Figure 2L).

40 Mile Road at Kimball Creek Crossing (Sewer Force Main and Water Main)

At this location the pipelines will be installed under Kimball Creek using pipe ramming/auger bore techniques. The bore launch shafts and receiving shafts are within the paved roadway and unpaved shoulder for both trenchless crossings at this location (Figure 2O).

Table 2. Trenchless Crossing Details

Crossing Name	Utility	Crossing Type	Surface Length: Linear Feet	Bore Length: Feet	Entry Location	Entry Work Area	Exit Location	Exit Work Area	Pipe String Area
SR 70 west of Power Line Rd - Dan Ave	Waste water	HDD	1,517	1,317	Within paved turn lane/centerline of McGowan Pkwy	Within paved turn lane/centerline of McGowan Pkwy	Within westbound paved travel lane or shoulder	Within westbound paved travel lane or shoulder	Within westbound unpaved shoulder
SR 65 between Olive Ave / Rancho Rd	Waste water	HDD	742	611	Within unpaved area / cultivated field	Within unpaved area / cultivated field	Within paved roadway and unpaved shoulder area	Within paved cul-de-sac	Within paved cul-de-sac / unpaved area
Rancho Rd / Reeds Creek	Waste water	HDD	1,500	1,468	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area
Rancho Rd / Reeds Creek	Water	HDD	1,500	1,300	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area
Rancho Rd / Hutchinson Creek	Waste water	HDD	746	532	Within unpaved area / cultivated field	Within unpaved area / cultivated field	Within unpaved area	Within unpaved area	Within unpaved area
Rancho Rd / Hutchinson Creek	Water	HDD	590	411	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area
Rancho Rd / Kimball Creek	Waste water	HDD	519	467	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area
Rancho Rd / Kimball Creek	Water	HDD	477	317	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area	Within unpaved area

Crossing Name	Utility	Crossing Type	Surface Length: Linear Feet	Bore Length: Feet	Entry Location	Entry Work Area	Exit Location	Exit Work Area	Pipe String Area
Rancho Rd / Virginia Creek	Waste water	Pipe ramming/ auger boring	50	50	Receiving Shaft: In paved area	Receiving Shaft: In paved area	Launch Shaft: Within unpaved shoulder area	Launch Shaft: Within unpaved shoulder area	n/a
Rancho Rd / Virginia Creek	Water	Pipe ramming/ auger boring	50	50	Receiving Shaft: Within unpaved area	Receiving Shaft: Within unpaved area	Launch Shaft: Within paved travel lane	Launch Shaft: Within paved travel lane	n/a
SR 65 between Slaughterhouse Rd / Shimer Rd	Waste water	HDD	748	601	Within unpaved area	Within unpaved area	Within paved cul-de-sac	Within paved cul-de-sac and paved travel lane	Within paved cul-de-sac and paved travel lane
40 Mile Rd / Kimball Creek	Waste water	Pipe ramming/ auger boring	82	82	Receiving Shaft: Within paved travel lane	Receiving Shaft: Within paved travel lane	Launch Shaft: Within paved travel lane	Launch Shaft: Within paved travel lane	n/a
40 Mile Rd / Kimball Creek	Water	Pipe ramming/ auger boring	82	82	Receiving Shaft: Within paved travel lane	Receiving Shaft: Within paved travel lane	Launch Shaft: Within paved travel lane	Launch Shaft: Within paved travel lane	n/a

Source: Jacobs/MHM 2023, Planning Partners 2023.

2.3.2 Pump Stations and Lift Stations

Most of the pump stations and lift stations are located in upland annual grasslands or disturbed and developed areas. Following is a brief summary of the pump station and lift station locations and details regarding the construction of pump stations and lift stations associated with the proposed wastewater pipeline are outlined in Table 3.

Pump station 1 and pump station 26 are both within vacant lots within urban areas. These areas support upland annual grasslands or ruderal (weedy) vegetation. Pump station 21 and lift station 24 are in upland annual grasslands adjacent to the paved roadway. Pump station 25 is located within a dirt parking lot and staging area east of 40 Mile Road. The pipeline connection to Pump station 25 may cross a roadside channel or ditch with wetland vegetation. Pump station 22 is within upland annual grassland adjacent to Rancho Road; however, this pump station is immediately adjacent to Kimball Creek and associated wetlands. Lift station 23 is partially within a rice field along Rancho Road and will remove a small portion of the field used for rice cultivation. The footprint of lift station 23 also extends into a wet depression within a roadside ditch that is seasonally inundated between Rancho Road and the rice field.

Table 3. Pump Station and Lift Station Details

Facility	PS 1 Olivehurst Ave/ 11th Ave	PS 2 McGowan Pkwy/East of SR 70	PS 26 McGowan Pkwy/ Mary Ave	PS 21 Rancho Rd/ Shimer Rd	LS 22 Rancho Rd/ Kimball Crk	LS 23 Rancho Rd/ Virginia Crk	LS 24 40 Mile Rd	PS 25 40 Mile Rd
Site Area (approx. square feet)	8,215	n/a	20,400	10,260	4,330	5,075	6,160	10,220
Depth of Wet Well(s) (feet below ground surface)	24 - 33	To be determined	40.5	41.3	23.4	27.2	40.7	37.05
Height of Soundwall (feet)	11	To be determined	11	11	11	11	11	11
Existing Facilities to be Abandoned or Improved	Existing Sewer Lift Station	Improvements to be determined	Existing 8" sanitary sewer in McGowan Pkwy west of PS 26	Existing fence	Existing fence	None	None	None
Outside of Existing Roadway Prism (Travel Lane + Improved Shoulder)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Serves Component Number	1	1	1/3/5	3/5	3	3	3	3

Source: Jacobs/Domenichelli & Associates 2022/Planning Partners 2023.
Note: *– Potential improvements limited to existing disturbed area

2.4 WATER PLANT AND DISTRIBUTION LINES (COMPONENT 4)

Facilities to be constructed within Component 4 include a new water well and water plant east of Forty Mile Road. This component consists of a production well and water plant to meet a portion of the demand for treated water for municipal and industrial needs and fire protection, and a backbone distribution system to meet future treated water demands for the South County Services Area consistent with the Yuba County General Plan.

Water Plant

As proposed, the water plant (WP) would be constructed on a 0.95-acre site located east of Forty Mile Road and north of the newly constructed Hard Rock Casino. The WP would consist of a new water well (OPUD Well #35), well pump, reservoir, booster station, and chorine feed system. As planned, the new well would provide 1,500 gallons per minute (gpm), although ultimate production could approach 3,000 gpm depending upon the type and timing of future development within the WP service area. A new welded steel reservoir would be constructed with an approximate capacity of 1,017,000 gallons. The tank dimensions would be 76-foot diameter by 32-foot shell height. The tank color is planned to be equivalent to Engard's "Desert Sand" or Glidden's "Pelt" subject to final approval by the District. The booster station is designed to pump out of the reservoir and maintain a desired pressure of 65 pounds per square inch (psi) with a pressure range of between 60 and 70 psi in the water system. A chlorine feed system would inject chlorine to be used for disinfection as part of the WP's treatment process. A backup generator supplied by an on-site propane tank would be provided to power the WP if necessary. Water provided by the WP and transmitted to the regional grid in Forty Mile Road would be provided by a 24-inch pipeline from the WP to a proposed pipeline to be constructed along the southbound travel lane of Forty Mile Road.

Water needs during construction would be provided by a temporary above ground pipeline from an existing agricultural well south of the Hard Rock Casino which would be removed upon completion of construction.

Water Distribution Pipelines

This subcomponent consists of treated water pipelines required to provide a backbone water distribution system to serve future demands for the South County Services Area consistent with the Yuba County General Plan. Water system improvements include water pipelines ranging in size from 16 to 24 inches in diameter.

The size of the water distribution system is based on the projected demands from future urban uses within the South Yuba County Service area. Additionally, the water distribution system would connect with the existing OPUD water system serving the community of Olivehurst. Pipelines associated with Component 4 are summarized in Table 4.

Table 4. Treated Water Pipeline Summary

Type	Size Range (inches)	Overall Length (feet)	Overall Length (miles)	Crossings	
				Roadway	Waterway
Water Main	16 – 24	36,939	7.0	2	5

Source: Jacobs/MHM/Planning Partners 2023.

The vertical alignment of trench installed pipelines within roadways would maintain a minimum of 48 inches from the top of pipe to the pavement surface. Trench depths would range from 60 inches to 12 feet. All pipeline alignments would provide for a one-foot separation from the pipe edge to any existing utility being crossed while maintaining the minimum cover. Any existing utilities would be surveyed and potholed by the design engineer/team to determine the proposed vertical alignment and crossing method.

Trenchless installations at roadway and waterway crossings would be achieved using attachment to an existing bridge where possible, such as the water line crossing on the McGowan Parkway Bridge over SR 65. Horizontal directional drill (HDD) or pipe ramming/auger bore trenchless installation methods are proposed where bridge attachment is not feasible. Table 2 above outlines the trenchless stream and roadway pipeline crossing methodology proposed for wastewater pipeline crossings in Component 3 and water pipeline crossings in Component 4.

3.0 METHODOLOGY

3.1 LITERATURE REVIEW

Padre biologists reviewed available project information, county soil survey maps, topographic maps, and other environmental documents. The California Natural Diversity Database (CNDDB) was queried for records of special-status species reported within the Olivehurst and Wheatland, California quadrangles and the surrounding seven quadrangles (California Department of Fish and Wildlife [CDFW], 2022). A list of federally listed Threatened and Endangered species was obtained from the U.S. Fish and Wildlife Service (USFWS) (USFWS, 2022a). An unofficial species list was obtained from the National Marine Fisheries Service (NMFS) for the two quadrangles that the project occurs within (NMFS, 2022). The federal species lists and CNDDB query results are included in Appendix A and Appendix B. 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], 2022; Zeiner et al., 1988; 1990a, b). A query of the National Wetland Inventory (NWI) was reviewed for information regarding mapped waters and wetlands in the project area (USFWS, 2022b).

3.2 FIELD RECONNAISSANCE SURVEYS

Reconnaissance level field surveys were conducted by Padre biologists between February 15-17, 2022 to assess the biological resources and to determine the likelihood of occurrence for special-status species or sensitive and regulated habitats on the project site. Follow-up surveys were conducted in June 2022 for the purposes of detecting elderberry shrubs during the blooming season, and follow-up surveys were conducted of various aspects of the project in August and December 2022 and January 2023 to resurvey areas for changes to the project design and to review the depressional features along Rancho Road during the wet season to confirm areas of inundation.

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 CNDDB 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 wetlands, potential nest trees, and potential dens or burrow clusters, were noted and mapped for avoidance to the extent feasible during Project design and planning. Lists of plants and wildlife observed during surveys were compiled and are included in Appendix C and Appendix D.

It should be noted that some portions of the study area were on private property that was inaccessible during the field surveys, including the HDD workspace adjacent to Rosser Road. Reconnaissance surveys for this location were conducted using binoculars from the fence line and aerial imagery. Aquatic resource features were generally mapped based on surface indicators; an aquatic resource delineation was not performed.

4.0 ENVIRONMENTAL SETTING

4.1 LOCATION

The Project study area is located within the community of Olivehurst and unincorporated area of southern Yuba County approximately 40 miles north of Sacramento and four miles south of Marysville (Olivehurst and Wheatland, California 7.5-minute USGS quadrangle) (USGS, 1947; USGS, 1952) (Figure 1). The study area within the existing urbanized community of Olivehurst is surrounded by residential and commercial properties. The study area within the south County area is primarily surrounded by agricultural and rural residential land along with areas supporting industrial uses and sports and entertainment uses (Hard Rock Casino). There are several natural drainages that run from northeast to southwest across the study area.

4.2 GEOLOGY/GEOMORPHOLOGY

The project is situated in the Butte Sink-Sutter Basin subsection of the Great Valley Ecological Region of California (Miles and Goudey, 1997).

The Butte Sink-Sutter Basin subsection is on the alluvial plain between the Feather and Sacramento Rivers. Elevations in the subsection range from approximately 30 to 150 feet. Fluvial erosion and deposition are the main geomorphic processes (Miles and Goudey, 1997).

4.3 CLIMATE

The project site is situated in Climate Zone 8, which includes California's cold air basins of the Central Valley. This zone has hot summers and mild winters and is outside of the influence of the Pacific Ocean (Clark, 1985).

The nearest meteorological station (045385) is located in Marysville, just to the north of the project site. Based on the 110-year period of record (1897 through 2007) at the station, the average maximum monthly temperature ranges from 54.1°F in January to 96.3°F in July (Western Regional Climate Center, 2022). The average minimum monthly temperature ranges from 37.7°F in January to 61.3°F in July. The average annual temperature ranges from 49.0°F to 75.3°F. The average monthly precipitation ranges from 0.03 inches in July to 4.01 inches in January. The total average annual precipitation is 20.96 inches (Western Regional Climate Center, 2022).

4.4 SOILS

A review of the U.S. Department of Agriculture's Web Soil Survey for Yuba County (Natural Resource Conservation Service [NRCS], 2022) identified nine soil mapping units within the study area (Appendix E). These include Hollenbeck silty clay loam, 0 to 1 percent slopes (131); Hollenbeck-Urban land complex, 0-1 percent slopes (134); Conejo loam, 0 to 1 percent slopes, MLRA 17 (141); Conejo loam, 0 to 2 percent slopes, occasionally flooded, MLRA 17 (142); Conejo-Urban land complex, 0 percent slopes, MLRA 17 (143); Oakdale sandy loam, 0 to 5 percent slopes (197); Oakdale-Urban land complex, 0 to 1 percent slopes (198); San Joaquin loam, 0 to 1 percent slopes (214); Urban land-San Joaquin complex, 0 to 1 percent slopes (217). None of these soil mapping units are hydric, though five of them (131,134,143, 214, and 217) include minor components that are considered hydric.

4.5 HABITAT DESCRIPTIONS AND VEGETATION

The majority of the study area consists of lands within developed urban areas, disturbed habitat along roadway shoulders or in vacant lots, and land within or adjacent to agricultural fields. Wetlands and riparian cover types occur along the waterways at the trenchless crossing locations. The agricultural fields in the area are primarily used to produce rice and other grain crops. Disturbed areas and road shoulders that had vegetation present support annual grassland and ruderal cover types. Proposed pipeline alignments are limited to developed lands within the paved roadway and disturbed shoulder with minimal vegetation present. Workspace associated with HDD crossings are within natural and undeveloped lands or agricultural lands. Pump stations and lift stations are within developed and disturbed lands, vacant lots, natural and undeveloped lands, or agricultural lands.

Dominant species observed in annual grasslands and ruderal habitat include ripgut grass (*Bromus diandrus*), rye grass (*Festuca perennis*), soft chess (*Bromus hordeaceous*), wild oat (*Avena fatua*), Medusa head (*Elymus caput-medusae*), redstem filaree (*Erodium cicutarium*), yellow star thistle (*Centauria solstitialis*), black mustard (*Brassica nigra*), Dove's-foot geranium (*Geranium molle*), and California burclover (*Medicago polymorpha*).

There are several natural drainage crossings throughout the pipeline alignments. These include crossings of Hutchinson Creek, Reeds Creek, Kimball Creek, and Virginia Creek. At these crossings, the vegetation communities observed were a mix of natural riparian communities, emergent wetland vegetation, and annual grassland cover types. Dominant species observed at these drainage crossings varied from crossing to crossing. Kimball Creek supported predominantly emergent wetland vegetation with little or no riparian corridor. Hutchinson Creek and Reeds Creek supported a riparian corridor. Virginia Creek is a channelized canal that supports little to no vegetation (See Section 4.5.1 below for more detail regarding the drainage crossings). The dominant species observed at the drainage crossings that had emergent vegetation include dense stand of broad-leaved cattail (*Typha latifolia*) and tule (*Schoenoplectus acutus* var. *occidentalis*). Drainage crossings with a riparian canopy often included Valley oak (*Quercus lobata*), Oregon ash (*Fraxinus latifolia*), Fremont cottonwood (*Populus fremontii*), Eucalyptus (*Eucalyptus* sp.), willow (*Salix* sp.) and Himalayan blackberry (*Rubus armeniacus*) growing along the banks. Annual grasslands around these crossings had a cover of herbaceous species similar to the grasslands described above.

At multiple locations along the pipeline alignment, roadside ditches and depressions are present that support a range of hydrologic characteristics which affect the types of vegetation that grow. Ditches with prolonged or perennial inundation supported wetland species like broad-leaved cattail, iris-leaved rush (*Juncus xiphoides*), tall cyperus (*Cyperus eragrostis*), and creeping spikerush (*Eleocharis macrostachya*). The roadside ditches with a shorter hydroperiod supported more facultative wetland species like curly dock (*Rumex crispus*) and rye grass or were barren of vegetation. Many of these ditches supported algal matting or biotic crust on the ground’s surface, an indicator of hydrology and inundation during the wet season.

See Figure 4 for site photos of locations described above, including photos of each of the drainage crossing locations. A complete list of plant species observed during the field survey is compiled in Appendix C.

4.5.1 Waters and Wetlands

The site was examined for evidence of regulated habitats, such as waters and wetlands, under regulatory authority of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. The National Wetland Inventory (NWI) map of the study area was reviewed to assist in the identification of waters and wetlands on the Site (USFWS, 2022b).

There are several riverine features identified on the NWI map within the project area. These include Hutchinson Creek, Reeds Creek, Kimball Creek, and Virginia Creek. In addition to the natural riparian crossings, NWI identifies several man-made features including stock ponds, irrigation canals, and the artificially flooded portions of the Olivehurst Public Utility District Wastewater Treatment Plant. In addition to the features mapped on NWI, there were many roadside ditches and depressions that had evidence of wetland vegetation and hydrology. The potential wetland areas were defined by the presence of hydrophytic vegetation and supported a combination of facultative (FAC), facultative-wetland (FACW), and obligate wetland (OBL) plant species. In addition, evidence of hydrology was commonly noted as in the form of algal matting and saturated soil.

The northernmost trenchless creek crossing is Reeds Creek on Rancho Road. Reeds Creek at the Rancho Road crossing has a mix of emergent wetland vegetation and shrubby riparian cover. Growing from the bed of the channel were dense stands of emergent wetland plants like tule and overhanging the banks were thick patches of Himalayan blackberry. In addition to the blackberry, willow trees and shrubs grew along the banks in varying densities. Reeds Creek is mapped as an intermittent waterway (USGS, 1952).

The next major riparian crossing along Rancho Road is Hutchison Creek. Hutchison Creek at this location supported a tall riparian canopy composed primarily of eucalyptus trees with some Valley oaks. Similar to Reed's Creek, dense blackberry briar patches cover much of Hutchison Creek's banks. There was very little emergent wetland vegetation growing from the channel. Hutchinson Creek is mapped as an intermittent waterway (USGS, 1952).

The next riparian crossing along Rancho Road is Kimball Creek. The Kimball Creek crossing can be characterized by two elements that make it distinct from the other creek crossings. On both the north and south sides of Rancho Road, the creek forms a wide sprawling wetland rather than a narrow and defined channel. Additionally, Kimball Creek can be characterized by an almost complete cover of dense cattail growing from the creek's bed. There was little to no riparian cover at this location with several scattered willows growing from the wetland area but not forming a canopy. As Kimball Creek flows to the southwest, it meets Forty Mile Road and the pipeline alignment crosses at that location as well. At the Forty Mile Road crossing of Kimball Creek, there was a thick dominant cover of cattail; however, the channel was narrower and water could be seen through the cattails. Kimball Creek is mapped as an intermittent waterway (USGS, 1952); however, based on a review of historic aerial imagery Kimball Creek appears to support summer water in the low flow channel as evidenced by imagery from August of 2016 and September of 2018 (GoogleEarth Pro, 2023).

The southernmost creek crossing on Rancho Road is Virginia Creek. Virginia Creek is a highly altered waterway that has been channelized to flow around the perimeter of agricultural farmland within the study area. There was no emergent wetland vegetation growing from Virginia Creek and the banks of the channel were barren. The top of bank supports weedy grassland

species like black mustard and no riparian canopy was present. Virginia Creek is not mapped on the USGS Wheatland, CA 7.5-minute quadrangle map (USGS, 1947) and based on historic aerial imagery appears to have been constructed sometime between 1988 and 1993 (GoogleEarth Pro, 2023).

The pipeline alignment crosses another significant waterway and wetland feature in the southern portion of the alignment along Forty Mile Road consisting of a channelized canal that's connected to the Virginia Creek canal and appears to have been constructed around the same time. This waterway is characterized by a wide sprawling wetland dominated by emergent wetland vegetation with no riparian corridor. The dominant species in the wetland was tule, although cattail was dominant in some areas. A channelized canal was approximately 15 feet wide, conveys water to the west through three large culverts under Forty Mile Road.

The Project is designed to avoid impacts to drainage crossings by using trenchless methods at all major waterway crossings. Trenchless methods include HDD crossings at some locations and pipe ramming or auger boring methods in the roadway at other locations. At these trenchless crossing locations, temporary impact footprints will be sited outside of the riparian community and/or adjacent wetlands. In several cases, culverted crossings may be trench installed within the paved roadway and beneath the existing shallow culverts without disturbance to the culverts or the waterway.

In addition to the waterway crossings, there are multiple roadside ditches and depressions that support a range of hydrologic characteristics. Roadside ditches that have been constructed for drainage were prevalent along much of the pipeline alignments in roadways. These features range from unvegetated roadside ditches or dry roadside ditches supporting a mix of upland or facultative wetland grasses to wet roadside ditches supporting emergent wetland vegetation. In addition, roadside depressions occur, primarily along Rancho Road and often in the low lying area between the roadway and the adjacent railroad tracks. Many of these depressions had indicators of hydrology and inundation during the wet season including algal mat or biotic crust formation. Some of these depressions support wetland plant species like creeping spikerush and California loostrife (*Lythrum hyssopifolia*). Because of their proximity to the road, these areas often had deep tire ruts from vehicular use during the wet season and are highly disturbed wet depressions.

4.6 WILDLIFE

Wildlife observed at the project site were characteristic of the region and the time of year that surveys were conducted. Species observed during the survey are listed in Appendix D. Special-status wildlife species occurring, or potentially occurring, within the study area are discussed in Section 4.7 below.

The vegetation communities within and surrounding the study area provide habitat for resident and migratory wildlife species. The composition, density, distribution, and physical characteristics of vegetative communities determine the diversity and abundance of wildlife species residing in the project area. Wildlife species observed and expected within the vegetative cover types present on the site are discussed below.

A large portion of the study area is in active agricultural production or is surrounded by urban development that limits use by wildlife. However, the waterways, riparian corridors and wetlands provide forage and cover for a variety of resident and migratory wildlife species. In

addition, certain types of agricultural fields, such as rice, can provide wildlife habitat. Surveys were conducted during the non-nesting season; therefore, many species observed are non-resident migratory species that would not be present in the project area during the spring and summer breeding season.

Some of the species observed include house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), brewer's blackbird (*Euphagus cyanocephalus*), turkey vulture (*Cathartes aura*), and black phoebe (*Sayornis nigricans*). At the waterway crossings and in riparian habitat, some of the bird species observed included red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), American goldfinch (*Spinus tristis*), Nuttall's woodpecker (*Picoides nuttallii*), and ruby-crowned kinglet (*Regulus calendula*). Signs of mammals moving through the riparian corridors were observed for several species including raccoon (*Procyon lotor*), coyote (*Canis latrans*), and mink (*Mustela vison*).

Species observed in ponded agricultural fields included killdeer (*Charadrius vociferus*), greater yellowlegs (*Tringa melanoleuca*), great egret (*Ardea alba*). Long-range migratory birds including snow goose (*Chen caerulescens*), greater white-fronted goose (*Anser albifrons*), and Canada goose (*Branta canadensis*) were also observed in these ponded areas. Raptors observed soaring above the project site included red-tailed hawk (Buteo jamaicensis), northern harrier (Circus hudsonius), white-tailed kite (*Elanus leucurus*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*).

4.7 SPECIAL-STATUS SPECIES

Based on the literature review and species list from USFWS (Project Code: 2022-0002318) and NMFS, a list of special-status species that have been reported in the vicinity of the project site (Olivehurst quadrangle and surrounding eight quadrangles), or within Yuba County, has been compiled. Special-status species that have the potential to occur in the vicinity of the project site are listed in Table 5.

An analysis of the likelihood of occurrence for each species was conducted on the basis of species ranges, previous observations, contemporary sightings, and presence of suitable habitat elements within the study area. The Project site may be located outside of the known range of some species, or it may be within the geographic range for a certain species, but suitable habitat, such as chenopod scrub, chaparral, or cismontane woodland is absent within the study area. For the purpose of this analysis, potential special-status species that occur in the general area of the project and for which the project may provide habitat are discussed in greater detail in Sections 4.7.1 and 4.7.2 below.

Table 5. Special-Status Species Potentially Occurring in the Vicinity of the South County Infrastructure Project

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
PLANTS				
Astragalus tener var. *ferrisiae* Ferris' milk-vetch	CRPR 1B.1	Vernally mesic meadows and seeps and subalkaline flats of Valley and foothill grasslands at elevations ranging from 5 to approximately 245 feet. Blooms from April to May.	Low	Habitat along the pipeline alignment is poor quality and alkaline soils not present. Nearest occurrence (Occ. #16) is from 1891 and is approximately 3.9 miles north of the northernmost extent of the project.
Delphinium recurvatum Recurved larkspur	CRPR 1B.2	Chenopod scrub, valley and foothill grassland, cismontane woodland. On alkaline soils; often in valley saltbush or valley chenopod scrub. Found regionally in slightly alkaline beds of vernal pools. Occurs at elevations ranging from 10 to approximately 2,250 feet. Blooms from March to June.	None	No suitable habitat present. Nearest occurrence (Occ. #104) is from 1900 and is approximately 3.9 miles north of the northernmost extent of the project. This occurrence is considered extirpated and there are no recent occurrences near the project site.
Downingia pusilla Dwarf downingia	CRPR 2B.2	Valley and foothill grasslands and vernal pools at elevations ranging from 1 to 1,460 feet. Blooms from March to May.	Low	Potentially suitable habitat occurs in seasonally inundated depressions and ditches. Due to proximity to roads, habitat is highly disturbed by offroad vehicle use. The nearest occurrence (Occ. #95) from 1999 is approximately 2.8 miles east of the project site.
Hibiscus lasiocarpos var. *occidentalis* Woolly rose-mallow	CRPR 1B.2	Freshwater marshes and swamps, often on the side of levees at elevations ranging from sea level to approximately 400 feet. Blooms from June to September.	Low	Potentially suitable habitat occurs along waterways. Project activities will avoid waterways through trenchless installation methods. Nearest occurrence (Occ. #69) from 2009 is approximately 9.4 miles west of the project site in levees along the Sutter Bypass.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Legenere limosa Legenere	CRPR 1B.1	Vernal pools at elevations ranging from sea level to approximately 2,900 feet. Blooms from April to June.	Low	Potentially suitable habitat occurs in seasonally inundated depressions and ditches. Due to proximity to road habitat is highly disturbed by offroad vehicle use. The nearest occurrence (Occ. #52) from 1999 is approximately 4.7 miles northeast of the project site.
Monardella venosa Veiny monardella	CRPR 1B.1	Cismontane woodlands and Valley and foothill grasslands, usually in clayey soil, at elevations ranging from 195 to approximately 1,345 feet. Blooms from May to July.	None	No suitable habitat is present at the project site. One historic occurrence in the area is considered extirpated.
Navarretia leucocephala ssp. *Bakeri* Baker's navarretia	CRPR 1B.1	Mesic cismontane woodlands, lower montane coniferous forests, meadows and seeps, valley and foothill grasslands, and vernal pools. Typically occurs at elevations ranging from 15 to approximately 5,700 feet. Blooms from April to July.	Low	Potentially suitable habitat occurs at in seasonally inundated depressions and ditches. Due to proximity to road habitat is highly disturbed by offroad vehicle use. Nearest occurrence (Occ. #56) from 1999 is approximately 11.7 miles northwest of the project site.
Pseudobahia bahiifolia Hartweg's golden sunburst	FE, SE, CRPR 1B.1	Cismontane woodlands and Valley and foothill grasslands, often in acidic clayey soil, at elevations ranging from 50 to approximately 490 feet. Blooms from March to April.	None	No suitable habitat is present at the project site. One historic occurrence in the area is considered extirpated.
Sagittaria sanfordii Sanford's arrowhead	CRPR 1B.2	Assorted freshwater habitats including swamps and marshes at elevations ranging from 0 to 2130 feet. Blooms from May to October, sometimes into November.	Moderate	Potentially suitable habitat present at the waterway crossings along the pipeline alignment or in roadside ditches that have a long period of inundation. Project activities will avoid waterways through trenchless installation methods at waterway crossings. Nearest occurrence

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
				(Occ. #98) from 1955 is approximately 3.1 miles southwest of the project site.
Wolffia brasiliensis Brazilian watermeal	CRPR 2B.3	Shallow freshwater marshes and swamps at elevations ranging from 65 to approximately 330 feet. Blooms from April to December.	Moderate	Potentially suitable habitat present at drainage crossings along pipeline alignment with shallow ponded water. Project activities will avoid waterways through trenchless installation methods at waterway crossings. Nearest occurrence (Occ. #5) from 2002 is approximately 10.2 miles east of the project site.
INVERTEBRATES				
Branchinecta conservation Conservancy fairy shrimp	FE	Large, cool-water vernal pools with moderately turbid water where pools generally last until June; however, the shrimp are gone long before then.	Low	Wet depression and inundation in roadside ditches within the study area would not remain inundated for the duration of time typical of vernal pools that support this species. Nearest occurrence (Occ. #36) from 2012 is approximately 10.6 miles south of the southernmost extent of the pipeline alignment.
Branchinecta lynchi Vernal pool fairy shrimp	FT	Endemic to the grasslands of the central valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Regionally inhabits small, clear-water sandstone depression pools and grass swale, earth slump or basalt-flow vernal pools.	High	Potentially suitable habitat occurs in seasonally inundated depressions and ditches. Due to proximity to roads habitat in the study area is highly disturbed by offroad vehicle use; however, other occurrences in region occur in similar habitat. Two occurrences are located less than 0.5 miles from the northern portion of the project site. Occ #708 from 2007 was in an irrigation ditch along Bernice Avenue and occ #709 from 2013 occurs in pools

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
				surrounded by mowed grassland east of Powerline Road in Olivehurst.
Danaus plexippus Monarch butterfly	FC	Monarchs roost in eucalyptus, Monterey cypress, Monterey pine, and other trees in groves along the Pacific coastline of California, arriving starting in late October. Dispersal from these roosts generally begins in mid-February. Milkweed and nectar plant availability throughout the spring, summer and fall is important for monarch migration. In areas of the desert southwest, monarchs use nectar and milkweed plants throughout much of the year.	None	There is no suitable habitat (milkweed) to support this species within the study area. The nearest occurrence is over 60 miles southwest of the site.
Desmocerus californicus dimorphus 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). Blue elderberry plants are obligate hosts for the VELB, providing a source of food and brood wood.	Low (Habitat present)	Surveys during the blooming season identified four elderberry shrubs within 165 feet (VELB encroachment buffer) along Rancho Road; however, these shrubs were east of the railroad and would not be impacted by the Project. A single elderberry shrub occurs on the shoulder of Forty Mile Road and within 20 feet of Project activities (VELB core area), but this shrub was very small and exposed to disturbance due to proximity to road and utility pole. No emergence holes occur and disjunct from riparian or other elderberry shrubs. Nearest occurrence of VELB (Occ. #193) from 1998 is approximately 0.4 miles south of the southernmost extent of the pipeline alignment; however, all elderberry shrubs at this location have been removed and the occurrence is considered extirpated.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
				The nearest recent occurrence (Occ. #190) from 2006 is approximately 3.8 miles west of the project site.
Lepidurus packardi Vernal pool tadpole shrimp	FE	Inhabits vernal pools and swales in the central valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud bottomed and highly turbid.	Moderate	Potentially suitable habitat occurs in seasonally inundated depressions and ditches. Due to proximity to roads habitat in the study area is highly disturbed by offroad vehicle use. There are three occurrences located less than 1 mile from the northern portions of the project stie. Occurrence #380 from 2016 is located approximately 700 feet from the pipeline alignment on Mary Avenue in artificial seasonal wetlands. Occurrence #221 from 2004 is located approximately 0.3 miles from the wastewater treatment plant in a field that has since been developed.
FISHES				
Acipenser medirostris pop. 1 Green sturgeon – Southern DPS	FT	Anadromous fish species found in near shore marine and estuarine environments from Alaska to Baja California, Mexico. Green sturgeon depend on large rivers to spawn, typically in deep pools in large turbulent mainstem rivers. The Sacramento River watershed is the only confirmed present and historical spawning area. Spawning occurs in the Sacramento River and has recently been documented in the Feather River and Yuba River (tributaries to the Sacramento River).	None	No suitable habitat present. Project activities will avoid waterways through trenchless installation methods and will result in no impact to fish. Nearest known occurrences in Feather and Yuba River.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Hypomesus transpacificus Delta smelt	FT, SE	Endemic to the Sacramento/San Joaquin Delta, they occur in the Delta primarily below Isleton on the Sacramento River, below Mossdale on the San Joaquin River, and in Suisun Bay. Delta smelt 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.	None	No suitable habitat present. Project activities will avoid waterways through trenchless installation methods and will result in no impact to fish.
Oncorhyncus mykiss irideus pop. 11 Steelhead – Central Valley DPS	FT	Sacramento and San Joaquin Rivers and their tributaries.	Low	Project activities will avoid waterways through trenchless installation methods and will result in no impact to fish.
Oncorhynchus tshawytscha pop. 11 Chinook salmon – Central Valley spring-run ESU	FT, ST	Sacramento and San Joaquin Rivers and their tributaries.	Low	Project activities will avoid waterways through trenchless installation methods and will result in no impact to fish.
Pogonichthys macrolepidotus Sacramento splittail	CSC	Slow moving rivers, lakes, and sloughs in the Sacramento San Joaquin valleys.	Low	Project activities will avoid waterways through trenchless installation methods and will result in no impact to fish.
AMPHIBIANS				
Rana draytonii California red-legged frog	FT, CSC	Marshes, lakes, reservoirs, ponds, slow moving segments of streams, and other usually permanent water in lowlands, foothill woodlands, and grasslands. Requires aquatic habitat with extensive emergent vegetation.	None	The project site is outside of the known range of the species. Nearest occurrence (Occ. #814) from 2005 is approximately 29.9 miles south of the project site.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Spea hammondii Western spadefoot	CSC	Primarily found in grasslands but can be found in other open areas of woodlands, coastal sage scrub, and chaparral. Breeding requires ponded water, often occurring seasonally from rainfall.	Low	Poor quality habitat occurs at in seasonally inundated depressions and ditches. Due to proximity to roads, habitat is highly disturbed by offroad vehicle use. Nearest occurrence (Occ. #1295) from 2016 is approximately 10.4 miles southeast of the project site
REPTILES				
Emys marmorata Western pond turtle	CSC	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Needs basking sites and suitable upland habitat (sandy banks, grassy open fields) for egg laying	Moderate	Potentially suitable habitat occurs at several of the drainage crossings along the pipeline alignment. Nearest occurrence (Occ. #334) from 1998 is approximately 2.2 miles south of the project site.
Thamnophis gigas Giant gartersnake	FT, ST	Freshwater marshes and streams with summer water, emergent wetland vegetation and suitable basking habitat. Has adapted to drainage canals and irrigation ditches. Rice fields in the Central Valley are known to support GGS.	Moderate	Suitable habitat within Kimball Creek and rice fields in the area. Rice fields have been shown to be suitable aquatic habitat in the absence of natural aquatic habitat. Nearest contemporary occurrence (Occ. #192) from 2014 is located in a rice field approximately 8.2 miles west of the project site.
BIRDS				
Accipiter cooperii Cooper's hawk	WL	Typical nesting and foraging habitat includes riparian woodland, dense oak woodland, and other woodland near water. Breeding range from Central Valley and Sierra Nevada and Coast ranges.	Moderate	Species could forage or nest within trees in or near the project site. Nesting occurrences of this species are not always reported to CNDDB although it is relatively common in the region of project.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Accipiter striatus Sharp-shinned hawk	WL	Species feeds and nests in oak and pine woodlands and preys mainly on small birds but will also eat small mammals and insects.	Low	Species could forage in the vicinity of the project site, primarily in forested riparian at crossings. Nesting habitat along the pipeline alignment is very limited.
Agelaius tricolor Tricolor blackbird	ST, CSC	Colonial nesting species. Nesting habitat is often found near a source of water and in emergent wetland, grassland, or agricultural cropland.	High	Suitable nesting habitat is present within the study area, primarily at riparian crossings or in nearby wetlands with emergent vegetation. Individuals were observed during field surveys. There are approximately 8 occurrences of tricolor blackbird within 0.5 miles of the pipeline alignment. Notably, occurrence #508 from 2014 is located along the pipeline alignment on Forty Mile Road in blackberry habitat.
Ammodramus savannarum Grasshopper sparrow	CSC	Forages and nests in grasslands, fields, and prairies. Often nests in open fields with tall grasses and forbes and may nest in overgrown pastures and hayfields.	Low	Species is a very rare breeder in the region surrounding the project site. Potentially suitable nesting habitat is present along the pipeline alignment in several locations that support weedy grasslands. Nearest occurrence (Occ. #3) from 1994 is approximately 10.4 miles east of the project site.
Athene cunicularia Burrowing owl	CSC, BCC	Dry, open short grass, treeless plains that are associated with burrowing species. Underground nesting habitat in burrows.	High	Suitable burrowing habitat is present in the berm at the southern end of the wastewater treatment plant. An extensive California ground squirrel colony was observed and several of the burrows showed sign of renovation by burrowing owl. Nearest contemporary occurrence (Occ. #2003) from 2016 is approximately 8.1 miles southeast of the project site.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Branta hutchinsii leucopareia Cackling (=Aleutian Canada) goose	WL	Breeds in the Aleutian Islands and winters in the Central Valley of California. During the winter, it occurs in agricultural fields and pastures.	High (foraging) / None (nesting)	Overwintering foraging habitat is present in agricultural land surrounding the study area. Nearest occurrence (Occ. #12) from 1997 is located approximately 9.6 miles west of the project site.
Buteo swainsoni Swainson's hawk	ST, BCC	Breeds in stands with few trees in juniper-sage flats, riparian areas and in oak savanna. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	High	Suitable nesting habitat is present in study area within riparian corridors or other areas with large trees like Valley oak and eucalyptus. There are approximately 73 nesting occurrences within 10 miles of the pipeline alignment. Nearest occurrence (Occ. # 1529) from 2003 is less than 400 feet west of the pipeline alignment on Forty Mile Road.
Circus hudsonius Northern harrier	CSC	Forages and nests in freshwater and brackish marshes and their adjacent grasslands.	Present	Species was observed foraging over emergent wetland habitat during surveys. Potentially suitable nesting habitat occurs in grasslands that receive minimal levels of disturbance. Nearest occurrences (Occ #38) include nesting occurrences from 2000 at Beale Air Force Base approximately 4.5 miles east of the site.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FT, SE, CSC, BCC	During the summer breeding season, it can be rarely found in valley foothill and desert riparian habitats in California. Typically breeds in dense deciduous riparian vegetation.	Low	Potentially suitable habitat present at drainage crossings with riparian cover; however, riparian habitat in the Project area is lacking preferred size and density for nesting. Nearest occurrence (Occ. #91) from 1976 is approximately 2.9 miles northwest of the project site.
Elanus leucurus	FP	Rolling foothills / valley margins with scattered oaks and river bottomlands or	Present	Species was observed foraging near the project site during surveys. Potentially

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
White-tailed kite		marshes next to deciduous woodland. Forages over grasslands, marshes, and oak savannas close to isolated, dense-topped trees for nesting and perching.		suitable nesting habitat is located within the study area primarily in riparian corridors with trees.
Laterallus jamaicensis coturniculus California black rail	ST, FP, BCC	Permanent resident of brackish and freshwater marshes with tall, dense, emergent vegetation.	Low	Potentially suitable habitat is present at waterway crossings in the study area with dense emergent vegetation; however, the likelihood of occurrence is low due to a paucity of occurrences in the region. Occurrences of the year-round resident Sierra Nevada populations of California black rail are located approximately 10 miles east of the project site. Occurrence #235 from 2006 is located approximately 8.4 miles west of project site adjacent to a rice field.
Melospiza melodia Song sparrow (“Modesto” population)	CSC	Marsh and riparian scrub; Resident of the north-central portion of the Central Valley. Nests in emergent freshwater marshes, riparian habitat, and vegetated irrigation canals.	High	Suitable habitat is present within the study area particularly at waterway crossings and wetland habitat. Song sparrows were observed during surveys. The nearest contemporary occurrence (Occ. #86) from 2005 is approximately 8.5 miles southwest of the project site.
Riparia riparia Bank swallow	ST	Can be found along rivers and streams along the steep eroded banks where they nest. Can also be found nesting in quarries and road cuts.	None	There is no suitable nesting habitat at any of the waterway crossings along the pipeline alignment. Although the species may pass through or forage in the area, there is no suitable nesting habitat present. Nearest occurrences are located along the Feather River approximately 3 miles west of the project site.

Scientific Name **Common Name**	**Status[1]**	**Habitat**	**Likelihood of Occurrence**	**Rationale**
Vireo bellii pusillus Least Bell's vireo	FE, SE	Typically nests in riparian habitat with dense shrub cover and a structurally diverse canopy.	Low	Potentially suitable nesting habitat present at riparian crossings along the pipeline alignment with dense tree and shrub cover. The species is very rare in the region. Nearest occurrence (Occ. #524) from 1878 is approximately 4 miles northwest of the project site. The nearest contemporary occurrence of this species is approximately 36 miles south of the project site.
MAMMALS				
Antrozous pallidus Pallid bat	CSC	Day roosts is caves and crevices; occasionally roosts in hollow trees and buildings.	Low	Preferred habitat is not present at the project site. Potentially suitable habitat present in snags along riparian crossings. Nearest occurrence (Occ. #425) from 2015 is approximately 9.3 miles south of the project site.
Corynorhinus townsendii Townsend's big-eared bat	CSC	Coniferous forests, deciduous riparian woodlands, and semi-desert and montane shrub lands. Roost in dark places like caves and buildings.	None	No suitable habitat present at the project site.

[1] Status:
FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate
SE = California State Endangered
ST = California State Threatened
SCT = California State Candidate Threatened
SCT = California State Candidate Endangered
FP = CDFW Fully Protected
California Rare Plant Rank (CRPR) 1B.1 = Threatened in California and elsewhere, seriously threatened in California
CRPR 1B.2 = Threatened in California and elsewhere, moderately threatened in California
CRPR 2B = Plants rare, threatened, or endangered in California but more common elsewhere
CRPR 3 = Plants about which more information is needed
CRPR 4 = Plants of limited distribution
CSC = California Species of Special Concern
BCC = USFWS Bird of Conservation Concern
WL = CDFW Watchlist

4.7.1 Special-Status Plants

4.7.1.1 Sanford's arrowhead (*Saggitaria sanfordii*)

Sanford's arrowhead is a CRPR 1B.2 species. This species occurs in shallow freshwater wetland habitat. It is a perennial herbaceous species that blooms from May to October. The nearest occurrence (Occ. #98) which is an occurrence from 1955 located approximately 3.1 miles southwest of the project site. There is potentially suitable habitat for this species within creeks and large ditches or depressions supporting prolonged hydroperiod.

4.7.1.2 Brazilian watermeal (*Wolffia brasiliensis*)

Brazilian watermeal is a CRPR 2B.3 species. This species occurs in shallow freshwater marshes with perennial water. It is a perennial herbaceous species that floats above the water and blooms from April to December. The nearest occurrence (Occ. #5) from 2002 is located approximately 10.2 miles east of the project site. There is potentially suitable habitat for this species within the perennially ponded areas in drainage crossings. The proposed Project will avoid impacts to these areas through trenchless installation methods at waterway crossings and perennial ponded habitat.

4.7.2 Special-Status Wildlife

4.7.2.1 Vernal pool fairy shrimp (*Branchinecta lynchi*)

Vernal pool fairy shrimp is a Federally threatened species that occurs through much of the Central Valley and as far south as the Santa Rosa Plateau in Riverside County. This species occurs in two types of vernal pools; pooled water in small depressions of sandstone outcrops surrounded by foothill grasslands, and ponded water in small swales or depression basins with grassy or muddy bottoms in un-plowed grasslands (Eriksen and Belk, 1999). The habitat characteristics typical of the pools that support the vernal pool fairy shrimp include small, cool water pools, low to moderate concentrations of dissolved solids, and short and unpredictable durations. The vernal pool fairy shrimp can also occur in wet depression features with an appropriate hydroperiod.

There are two occurrences located less than 0.5 miles from the northern portion of the project site (CNDDB, 2022) that occur in roadside habitat similar to wet depression habitat observed along Rancho Road. Occurrence 708 is an occurrence within an irrigation ditch on Bernice Avenue recorded in 2007. Occurrence 709 is within pools surrounded by mowed grassland east of Powerline Road in Olivehurst recorded in 2013. Potentially suitable habitat occurs in seasonally inundated ditches and depressions, primarily along Rancho Road (Figures 2A through 2T). Due to proximity to the roadway, habitat in the study area is often highly disturbed by offroad vehicle use, trash dumping, and other urban influences and may be suboptimal for fairy shrimp occurrence; however, given proximity to other occurrences of this species in similar roadside habitat, occurrence cannot be ruled out. The southern portion of the existing WWTP emergency storage basin also supports ponded areas in the wet season; however, because of it's location within the existing WWTP and the routine disturbance of this area associated with WWTP operations, it was not considered suitable habitat.

4.7.2.2 Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

Valley elderberry longhorn beetle (VELB) is a federally threatened insect species. It is a moderate-sized, brightly colored, and sexually dichromatic beetle, and was listed as a Threatened species by the USFWS on August 10, 1980. The range of the VELB extends throughout California's Central Valley and associated foothills from about the 2,200-foot elevation contour on the east and the watershed of the Central Valley on the west According to Barr (1991), the evidence of VELB occurrence extends from Shasta County to the north, Kern County to the south, Placer and El Dorado counties to the east, and along the Middle River southwest of Stockton, San Joaquin County to the west.

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). Blue elderberry (*Sambucus mexicana)* plants are obligate hosts for the VELB, providing a source of food and broodwood. Because of the relatively large size of the VELB (0.5 to 1.0 inch), it is generally restricted to the larger branches and stems of older elderberry plants. Emergence holes are circular-to-slightly oval and usually 0.25 to 0.5-inch in diameter. Emergence holes are generally found on plants with branch and trunk girths with an average diameter of 3.3 inches but can occur in stems one inch or larger. Emergence holes have been found from a few inches above ground up to 10 feet, but over 70 percent are found are below 4 feet (Barr 1991).

The adult VELB lays eggs on the bark of the elderberry stem. The eggs hatch and the larvae bore into and feed upon the pith of the stem. When the larvae are ready to pupate, they bore exit holes in the stem, and then return to complete pupation. Adult beetles emerge from the pupae in late spring and can be found on foliage, flowers, stems, adjacent vegetation, or flying among elderberry plants between late April and early June. The entire life cycle is believed to encompass about two years from egg laying until the adults die (U.S. Fish and Wildlife Service, 1984).

The nearest recent occurrence (Occ. #190) is from 2006 and is approximately 3.8 miles west of the project site (CDFW, 2022). Surveys during the blooming season identified four elderberry shrubs within 165 feet (VELB encroachment buffer) of the project site along Rancho Road; however, these shrubs were east of the railroad and would not be impacted by the Project. A single elderberry shrub occurs on the shoulder of Forty Mile Road and within 20 feet (VELB core area) of proposed trench installed pipeline within the paved roadway. This shrub was very small though several stems were greater than one inch in diameter and is exposed to disturbance within the VELB Core Area due to its location at the edge of pavement on Forty Mile Road. No emergence holes occur on the shrub and this shrub is highly disjunct from riparian habitat and other elderberry shrubs. It is very unlikely this the VELB occurs in the study area, though habitat is present due to the presence of this single shrub.

4.7.2.3 Vernal pool tadpole shrimp (*Lepidurus packardi*)

Vernal pool tadpole shrimp is a Federally Endangered species. Vernal pool tadpole shrimp occurs in vernal pools within the Central Valley and the Sacramento-San Joaquin Delta east of San Francisco Bay (Rogers, 2001). This species inhabits freshwater habitats

containing clear to highly turbid water, with water temperatures ranging from 50 to 84 degrees Fahrenheit and pH ranging from 6.2 to 8.5.

There are three occurrences located less than one mile from the northern portion of the project stie. Occurrence #380 is located approximately 700 feet from the pipeline alignment on Mary Avenue in artificial seasonal wetlands recorded in 2016. Occurrence #221 is a 2004 occurrence located approximately 0.3 miles from the wastewater treatment plant in a field that has since been developed. Potentially suitable habitat occurs in seasonally inundated ditches and depressions. Due to proximity to the roadway, habitat in the study area is often highly disturbed by offroad vehicle use and may be suboptimal for tadpole shrimp occurrence.

4.7.2.4 Western pond turtle (*Emys marmorata*)

Western pond turtle (WPT) is a California species of special concern. The WPT occurs in open water habitats throughout much of California, although at much lower numbers and fewer localities than historical populations, especially in urban areas. WPT prefer slack or slow water habitats with dense stands of submergent or emergent vegetation for food and cover, and with abundant basking habitat. WPT are a semi-aquatic species inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities, but they require upland sites for nesting and over-wintering. Presence of nearby nesting sites and lack of exotic predators are also good habitat components (Bury, 1986).

The nearest occurrence (Occ. #334) is from 1998 and is approximately 2.2 miles south of the project site (CDFW, 2022). The project site has potentially suitable habitat for western pond turtle at several of the drainage crossings in the study area. There was, however, limited basking habitat identified during surveys and no western pond turtles were observed during field surveys.

4.7.2.5 Giant gartersnake (*Thamnophis gigas*)

Giant gartersnake (GGS) is a State and federally listed Threatened species found in emergent marsh habitats associated with waterways during spring and summer and hibernates in adjacent upland habitat during the winter. Due to extensive habitat loss, giant gartersnakes now inhabit remaining wetlands as well as highly modified habitats, such as agricultural areas. Active rice fields and their associated irrigations systems serve as an alternative habitat that is commonly used by giant gartersnake. These fields provide the habitat components typically required by giant gartersnake. Essential components of giant gartersnake habitat include:

- A fresh-water aquatic component with adequate water from early spring through fall to provide foraging habitat and cover;
- Emergent herbaceous wetland vegetation to provide foraging habitat, cover, and basking areas;
- An upland component near the aquatic habitat that can be used for thermoregulation, cover, and retreat; and

- An upland refugia component at higher elevation sites that will serve as winter hibernacula and provide cover and refuge from flood waters (Hansen and Brode, 1980; USFWS, 1997).

The nearest contemporary occurrence (Occ. #192) of GGS is a 2014 occurrence located in a rice field approximately 8.2 miles west of the project site. Potentially suitable habitat occurs within Kimball Creek and active rice fields in the area based on the presence of summer water, emergent wetland vegetation, and surrounding upland habitat. Reeds Creek may also provide potentially suitable habitat for GGS; however, the pipeline will be installed using trenchless techniques under Reeds Creek and all Project activities are setback more than 200 feet from Reeds Creek, and therefore will not impact GGS or its habitat at this location.

Hutchinson Creek has riparian cover and does not provide potential habitat for this species. Virginia Creek does not support emergent wetland vegetation thereby limiting its potential to provide suitable habitat for this species. Some other agricultural ditches or rice fields in the study area may provide suitable aquatic habitat for GGS; however, Project activities will be limited to pipeline installation activities within the paved roadway and will avoid disturbance to suitable aquatic or upland habitat at these locations.

4.7.2.6 Cooper's hawk (*Accipiter cooperii*)

Cooper's hawk is on the CDFW Watch List. These birds breed over much of California in forests, open woods and streamside trees. They utilize additional habitats for hunting, including chaparral and other scrub communities. Cooper's hawks have also become well adapted to heavily treed urban environments where they are commonly observed in public parks and around bird feeders. Nests can be built in a variety of trees, typically at heights ranging from 25 to 50 feet off of the ground. There are no recorded occurrences of this species near the project site and it was not observed during reconnaissance surveys (CDFW, 2022), however, nesting occurrences of this species are not commonly reported to CNDDB and this species is common in the region of the Project. Suitable foraging and nesting habitat for this species occurs along the pipeline alignment at forested riparian crossings.

4.7.2.7 Tricolored blackbird (*Agelaius tricolor*)

Tricolored blackbird is a state-listed Threatened species, California Species of Special Concern, and a Bird of Conservation Concern. The tricolored blackbird is a nomadic resident of the Sacramento and San Joaquin Valleys and lower foothills of the Sierra Nevada. This species is a colonial nesting species that nests near freshwater in dense cattails and bulrush, and also in thickets of willow, blackberry, wild rose, and tall herbs (Zeiner et al., 1990a). Estimates for colony size range from 15 to 47,000 birds. Flooded lands, pond margins, grass fields and agricultural fields constitute typical foraging habitat. Individual tricolored blackbirds were observed during field surveys along Forty Mile Road and Rancho Road.

There are approximately eight occurrences of tricolor blackbird within 0.5 miles of the pipeline alignment (CNDDB, 2022). Occurrence #508 is a 2014 occurrence located along the pipeline alignment on Forty Mile Road in a blackberry bramble that is still in

place near the southernmost waterway crossing. Suitable nesting habitat is present in many locations within the study area, but primarily at the waterway crossings with emergent vegetation and in the dense blackberry patch along Forty Mile Road.

4.7.2.8 Burrowing owl (*Athene cunicularia*)

Burrowing owl is a California Species of Special Concern and a Bird of Conservation Concern. The burrowing owl is a small, long-legged owl that differs from other species of owls by its use of underground burrows and its diurnal activity pattern (Mallette and Gould, 1976). It occurs throughout California except in humid northwest coastal forests and high mountains (Zeiner et al., 1990a). It's breeding range is dry, open short grass, treeless plains associated with burrowing mammals. It is also found on golf course, cemeteries, road rights-of-way, airports, vacant lots in residential areas, campuses, and fairgrounds (Haug et al., 1993).

Burrowing owls are semicolonial with 5 to 6 pairs per acre. The owls usually enlarge burrows excavated by ground squirrels or other fossorial species, but may excavate their own in soft, friable soils. The owls show a high level of site fidelity, and reuse burrows, but burrows may be used by different pairs in different years. Several burrows may be excavated with one used for nesting, while satellite burrows are used for escape, perching, and observation. They will also use pipes, culverts, debris piles, and nest boxes in areas where burrows are scarce. Burrows are generally surrounded by bare ground or short grass that afford unrestricted views. High perches and elevated areas with clear lines-of-sight, such as mounds, fences, or other structures, are used as for hunting and detecting predators including skunks, badgers, bobcats, coyotes, and barn owls.

The nearest recorded occurrence (Occ. #2003) is from 2016 and is approximately 8.1 miles southeast of the project site. Suitable burrowing owl habitat is present at the southern end of the wastewater treatment plant where an extensive California ground squirrel colony was observed on an earthen berm. Within this colony, several of the burrows showed signs of renovation by burrowing owls.

4.7.2.9 Swainson's hawk (*Buteo swainsoni*)

Swainson's hawk is a state-listed Threatened species and a Bird of Conservation Concern. This species breeds in open habitats in western North America from Alaska south to Mexico. It breeds in California, found mainly in the Central Valley, Klamath Basin, Northeastern Plateau, and Mojave Desert. It winters primarily on the pampas of southern South America, and Mexico, and a few winter in California, the southwestern U.S. and Florida.

This species forages in grassland or areas of sparse trees or shrubs, and often forages in agricultural areas in the Central Valley. It nests in the scattered trees within these habitats, particularly those along waterways. During the breeding season, it feeds primarily on small mammals and reptiles. During other seasons, large insects (especially grasshoppers) are the bulk of its diet.

In California, it usually arrives in March and April and departs in September or October. Loss of habitat is the major threat to this species in California. Residential and commercial development continues to replace Swainson's hawk habitat. Pesticides and

herbicides are also a major threat, particularly on their wintering grounds. They are also sensitive to disturbance while nesting and may abandon nests if disturbed before the eggs hatch.

The project site is in a region that has very high Swainson's hawk nesting activity. There are approximately 73 nesting occurrences within 10 miles of the study area. The nearest occurrence (Occ. # 1529) is from 2003 and is less than 400 feet west of the pipeline alignment on Forty Mile Road (CDFW, 2022). This species was not observed during field surveys because surveys were conducted during the winter when Swainson's hawk is not present in California. Suitable nesting habitat is present in many locations along the pipeline alignments particularly within riparian corridors with large trees like Valley oak, Fremont cottonwood, and eucalyptus. Swainson's hawk foraging habitat also occurs within agricultural fields and grasslands in the area.

4.7.2.10 Northern harrier (*Circus hudsonius*)

Northern harrier is a California Species of Special Concern. The Northern Harrier inhabits meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. It forages mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and, rarely on fish. Breeding typically occurs April to September, with peak activity June through July. Destruction of wetland habitat, native grassland, and moist meadows, and the burning and plowing of nesting areas during early stages of breeding cycle, are major reasons for the decline (Remsen, 1978).

Nearest occurrences are nesting occurrences at Beale Air Force Base approximately 4.5 miles east. This species was observed foraging over emergent wetland habitat within the study area during surveys. Potentially suitable nesting habitat occurs in grasslands in the area that receive minimal levels of disturbance.

4.7.2.11 White-tailed kite (*Elanus leucurus*)

White-tailed kite is a California Fully Protected species. It is a small raptor with a total length of about 12 inches and is often identified from a distance by its hovering or "kiting" behavior while hunting. White-tailed kites primarily prey on voles and other diurnal mammals, but will occasionally prey on birds, insects, reptiles, and amphibians. It typically forages over open grasslands and emergent wetlands. White-tailed kites nest in dense foliage in treetops near grassy foothills, marshes, riparian woodland, savanna, and partially cleared fields. Preferred nesting trees include oak, willow, sycamores, or other tree stands. White-tailed kites range from western California and southwestern Oregon to southeastern Arizona, and along the Gulf Coast from Texas to Florida (Wheeler and Clark, 1995).

There are no recorded occurrences of this species near the project site; however, it was observed foraging in the study area during surveys. The project site provides suitable foraging habitat for this species and suitable nesting habitat is present in the area.

4.7.2.12 Song sparrow ("Modesto population") (*Melospiza medlodia*)

The Modesto population of the song sparrow is endemic to California, where it resides only in the north-central portion of the Central Valley. Highest densities occur in the Butte Sink area of the Sacramento Valley and in the Sacramento-San Joaquin Delta. Song sparrows breed from mid-March to early August and are resident species of the Sacramento Valley and Delta. Song sparrows are frequently seen within mature riparian corridors, such as the Cosumnes and Stanislaus Rivers, and less frequently within irrigation canals and levees. The Modesto population of song sparrow has an affinity for emergent freshwater marshes dominated by bullrush and cattails as well as riparian willow (*Salix* sp.) thickets. Song sparrows also nest in riparian forests of valley oak (*Quercus lobata*) with a sufficient understory of blackberry, along vegetated irrigation canals and levees (Shuford et al., 2008); however, nest appear to be more successful in early succession riparian wetland communities, such as restoration sites.

The nearest contemporary occurrence (Occ. #86) is a 2005 occurrence approximately 8.5 miles southwest of the project site. Suitable habitat is present within the study area particularly at waterway crossings and in emergent wetland habitat. Song sparrows were observed during surveys.

4.8 WILDLIFE CORRIDORS

Wildlife migration corridors are generally defined as connections between fragmented habitat patches that allow for physical and genetic exchange between otherwise isolated wildlife populations. Migration corridors may be local, such as those between foraging and nesting or denning areas, or they may be regional in extent. Migration corridors are not unidirectional access routes; however, reference is usually made to source and receiver areas in discussions of wildlife movement networks. "Habitat linkages" are migration corridors that contain contiguous strips of native vegetation between source and receiver areas. Habitat linkages provide cover and forage sufficient for temporary inhabitation by a variety of ground-dwelling animal species. Wildlife migration corridors are essential to the regional fitness of an area as they provide avenues of genetic exchange and allow animals to access alternative territories as fluctuating dispersal pressures dictate.

Within the study area there are several natural drainages and riparian corridors that provide suitable migratory corridors for an array of species. These drainages and riparian areas include Reeds Creek, Hutchinson Creek, Kimball Creek, and Virginia Creek and other smaller unnamed waterways. These creeks help to provide access for wildlife to move from foothill habitat areas to valley habitat areas, including the Feather River, Sutter National Wildlife Refuge, and other wildlife areas. At the drainage crossings within the study area, the vegetation communities observed were a mix of natural riparian communities, emergent wetland vegetation, and annual grassland cover types. Signs of mammals moving through the riparian corridors were observed for several species including raccoon, coyote, and mink.

The Project is designed to avoid impacts to the drainage crossings and associated riparian corridors using trenchless installation methods for pipeline crossings at these

locations. Impacts to wildlife corridors will be limited to indirect temporary disturbance during construction, primarily during daytime hours.

5.0 REGULATORY SETTING

5.1 FEDERAL REGULATIONS

5.1.1 Federal Endangered Species Act.

The federal Endangered Species Act (FESA), administered by the USFWS and the NMFS (collectively referred hereafter as the "Services"), 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. The Services must make one of three possible findings for each species potentially affected:

No effect: The proposed action will not affect the listed species or critical habitat;

Not likely to adversely affect: Effects of the proposed action on the listed species are expected to be discountable (extremely unlikely to occur), insignificant (minimal impact without take), or beneficial; and

Likely to adversely affect: An adverse effect may occur as a direct or indirect result of the proposed action, and the effect is not discountable, insignificant, or beneficial.

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

5.1.2 Magnuson-Stevens Fishery Conservation and Management Act.

The NMFS administers the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.). The MSA is the primary law governing marine fisheries management in U.S. Federal waters. The MSA was first enacted in 1976 and amended in 1996. Amendments to the 1996 MSA require the identification of Essential Fish Habitat (EFH) for federally managed species and the implementation of measures to conserve and enhance this habitat. Any project requiring Federal authorization is required to complete and submit an EFH Assessment with the application and either show that no significant impacts to the essential habitat of managed species

are expected or identify mitigations to reduce those impacts. Under the MSA, Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1802(10)). The EFH provisions of the MSA offer resource managers a means to heighten consideration of fish habitat in resource management. Pursuant to section 305(b)(2), Federal agencies shall consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH.

5.1.3 Migratory Bird Treaty Act / Bald Eagle and Golden Eagle Protection Act

The USFWS 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.

5.1.4 Clean Water Act

The Corps and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredge and fill material into jurisdictional "waters of the United States" and wetlands under Section 404 of the Clean Water Act.

The Corps is responsible for the issuance of permits for the placement of dredged or fill material into Waters of the U.S. (WoUS) pursuant to Section 404 of the Clean Water Act (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 which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; interstate waters including interstate wetlands; and, territorial seas.

The Corps asserts jurisdiction over traditional navigable waters (TNW) and adjacent wetlands. 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]).

5.1.5 Rivers and Harbors Act

The Corps regulates activities affecting "navigable waters of the United States" under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403). Navigable waters are defined as "…those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." Structures or work under or over a navigable WoUS is considered to have an impact on the navigable capacity of the waterbody.

5.2 STATE REGULATIONS

5.2.1 California Endangered Species Act

CESA was enacted to protect fish, wildlife, and plant species in danger of, or threatened with, extinction in the State of California (Fish and Game Code §2051). CESA prohibits "take" of a state-listed species. Take is defined as "hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code §86). 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.

5.2.2 Fully Protected Species, Fish and Game Code Sections 3511, 4700, 5050, and 5515

This section of the California Fish and Game Code provides particular and special state protection to a list of 37 wildlife species and prohibits take or possession "at any time" with few exceptions and the CDFW cannot authorize incidental take of fully protected species.

5.2.3 California Fish and Game Code Section 3503

This section of the California Fish and Game Code prohibits the take, possession or needless destruction of nests or eggs of birds. It also prohibits the take, possession, or destruction of hawks or owls and the nests or eggs of any hawk or owl.

5.2.4 California Native Plant Protection Act

CDFW manages the California Native Plant Protection Act (NPPA) of 1977 (F&G Code Section 1900, et seq.), which was enacted to identify, designate, and protect rare plants. There are 64 species, subspecies, and varieties of plants that are designated rare under the NPPA. F&G Code Section 1913 provides utilities with an exemption from CESA permitting requirements for listed plants within the utility right of way. Specifically, Section 1913(b) states: "…the removal of endangered or rare native plants from a canal, lateral ditch, building site, road, or other right-of-way by the owner of the land or his agent, or the

performance by a public agency or a publicly or privately owned public utility of its obligation to provide service to the public, shall not be restricted because of the presence of rare or endangered plants." Section 1913(c) of the CNPPA requires the landowner to provide the CDFW with at least 10 days' notice to allow for plant salvage prior to affecting the species. In addition to NPPA designated rare plants, all California Rare Plant Rank (CRPR) 1 (A and B), Rank 2 (A and B), Rank 3, and some Rank 4 plants meet the definition of Rare or Endangered under the CEQA Guidelines §15125 and/or §15380. Potential impacts to these species are considered during CEQA review of a proposed project.

5.2.5 California Fish and Game Code Section 1600

Pursuant to Section 1602 of the Fish and Game 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. The CDFW claims jurisdiction over the bed, bank, and channel of drainage features with regard to activities regulated under Section 1602 of the California Fish and Game Code.

5.2.6 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act mandates that waters of the State of California shall be protected. Current policy in California is that activities that may affect waters of the State shall be regulated to attain the highest quality. Waters of the State include any surface water or groundwater, including saline waters, and any aquatic features that meet the state definition of a wetland, within the boundaries of the state. The Porter-Cologne Act establishes that the state assumes responsibility for implementing portions of the federal Clean Water Act, rather than operating separate state and Federal water pollution control programs in California. Consequently, the state is involved in activities such as setting water quality standards, issuing discharge permits, and operating grant programs.

5.2.7 Clean Water Act

Pursuant to Section 401 of the Clean Water Act, 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 California State Water Resources Control Board or one of the nine Regional Water Quality Control Boards (RWQCB) issues water quality certifications.

5.2.8 Oak Woodland Protection

California Senate Concurrent Resolution No. 17 (1989) is a Senate resolution that requests that… "all state agencies having land use planning duties and responsibilities…to assess and determine the effects of their land use decisions or actions within any oak woodland" and that agencies ...preserve and protect native oak woodlands to the maximum extent feasible…or provide for replacement plantings where designated oak species are removed from oak woodlands".

The Oak Woodlands Conservation Act (Section 1363 of the Fish and Game Code) was enacted in 2001. The program, which is managed by the Wildlife Conservation Board, is intended to:

- Support and encourage voluntary, long-term private stewardship and conservation of California oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands;
- Provide incentives to protect and encourage farming and ranching operations that are operated in a manner that protect and promote healthy oak woodlands;
- Provide incentives for the protection of oak trees providing superior wildlife values on private land, and;
- Encourage planning that is consistent with oak woodlands preservation.

5.3 LOCAL AND REGIONAL PLANS

5.3.1 Yuba County General Plan

The Yuba County General Plan contains goals and policies that are relevant to biological resource issues. The project site and pipeline alignments are within the County of Yuba and is therefore within the jurisdiction of this general plan. Policies within the general plan applicable to the proposed project are outlined below. The applicable sections of the General Plan are under the Natural Resources Element. Policies within the general plan applicable to the proposed project are outlined below (County of Yuba, 2011).

5.3.1.1 Biological Resources

Goal: Protect and restore habitat for special-status species that have the potential to occur in Yuba County.

Implementing Policies

Policy NR-5.1: New developments that could adversely affect special-status species habitat shall conduct a biological resources assessment and identify design solutions that avoid such adverse effects. If, after examining all feasible means to avoid impacts to special-status species habitat through project design, adverse effects cannot be avoided, then impacts shall be mitigated in accordance with guidance from the appropriate state or federal agency charged with the protection of the subject species, including pre-construction surveys conducted according to applicable standards and protocols, where necessary.

Policy NR-5.2: The County will coordinate its environmental review and mitigation requirements with the Yuba-Sutter NCCP/HCP, once adopted.

Policy NR-5.3: The County will support the continued development and implementation of the Yuba-Sutter NCCP/HCP, once adopted.

Policy NR-5.4: New developments shall be located and designed to preserve and incorporate existing native vegetation to the maximum extent feasible. Fire safety standards may override consideration of retaining existing vegetation in certain circumstances.

Policy NR-5.5: The County will support cooperative restoration, development, and promotion of natural resources with the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the Bureau of Reclamation, the U.S. Forest Service, and other public agencies with an interest in the Yuba County's water and wildlife assets.

Policy NR-5.6: The County will seek funding to enhance and restore habitat along the Yuba River, in coordination with development of recreational facilities and public access.

Policy NR-5.7: New developments and public investments near Yuba County's streams and rivers shall be designed to avoid tree removal, erosion, or other modifications that would adversely affect salmonid habitat.

Policy NR-5.8: New private developments adjacent to riparian areas shall provide a buffer designed and maintained to preserve existing wildlife habitat; provide habitat conditions favorable to native local wildlife; restrict activities that may adversely affect wildlife habitat quality; and restore degraded habitat, where feasible.

Policy NR-5.9: New developments shall be designed to avoid the loss of jurisdictional wetlands. If loss is unavoidable, the County will require applicants to mitigate the loss on a "no net loss" basis through a combination of avoidance, minimization, restoration, and/or constructed wetlands, in accordance with federal and state law.

Policy NR-5.10: The County will encourage measures on agricultural lands that conserve or restore habitat.

Policy NR-5.11: The County will support the use of mitigation fees from the Yuba-Sutter Natural Community Conservation/Habitat Conservation Plan to fund preservation and restoration elements of the County's open space strategy.

Policy NR-5.12: Any new developments adjacent to the Spenceville Wildlife Refuge, Marysville Wildlife Area, Feather River Wildlife Area, Daugherty Hill Wildlife Area, or Starbend Fishing Access shall be buffered from wildlife areas or otherwise designed to avoid adverse direct and indirect effects on wildlife. Buffers related to firearm use, if necessary, should occur within the public wildlife area.

Policy NR-5.13: New developments that could adversely affect wildlife movement corridors shall conduct a biological assessment and avoid placing any temporary or permanent barriers within such corridors, if they are determined to exist on-site. Avoiding barriers to wildlife movement may be accomplished at the project or community plan level.

Policy NR-5.14: The County will discourage development that would substantially and adversely affect the designated winter and critical winter range of the Mooretown or Downieville deer herd.

Policy NR-5.15: Roads, water lines, sewer lines, drainage facilities, and other public facilities constructed to serve unincorporated County development shall be located and designed to avoid substantial impacts to stream courses, associated riparian areas, and wetlands, to the greatest extent feasible.

5.3.1.2 Trees and other Important Vegetation

Goal: Preserve the County's trees and other vegetation that provide aesthetic and habitat benefits.

Implementing Policies

Policy NR-10.1: Building placement, grading, and circulation should be planned to retain as much existing native vegetation as feasible, with a priority on preserving existing oak trees that have a diameter at breast height (dbh) of 6 inches or greater and all other trees that have a dbh of 30 inches or greater. The County's policies and standards for fire safety may override consideration of retaining existing vegetation in certain circumstances.

Policy NR-10.2: The County will encourage the preservation of healthy, attractive native vegetation during land development. Where this is not feasible, the County will require landscaping that uses climate-appropriate plant materials.

6.0 SIGNIFICANCE CRITERIA

The impact of the project on biological resources was evaluated in terms of mandatory findings of significance at Section 15065 of CEQA and Appendix G of the State CEQA Guidelines (Governor's Office of Planning and Research, 1999). The various components of the project were considered in association with site conditions and were evaluated against CEQA criteria and County General Plan policies pertaining to biological issues. In accordance with these CEQA Guidelines, a project will normally result in a significant impact if any of the following conditions would result from project implementation:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulation, or by the CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site;
- Conflict with any local polices or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and,
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.

Additionally, the CEQA Guidelines Initial Study Land Use and Planning checklist notes that conflicts with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project should be considered during a project's environmental review.

7.0 IMPACTS AND MITIGAITON MEASURES

Effects on biological resources in the Project area will be primarily temporary with permanent impact limited to above ground project features such as the WTP and lift stations and pump stations. There will be temporary impacts to wildlife habitat during pipeline installation and construction of above ground structures. General construction may temporarily alter the natural movement and behavior of wildlife in the Project area. Construction may also result in indirect impacts that affect the quality of habitat in the Project area.

7.1 IMPACT CATEGORIES

Short-term and long-term impacts are analyzed for the proposed project. Each impact statement is classified as to the level of significance, based on the significance thresholds from Section 6.0, and the availability of measures to feasibly mitigate project effects. Impact categories include:

- **Potentially Significant Impact** is an adverse effect that cannot be mitigated. This category of impact is one for which a solution has not been formulated, either because of the limits of technical and/or scientific knowledge, or unfeasibility from a technical, economic, and/or political perspective. Under CEQA, a Significant Unavoidable impact would require a “finding of overriding consideration” by the Lead Agency to approve the project;
- **Less than Significant with Mitigation** is an adverse environmental effect that can be mitigated to less than significant levels. Measures have been identified that can feasibly be implemented and will avoid the impact altogether by not taking a certain action or parts of an action; minimize impacts by limiting the degree or magnitude of the action and its implementation; rectify the impact by repairing, rehabilitating, or restoring the affected environment; or compensate for the impact by replacing or providing substitute resources or environments;
- **Less than Significant Impact** is an environmental effect that is less than significant or has no identified impact. These impacts may be adverse, but are not of a sufficient magnitude, intensity, or duration to disrupt the environment, and have no serious consequences. As a result, no mitigation is required; and
- **No Impact** is when the Project would not result in any impact in the category, or the category does not apply.

7.2 PROJECT IMPACTS

Effects on biological resources in natural or semi-natural areas due to development take the form of direct impacts, including habitat loss and fragmentation, introduction of barriers to movement and dispersion, and conversion of native communities to developed conditions. Development may also result in indirect impacts that affect the quality of habitat on the project site and in the project area. Indirect impacts include invasion of non-native plants into natural areas, noise disturbances, and declines in air and water quality. The proposed improvements associated with the South County Infrastructure Project are

primarily within developed areas in the community of Olivehurst and in developed roadways and disturbed areas in rural southern Yuba County. All of the proposed alignments for trench installed pipelines are within the paved roadway and disturbed shoulder, with the exception of short overland connections to permanent above ground features (e.g. WP, Lift Stations, and Pump Stations). Trenchless construction methods are proposed for large drainage crossings to avoid impacts to waterways and riparian habitat. Permanent above ground Project features are sited within upland areas and disturbed or developed areas to the extent feasible to minimize habitat loss.

The following analysis provides an assessment of potential impacts from the proposed Project activities and includes Project-specific applicant proposed measures, and/or prescribed mitigation measures to reduce impacts to special-status species or other biological resources to a level of less than significant.

7.2.1 Vegetation Communities

The permanent, above ground features associated with this Project will result in approximately 2.43 acres of conversion to developed lands. Construction of the Pump Stations and Lift Stations and the WP will occur in annual grassland, ruderal, developed, disturbed, and agricultural lands. Installation of the pipeline alignments using trench installation and bored trenchless methods will result in temporary impacts, primarily within the paved roadway and unvegetated road shoulder but include pipeline connections to pump stations, lift stations, and the WP through overland areas including annual grassland, disturbed lands, and roadside ditches and depressions that are seasonally inundated. HDD installed highway and waterway crossings will result in temporary impacts from the HDD workspace and the pipe string staging area. Table 6 summarizes the permanent and temporary impacts associated with the Project.

Table 6. South County Infrastructure Project Impacts

Feature	Cover Type	Impact Area (Acres)
Permanent Impacts		
Pump Station 1	Annual Grassland, Ruderal (urban vacant lot)	0.19
Pump Station 26	Annual Grassland, Ruderal (urban vacant lot)	0.46
Pump Stations 21	Annual Grassland	0.24
Lift Station 22	Annual Grassland	0.10
Lift Station 23	Agricultural (rice), Roadside ditch / depression (seasonally inundated)	0.12
Pump Station 25	Disturbed land (Unpaved parking lot)	0.23

Feature	Cover Type	Impact Area (Acres)
Pump Station 24	Annual Grassland	0.14
Water Plant	Disturbed land (Stockpile / staging area)	0.95
Temporary Impacts		
SR 70 HDD (McGowan Pkwy)	Developed land (paved roadway)	0.29
SR 65 HDD (Olive Ave – Rancho Rd)	Annual Grassland, Wet depression (seasonally inundated)	0.95
Reeds Creek HDD (Rancho Rd)	Disturbed land (road shoulder), Roadside ditch / depression (seasonally inundated), annual grassland, agricultural	0.88
Hutchinson Creek HDD (Rancho Rd)	Annual grassland, Disturbed land (road shoulder), agricultural	1.28
SR 65 HDD (Rosser Rd – Shimer Rd)	Grazed pasture, developed land (paved road)	0.69
Kimball Creek HDD (Rancho Rd)	Annual grassland, Roadside ditch / depression (seasonally inundated)	0.90
Virginia Creek Bore (Rancho Rd)	Developed land (paved road), disturbed land (road shoulder)	0.02
Kimball Creek Bore (Forty Mile Rd)	Developed land (paved road)	0.03
Trench Installed Pipeline[1]	Developed land (paved road), Disturbed land (road shoulder), Annual Grassland, Roadside ditch / depression (seasonally inundated)	--
[1]Total acreage not available for 32.6 miles of trench installed pipeline because trench width and depths are variable and not fully defined. Trench installed pipeline will occur primarily in existing roadways in developed and disturbed land.		

Temporary disturbance areas within or near sensitive areas (e.g. riparian corridors, waterways and wetlands, and suitable habitat for special-status species) will require work within designated workspace and delineation of the work areas to prevent encroachment on sensitive areas. Limited tree removal may occur in some of these work areas though the number, type, and size of trees that may need to be removed is unknown.

No mitigation is proposed for permanent or temporary impacts to developed lands, disturbed lands, and upland annual grasslands and ruderal areas. Yuba County does not have a tree ordinance that would require mitigation for the loss of individual oak trees and no mitigation for tree removal is proposed.

Cover types that are regulated habitats or potentially suitable habitat for special-status species will be addressed by recommended mitigation outlined by resource or species below.

7.2.2 Aquatic Resources

The proposed Project may result in impacts to aquatic resources at Lift Station 23, several of the HDD workspace areas, and several of the pipeline connection crossings. Additionally, the HDD waterway crossings will involve the use of drilling fluids that present the unlikely potential for inadvertent returns to the waterways. These aquatic resources may be regulated by the Corps under Section 404 of the Clean Water Act, the RWQCB under Section 401 of the Clean Water Act, and/or the CDFW under Section 1600 of the California Fish and Game Code. These areas were identified and mapped for the purposes of avoidance during biological reconnaissance surveys (Figures 2A through 2T). A preliminary aquatic resource delineation was not conducted as part of the reconnaissance surveys and full avoidance of these features may not be feasible; therefore, some of the following authorizations may be required:

- Clean Water Act Section 404 Discharge/Fill Permit by the Corps;
- Clean Water Act Section 401 Water Quality Certification by the CVRWQCB; and,
- Fish and Game Code Section 1600 Lake/Streambed Alteration Agreement with CDFW

Construction of the project may result in impacts to regulated aquatic resources. **(Potentially significant)**

Mitigation BIO-1:

BIO-1A: Prior to the initiation of construction, OPUD or its contractor shall conduct a preliminary aquatic resource delineation of the project site to define the limits of jurisdictional areas and determine the extent of project impacts. The delineation will be verified by the Corps. The verified delineation will provide OPUD with the impact acreage necessary for preparing a WoUS/Wetland Mitigation Plan and/or permit application if impacts to jurisdictional areas cannot be avoided. If the Project can fully avoid delineated aquatic resources, no further mitigation would be required. If the Project cannot fully avoid delineated aquatic resources, 1A-1 will apply.

1B-1: If project impacts to federal and state jurisdictional areas are identified, OPUD shall obtain all necessary permits for impacts to WoUS and wetlands from the Corps and RWQCB and/or for potential impacts to stream features from CDFW prior to project implementation. Implementation of the Project shall comply with all permit conditions. Compensatory mitigation must be consistent with the Corps' standards pertaining to mitigation type, location, and ratios, but will be accomplished with a minimum of 1:1 replacement ratio.

If compensatory mitigation is needed, OPUD may satisfy all or a portion of WoUS and wetlands mitigation through the purchase of "credits" at a mitigation bank approved by the Corps, RWQCB, and/or CDFW for compensatory mitigation of

impacts to hydrologically similar WoUS, or through other means, such as on- or off-site wetland creation, conservation easement, contribution to approved in-lieu habitat fund, etc. The mitigation plan must be approved by the permitting agencies and shall be implemented by OPUD subsequent to plan approval.

BIO-1B: The proposed HDD installations under regulated drainages have a small potential to "frac out" or inadvertently release drilling muds to the surface during the drilling operations. Because of the potential for a frac-out to impact waters and wetlands at the drainage crossings, OPUD or its contractor shall prepare and implement an Inadvertent Returns Contingency Plan that outlines the measures that will be taken to prevent inadvertent returns and outlines the response measures to be employed and response equipment to be maintained onsite for use in the unlikely event of an inadvertent return during drilling operations.

7.2.3 Special-Status Plants

The likelihood of occurrence of special-status plant species within Project disturbance areas is limited because most impacts are within cover types not known to support special status plants. Potential for occurrence of special-status plants within suitable habitat areas is limited due to the level of disturbance in roadside ditches and depressions that provide seasonally inundated habitat. Two plant species were identified as having a moderate potential for occurrence within creeks or large ditches or depressions that support a prolonged hydroperiod. The Project will avoid impacts to the drainage crossings through the use of trenchless pipeline construction methods; however, impacts to seasonally inundated ditches and depressions may provide habitat for Sanford's arrowhead, particularly in large ditch or depression features that support a prolonged hydroperiod, such as those along the southern portion of Rancho Road. Project impacts to some of these areas can not be avoided.

Because of this, there is some potential for Project related impact to special-status plants in locations where impacts to seasonally inundated ditches and depressions could not be avoided or where workspaces and trench installed pipeline will occur in close proximity to these features. Construction of these features may have an impact on special-status plants. **(Potentially significant)**

Mitigation BIO-2:

BIO-2A: Pre-construction special-status species plant surveys shall be conducted by OPUD or its contractor in all impact areas that provide potentially suitable habitat for special-status plants prior to initiating Project construction activities. All surveys shall be conducted in accordance with agency approved survey protocols during the appropriate blooming period. If no special-status species are identified in protocol surveys, no additional mitigation is required. If surveys determine that special-status species occur within impact areas, BIO-2B shall apply.

BIO-2B: If special-status plants are identified within Project impact areas, one of the following measures shall apply:

2B-1: If feasible, the Project shall be adjusted to avoid impacts to special-status plants. If modifications can be made to avoid special-status species, the installation of protective fencing may be necessary to prevent accidental encroachment. If

adjustment of construction areas or methods is not feasible, MM BIO 2B-2 shall apply.

2B-2: If there is no feasible alternative to special-status plant species impacts, OPUD shall mitigate for impacts to special-status plants. A Mitigation Plan shall be prepared and implemented that provides for plant salvage, transplantation, seed collection and replanting, and/or topsoil collection and replacement as appropriate for the species identified within the project impact area. Transplantation or seed placement shall be within suitable habitat within restored habitat after completion of construction for temporary impacts or within offsite habitat at a mitigation site for permanent impacts. The Mitigation Plan shall outline monitoring requirements to ensure successful establishment of special-status plants, performance criteria established are achieved, and no net loss of special-status plants after the prescribed monitoring period.

7.2.4 Special-Status Wildlife

7.2.4.1 Vernal Pool Branchiopods

Seasonally inundated wetlands, vernal pools, ditches and depressions provided suitable habitat for vernal pool branchiopods (VPBs) including the listed vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*). There are two occurrences of vernal pool fairy shrimp located less than 0.5 miles from the northern portion of the project site (CNDDB, 2022) that occur in seasonally inundated roadside habitat similar to wet ditch and depression habitat observed within the study area. There are no classic vernal pool landscapes within the study area, but potentially suitable habitat for VPBs occurs in seasonally inundated ditches and depressions that provide a sufficient hydroperiod primarily along Rancho Road (Figures 2A through 2T). Due to proximity to the roadway, habitat in the Project area is often highly disturbed by offroad vehicle use, trash dumping, and other urban influences and therefore may be suboptimal for fairy shrimp occurrence; however, given proximity to other occurrences of this species in similar roadside habitat, occurrence cannot be ruled out.

Project impacts to seasonally inundated ditches and depressions may provide habitat for VPBs, particularly the vernal pool fairy shrimp. Because of this, there is some potential for Project related impacts to VPBs in locations where impacts to seasonally inundated ditches and depressions could not be avoided or where workspaces and trench installed pipeline will occur in close proximity to these features. Construction of these features may have an impact on VPBs. **(Potentially significant).**

Mitigation BIO-3:

A Section 7 Consultation with USFWS shall be conducted to analyze the direct and indirect effects on listed species and to obtain regulatory permits and authorizations for impacts to listed species and loss of habitat. Measures and requirements outlined in agency authorizations may supersede the following measures.

Indirect Impacts:

The trench installed pipeline within Rancho Road is proposed to be constructed in or on the shoulder of the existing paved roadway and will not directly impact seasonally inundated ditch or depression features. Trench installation of the pipeline alignment on

this road will involve construction in close proximity to potentially suitable habitat for VPBs in seasonally inundated ditches and depressions immediately adjacent to the roadway. Additionally, HDD workspace at several locations occurs immediately adjacent to potentially suitable habitat for VPBs. Indirect impacts could occur in areas where construction will be in close proximity to seasonally inundated ditch and depression features. These include the following:

- Pipe string staging area off north end of Rancho Road at the SR 65 HDD crossing
- Trench installed pipelines in the paved roadway or disturbed road shoulder on Rancho Road
- Pipe string staging area adjacent to Shimer Road at the SR HDD crossing
- HDD workspace and pipe stating area southeast of Kimball Creek and northeast side of Rancho Road
- Bore pit locations in the paved road and disturbed road shoulder on Rancho Road at the Virginia Creek crossing.

BIO-3A: Trench excavation and stockpiling for pipeline installation shall be entirely located within the paved roadway or disturbed shoulder on Rancho Road in areas where seasonally wet ditches and depressions were mapped adjacent to the roadway. Equipment staging and trench excavation in these areas will be limited to designated workspace areas in the paved roadway and shoulder. To reduce the potential for indirect impacts to seasonally inundated ditches and depressions in close proximity to construction activities, but where no direct impacts will occur, the following measures shall apply:

3A-1: Prior to the initiation of construction, crews shall attend an environmental Awareness Training Program will include information regarding the potential presence of listed branchiopod species and the importance of avoiding impacts to these species and their habitat.

3A-2: All work shall be conducted during the dry season when potential habitat features on or near the proposed pipeline installation areas are dry.

3A-3: Fencing shall be placed and maintained to delineate the approved work areas and prevent encroachment on seasonally inundated ditch and depression features. A qualified biologist shall oversee the installation of fencing. Once fencing is installed, a biologist will inspect fencing weekly to ensure its integrity and effectiveness.

3A-4: All excavation, construction staging, and stockpiles shall be limited to paved roadways, disturbed shoulder, and approved work areas.

3A-5: Storm water BMPs (silt fencing and straw waddles) shall be placed around construction disturbance and dirt stockpiles to reduce potential for erosion and sedimentation into potential branchiopod habitat features.

3A-6: No application of water (e.g., dust suppression) shall occur in seasonally inundated ditch or depression features without additional measures (such as barriers and/or use of low flow water truck nozzles) in place to keep water out of potential or known VPB habitat features during the dry season.

3A-7: Any groundwater encountered within the trench excavation shall not be discharged to areas where seasonally inundated ditch or depression features are located.

Direct Impacts:

Direct impacts may occur in areas where impacts to seasonally inundated ditch and depressions cannot be avoided including HDD workspace areas at two of the drainage crossings and Lift Station 23. These include:

- Pipe string staging area off north end of Rancho Road at the SR 65 HDD crossing
- HDD workspace on the northwest side of the Reed Creek crossing on Rancho Road
- HDD workspace on the northwest side of the Kimball Creek crossing on Rancho Road
- Lift Station 23 and the pipeline connection to Lift Station 23

BIO-3B: If avoidance of habitat features as outlined in BIO-3A is not feasible and direct impacts (temporary or permanent) will occur to seasonally inundated ditch and depression features, compliance with one of the following mitigation measures (3B-1 or 3B-2) shall be required:

3B-1: Prior to the initiation of construction, surveys conducted in accordance with USFWS protocols shall be conducted in all potentially suitable habitat to be impacted. If protocol surveys determine that the seasonally inundated ditch and depression features are not occupied by federally listed vernal pool branchiopod species, no further mitigation is required for impact to species habitat (mitigation for jurisdictional aquatic features consistent with BIO-1 may still apply). If protocol surveys detect the presence of federally listed species, then the following measures shall be implemented:

(a) Prior to the initiation of construction, construction crews shall attend an Environmental Awareness Training Program will include information regarding the potential presence of listed branchiopod species and the importance of avoiding impacts to these species and their habitat.
(b) All work shall be conducted during the dry season when potential habitat features on or near the proposed pipeline installation areas are dry.
(c) Fencing shall be placed and maintained around any avoided (preserved) seasonally inundated ditch and depression features to prevent encroachment. A qualified biologist shall oversee the installation of fencing. Once fencing is installed, a biologist will inspect fencing weekly to ensure its integrity and effectiveness.
(d) A USFWS approved biologist shall monitor construction activities in known or potential vernal pool branchiopod habitat that results in temporary or permanent impacts.
(e) For temporary impacts that will be restored after construction, a Site Restoration Plan outlining requirements for topsoil collection, preservation, and

restoration will be prepared and approved by the USFWS. Implementation of the approved Plan shall include the following requirements at minimum. Prior to excavation in locations with potential or known vernal pool branchiopod habitat, the uppermost soil layer that may contain branchiopods eggs (cysts) shall be collected, labelled, and stored under appropriate climatic conditions until construction in temporary impact areas is complete. Once construction is complete, topsoil shall be placed back in the feature from which it was collected.

(f) For permanent impacts, loss of vernal pool branchiopod habitat shall be mitigated through the purchase of mitigation credits at a USFWS approved mitigation bank in accordance with mitigation ratios approved by the USFWS.

3B-2: If the applicant chooses not to conduct protocol-level surveys, they may assume presence of listed vernal pool branchiopod species within seasonally inundated ditch and depression features that provide potentially suitable habitat. If presence of listed species is assumed, then measures 3B-1(a) and 3B-1(f) outlined above shall apply to mitigate impacts to a less than significant level.

7.2.4.2 Valley Elderberry Longhorn Beetle

Surveys during the blooming season identified four elderberry shrubs within 165 feet (VELB encroachment buffer) of Project activities along Rancho Road; however, these shrubs were east of the railroad and would not be impacted by the Project by accidental encroachment. A single elderberry shrub occurs on the shoulder of Forty Mile Road and within 20 feet (VELB core area) of a proposed trench installed pipeline within the paved roadway. This shrub was very small, though several stems were greater than one inch in diameter. The shrub is exposed to frequent disturbance within 20 feet of the canopy due to its location at the edge of pavement on Forty Mile Road. No emergence holes occur on the shrub and this shrub is highly disjunct from riparian habitat and other elderberry shrubs. It is very unlikely that the VELB occurs, though habitat is present due to the presence of this single shrub and could be indirectly impacted **(Potentially significant).**

Mitigation BIO-4:

Implementation of the Project will not require removal of the shrub; however, a 20-foot protective buffer is not possible because that would extend the buffer into the paved travel lane. The following measures will ensure that the blue elderberry shrub is not directly impacted by the Project. Prior to the initiation of construction, a Section 7 Consultation with USFWS shall be conducted to analyze the direct and indirect effects on listed species and to obtain regulatory permits and authorizations for impact to listed species and loss of habitat. Measures and requirements outlined in agency authorizations may supersede the following measures.

BIO-4A: A 20-foot exclusion zone extending from the dripline of the shrub shall be maintained during construction in all directions away from the pavement. The exclusion zone will be reduced on the pavement side of the shrub to the edge of gravel roadway shoulder so that the fencing will not interfere with the roadway. Consistent with measures outlined by the USFWS to mitigate potential impacts to VELB, the following measures shall be implemented:

4A-1: Fence and flag the elderberry shrub to be avoided and provide a minimum setback of at least 20 feet from the dripline of the elderberry plant for ground disturbance activities (e.g. trenching) to ensure that activities will not damage or kill the elderberry shrub. Due to its location at the edge of pavement on Forty Mile Road, the 20-foot setback will be adjusted (reduced) consistent with the edge of the gravel road shoulder so that fencing does not interfere with the paved roadway.
4A-2: Prior to the initiation of any construction, environmental training shall brief the contractors and key employees of the need to avoid any impacts to the elderberry plants, and to advise them of penalties associated with damage or destruction of the plants. The work crew shall be instructed regarding the status of the VELB and the need to protect its elderberry host plant, and possible penalties for non-compliance with avoidance and minimization measures.
4A-3: A qualified biologist shall monitor the work area at project-appropriate intervals to assure that all avoidance and minimization measures are implemented. The amount and duration of monitoring will depend on the timing of Project activities, and shall be determined in coordination with the USFWS biologist.
4A-4: As much as feasible, all activities within 165 feet of the elderberry shrub, will be conducted outside the flight season of the VELB (March-July).
4A-5: No insecticides, herbicides, fertilizers, or other chemicals that might harm the VELB or its host plant shall be used within 100 feet of any elderberry plant with a stem measuring 1.0 inch or greater in diameter at ground level.
4A-6: Mechanical vegetation removal within the dripline of an elderberry shrub shall be limited to the season when adult VELB are not active (August-February) and shall avoid damaging the elderberry.
4A-7: Erosion control will be implemented, and the affected construction area shall be revegetated with appropriate native plants.

7.2.4.3 Giant Garter Snake

Potentially suitable habitat occurs within Kimball Creek and active rice fields in the Project area based on the presence of the three habitat components necessary to support giant garter snake (GGS), which include, aquatic habitat in the summer with emergent vegetation and a prey base, an upland component near aquatic habitat for thermoregulation and summer shelter in burrows, and an upland refugia component for use as winter hibernacula (USFWS, 1993). Reeds Creek may also provide potentially suitable habitat for GGS; however, the pipeline will be installed using trenchless techniques under Reeds Creek and all Project activities are setback more than 200 feet from Reeds Creek, and therefore will not impact GGS or its habitat at this location. Other suitable habitat in the study area, including agricultural ditches and rice fields along Forty Mile Road, were in areas where pipeline installation activities are limited to the paved roadway and will avoid impacts to suitable aquatic or upland habitat.

Impacts associated with the construction of Lift Station 22 adjacent to Kimball Creek will impact suitable upland habitat for GGS and the loss of a small portion of suitable aquatic habitat within the northwest corner of a rice field associated with construction of Lift Station 23, which will be inactive at the time of construction, will result in a small amount of suitable aquatic habitat for GGS (**Potentially Significant).**

Mitigation BIO-5:

BIO-5A: The Project will result in approximately 0.12-acre of loss of rice field for the construction of Lift Station 23 and 0.10-acre of upland grassland habitat adjacent to Kimball Creek. Because these features provide potentially suitable upland and aquatic habitat for GGS, the following measures are identified.

5A-1: Prior to the initiation of construction, construction staff shall attend an Environmental Awareness Training Program that will include information regarding identification of giant gartersnake and its habitat, protection measures for the species, and procedures to follow if a giant gartersnake or unknown snake is observed.

5A -2: Construction of Lift Station 23 will occur when the rice field is inactive and has been dry for a minimum of 15 days.

5A -3: Construction of Lift Station 22 and Lift Station 23 and the HDD installation of pipelines under Kimball Creek, including all activities within 200 feet of Kimball Creek and the rice field at LS 23, shall be restricted to the period between May 1 and October 1. This is the active period for GGS when the potential for direct mortality is reduced because GGS can actively avoid disturbance.

5A -4: Prior to the start of the Kimball Creek HDD, construction of Lift Station 22, or the construction of Lift Station 23, a qualified biologist shall conduct a preconstruction survey for GGS at these locations prior to the initiation of disturbance. Exclusion fencing shall be installed, as directed by the qualified biologist, to isolate the workspace within 200 feet of suitable aquatic habitat and exclude snakes from the work areas. Exclusion fencing will be buried at the base to prevent snakes from moving under the fence into the construction area. Exclusion fencing shall be maintained for the duration of work in these areas and shall be routinely inspected by the qualified biologist to ensure the fencing is intact and effective. The workspace shall be inspected prior to the start of work each day to ensure that no snakes have entered the work area.

5A -5: If a GGS is observed, the USFWS and CDFW shall be notified immediately. Construction will be suspended in the area until the snake leaves the site of its own volition.

5A -6: All excavations within 200 feet of suitable GGS habitat shall be covered or have escape ramps installed to prevent entrapment prior to the end of work each day. These excavations shall be inspected by the qualified biologist prior to the start of work the following day.

5A -7: Erosion control materials shall consist of tightly woven fibers and netting to prevent entanglement of reptiles and amphibians. No monofilament materials will be allowed.

7.2.4.4 Western pond turtle

The project site has potentially suitable habitat for western pond turtle at the drainage crossings and wetlands in the study area, though suitable basking habitat was limited.

Suitable habitat for western pond turtle includes aquatic habitat with basking sites available for thermoregulation and nearby upland breeding habitat. Because of the proximity of the Project to potential western pond turtle habitat, there is potential for impact to the western pond turtle. **(Potentially significant)**.

Mitigation BIO-6:

BIO-6A: A preconstruction survey for western pond turtle shall be conducted no more than 48 hours prior to the start of construction within 150 feet of the drainages or other suitable wetland habitat. If no western pond turtles are observed, no further mitigation is necessary. If a western pond turtle is observed within the Project area, a qualified biologist will relocate the individual to a suitable habitat location outside of the construction area. If a pond turtle nest is identified, exclusion fencing shall be placed a minimum of 25 feet around the nest and disturbance to the area will be avoided until the hatchlings have emerged. The nest will be monitored daily by the qualified biologist to ensure nestlings emerge to a suitable habitat area safely outside the construction zone.

7.2.4.5 Swainson's Hawks

Nest Disturbance. The state-threatened Swainson's hawk is known to nest and forage in the Project vicinity and suitable nest trees occur within the study area, particularly within riparian habitat with large trees surrounded by foraging habitat in agricultural fields and grasslands. The project site is in a region that has very high Swainson's hawk nesting activity. There are approximately 73 nesting occurrences within 10 miles of the study area. The nearest occurrence (Occ. # 1529) is from 2003 and is less than 400 feet west of the pipeline alignment on Forty Mile Road (CDFW, 2022). This species was not observed during field surveys because surveys were conducted during the winter when Swainson's hawk is not present in California.

Because Swainson's hawk is a State-listed species, and there are known nesting occurrences in the vicinity of the Project area, there is the potential that construction near Swainson's hawk nesting areas could disrupt breeding activities if construction occurs during the nesting season.

The following mitigation measure would reduce impacts to nesting Swainson's hawk resulting from Project construction **(Potentially significant).**

Mitigation BIO-7 – Nest Disturbance:

BIO-7A: If construction or vegetation removal work occurs outside of Swainson's hawk nesting season (August 31 to Feb 1), impacts to the Swainson's hawk would be avoided. Surveys would not be required for work conducted during that part of the year, and no further mitigation for nest disturbance would be required. If construction is scheduled to occur during the Swainson's hawk nesting season (Feb 1 to August 31), the following measures would be required to reduce impacts to a less than significant level.

BIO-7B: If project activities occur between February 1 to August 31, surveys shall be conducted by a qualified biologist for active Swainson's hawk nests. OPUD or its contractor shall conduct a protocol-level survey in conformance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley,* (Swainson's Hawk Technical Advisory Committee, 2000) hereby incorporated by

reference. This protocol prescribes minimum standards for survey equipment, mode of survey, angle and distance to tree, speed, visual and audible clues, distractions, notes and observations, and timing of surveys. If the surveys show that there are no active Swainson's hawk nests within 0.25-mile of construction activities, then no further mitigation for nest disturbance will be required. If active Swainson's hawk nests are identified near the project area, a 0.25-mile nest protection buffer shall be identified, and the following measures shall be required:

> **7B-2:** Apply a nest protection buffer with a minimum distance of 0.25-mile from an active nest. Postpone Project activities within the nest protection buffer until after the young have fledged and are no longer dependent on the nest tree. The minimum nest protection buffer may be reduced in coordination with CDFW if existing site conditions, habituation to disturbance, proposed disturbance levels, and nest concealment or barriers between the nest and activities indicate a reduced buffer would be effective.
>
> **7B-3:** If it is not possible to postpone Project activities within the minimum nest protection buffer, construction activities may proceed with CDFW approval and monitoring of the nest by a qualified raptor biologist. If the monitoring biologist observes signs of distress, they shall have the authority to stop construction work and coordinate with CDFW to establish additional protection measures to ensure avoidance of nest abandonment prior to the re-start of Project activities.

BIO-7C: A written report summarizing the pre-construction survey results shall be provided to OPUD and CDFW within 30 days of survey completion.

Loss of Foraging Habitat: Swainson's hawks generally forage within 10 miles of their nest tree, and more commonly within five miles of their nest tree (CDFW, 1994). According to the CDFW Staff Report regarding Mitigation for Impacts to Swainson's Hawks (CDFW, 1994), the following vegetation types are considered small mammal and insect foraging habitat for Swainson's hawks: alfalfa; fallow fields; beet, tomato, and other low-growing row or field crops; dry-land and irrigated pasture; rice land (when not flooded); and cereal grain crops (including corn after harvest). Small disjunct parcels of habitat seldom provides foraging habitat; therefore, infill development in urbanized areas which have less than five acres of foraging habitat and are surrounded by existing urban development, would not be considered foraging habitat unless within 0.25-mile of a nest tree (CDFW, 1994).

Swainson's hawk is a state-listed species, because approximately 0.6-acre of foraging habitat (annual grassland and agricultural land) would be removed with construction of Pump Station 21 (0.24-acre), Lift Station 22 (0.10-acre), Lift Station 23 (0.12-acre) and Pump Station 24 (0.14-acre), and due to the abundance of potential nesting habitat in close proximity to the pipeline alignment, this would be a potentially significant impact, and the following compensatory mitigation would be required. **(Potentially significant).**

Mitigation BIO-8 – Foraging Habitat:

BIO-8A: If nesting occurrences of Swainson's hawks occur within 10 miles of the permanent impact areas (e.g. pump station, lift station, and WP sites) mitigation for loss of foraging habitat shall be required. Generally, CDFW requires mitigation for loss of Swainson's hawk foraging habitat based on the presence of active nests within 10 miles of the Project. If an active nest site occurs within ten miles of the Project, the applicant will be required by CDFW to provide off-site foraging habitat management lands at a specified Mitigation Ratio that is based on nest proximity to the project site, as follows:

Distance from Project Boundary	Mitigation Acreage Ratio*
Within 1 mile	1.00:1**
Between 1 and 5 miles	0.75:1
Between 5 and 10 miles	0.50:1
*Ratio means [acres of mitigation land] to [acres of foraging habitat impacted]. **This ratio shall be 0.5:1 if the acquired lands can be actively managed for prey production.	

CDFW provides options for off-site habitat management by fee title acquisition or conservation easement acquisition with a CDFW-approved management plan, and by the acquisition of comparable habitat. Mitigation credits may be obtained through a CDFW-approved mitigation bank for Swainson's hawk with a service area that covers the Project site.

7.2.4.6 Burrowing Owl

The burrowing owl, a California Species of Special Concern, is known to occur within grassland habitat in the region. Suitable burrowing owl habitat is present at the southern end of the wastewater treatment plant where an extensive California ground squirrel colony was observed on an earthen berm. Within this colony, several of the burrows showed signs of renovation by burrowing owls. Additionally, grassland habitat with ground squirrel burrows present could provide habitat. Due to the proximity of suitable habitat, impact to nesting burrowing owls could occur as a result of construction disturbance. Nest disturbance would be a potentially significant impact, and the following mitigation is recommended **(Potentially significant).**

Mitigation BIO-9

BIO-9A: A pre-construction survey of areas providing suitable burrowing owl habitat within 1,640 feet (500 meters) of construction at the WWTP shall be conducted by a qualified raptor biologist within 14 days prior to ground disturbance. Surveys shall follow guidelines outlined by CDFW in the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012).

If the required pre-construction surveys show there are no active burrowing owl nests within the 1,640 feet (500 meters) of construction activities, then no further mitigation for burrowing owl nest disturbance will be required. If occupied burrows are identified during surveys the following shall be required:

BIO-9B: If an occupied burrow is discovered during pre-construction surveys, a protective buffer consistent with CDFW guidelines shall be established. Appropriate protective buffers depend on the type of burrowing owl occurrence (nesting or overwinter), level of

project disturbance, and time of year that the disturbance occurs. Nest protective buffers consistent with CDFW guidelines are outlined below.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting Site	April 1 – Aug 15	200 m	500 m	500 m
Nesting Site	Aug 16 – Oct 15	200 m	200 m	500 m
Nesting Site	Oct 16 – March 31	50 m	100 m	500 m

A reduced buffer may be implemented upon CDFW approval and based upon site specific conditions, nesting phenology, and the recommendation of the qualified biologist.

BIO-9C: A written report summarizing the pre-construction survey results shall be provided to OPUD and CDFW within 30 days of survey completion.

BIO-9D: If occupied burrows cannot be avoided, the applicant shall conduct a survey during the non-nesting season (September 30 through January 31) to identify occupied burrows within the disturbance footprint, exclude burrowing owls from burrows within the disturbance footprint, and then collapse the burrows in accordance with methodology outlined by the CDFW. Burrowing owl exclusion and burrow collapse must be conducted in coordination with CDFW and with the approval of CDFW.

7.2.4.7 Nesting Birds

The Project has the potential to impact nesting migratory birds, including special-status species such as tricolored blackbird, Modesto song sparrow, and other MBTA protected species. Suitable habitat for tree and ground-nesting raptors, including special-status species such as northern harrier, or white tailed kite occur in the Project area. Construction disturbance has the potential to impact nesting birds and the following mitigation is recommended **(Potentially significant).**

Mitigation BIO-10:

BIO-10A: If construction or vegetation removal work occurs outside of nesting season (August 31 to Feb 1), impacts would be avoided. Surveys would not be required for work conducted during this part of the year, and no further mitigation for nest disturbance would be required. If construction is scheduled to occur during nesting season (Feb 1 to August 31), the following measures would reduce impacts to a less than significant level.

BIO-10B: If vegetation removal or construction activities occur between February 1 to August 31, pre-construction surveys shall be conducted by a qualified biologist of suitable habitat within 500 feet of worksites and disturbance areas for passerines and within 0.25-mile of worksites and disturbance areas for raptors. Pre-construction surveys shall be conducted within 14 days prior to the start of construction of vegetation removal. If nests are identified, a suitable nest protection buffer shall be recommended by the qualified biologist based on the species, nest phenology, and site-specific conditions. Construction

activities shall be prohibited within the established buffer zones until the young have fledged. If a lapse in Project-related activities occurs for 14 days or longer during the nesting season, another focused survey shall be conducted before construction activities can be reinitiated.

BIO-10C: A written report summarizing the pre-construction survey results shall be provided to OPUD and CDFW within 30 days of survey completion.

7.3 EVALUATION OF COMPLIANCE WITH FEDERAL REGULATIONS

This biological technical report considers the potential for Project activities to affect biological resources protected by State and Federal regulation, including species listed as Threatened or Endangered by the FESA or CESA, wetlands and WoUS, and migratory birds protected by the MBTA (see Section 7.2 above for impacts analysis to resources protected by these regulations). This section of the report includes an analysis of compliance with other Federal Environmental Regulations related to biological resources.

7.3.1 Bald and Golden Eagle Protection Act

The Project has the potential to affect nesting bald or golden eagles protected by the Bald and Golden Eagle Protection Act. Implementation of Measure BIO-10 (Section 7.2) addresses the potential for Project activities to affect raptors, including eagles, and provides mitigation measures to reduce those impacts.

7.3.2 Federal Endangered Species Act and Fish and Wildlife Coordination Act

The Project has the potential to affect listed species. A Section 7 Consultation will be conducted between the Federal Lead Agency and the USFWS. A Biological Assessment has been prepared to facilitate the Section 7 Consultation and ensure compliance with the FESA.

The Project will not impact the waters of a stream or other water body by impounding, diverting, or deepening a channel or otherwise modify flow as a result of this Project and will not require compliance with the Fish and Wildlife Coordination Act.

7.3.3 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

EFH is defined as "…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". "Waters", as used in this definition, are defined as "aquatic areas and their associated physical, chemical, and biological properties that are used by fish". These may include "…areas historically used by fish where appropriate; 'substrate' to include sediment, hard bottom, structures underlying the waters, and associated biological communities. Necessary" means, "the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem." EFH is described as a subset of all habitats occupied by a species (NMFS, 1998).

The Olivehurst area is within the Honcut Headwaters-Lower Feather River and Upper Bear River-Below Camp Far West watersheds (Hydrologic Unit Code 18020159 and 18020126), which are mapped as Chinook salmon EFH. However, there is no potential for the Project to affect EFH because Project activities will avoid impacts to waterways through trenchless installation methods and will result in no impacts to fish.

7.3.4 Marine Mammal Protection Act

The Project has no potential to affect marine mammals due to the distance of the Project site from marine habitat and because marine mammals are not expected to occur within the Project area.

7.3.5 Migratory Bird Treaty Act

The Project has the potential to affect migratory birds protected by the MBTA. Implementation of measure BIO-10 (Section 7.2) addresses the potential for Project activities to affect bird species protected by the MBTA and provides mitigation measures to reduce those impacts.

7.3.6 Wetlands Protection (Section CWA Section 404 and 401 Wetlands)

Natural drainage crossings, wetlands, and other aquatic resources occur within the Project site that are potential waters of the U.S. and/or wetlands regulated under Sections 404 and 401 of the Clean Water Act. Project design measures such as trenchless pipeline installation under waterways are included in the Project Description to minimize the potential for impact to Waters of the U.S. Implementation of measure BIO-1 (Section 7.2) will ensure compliance with the Federal Clean Water Act.

7.3.7 Rivers and Harbors Act

There are no Navigable Waters of the U.S. on the project site, and Project implementation will have no effect on navigable waters of the U.S.

7.3.8 Wild and Scenic Rivers Act

The project site is within the Honcut Headwaters-Lower Feather River and Upper Bear River watersheds (Hydrologic Unit Code 18020159 and 18020126). There are no designated Wild and Scenic Rivers adjacent to the project site, and Project implementation will not affect any designated Wild and Scenic Rivers.

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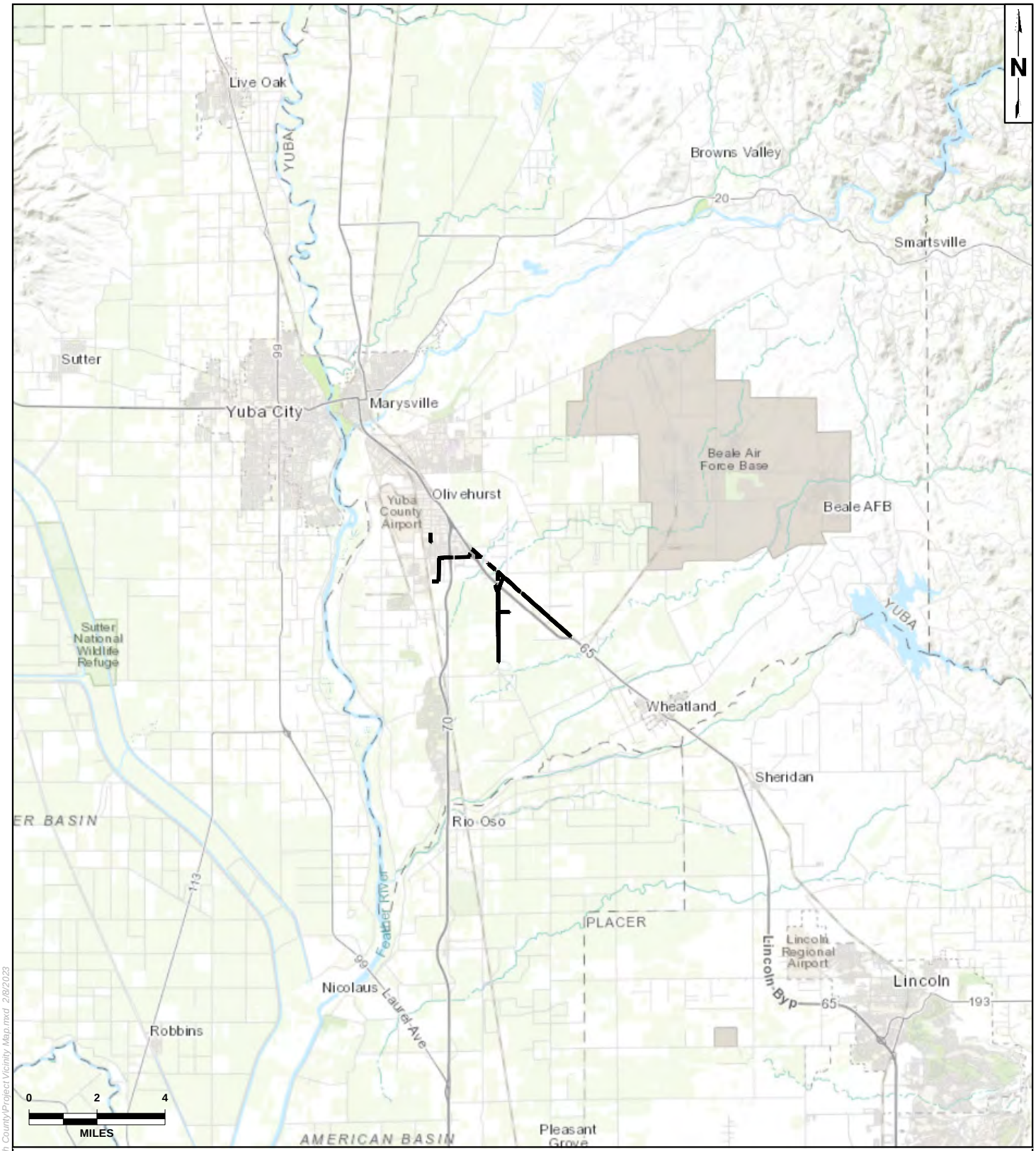
FIGURES



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— OPUD South County Infrastructure Project

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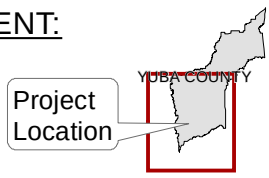

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Notes: This map was created for informational and display purposes only.

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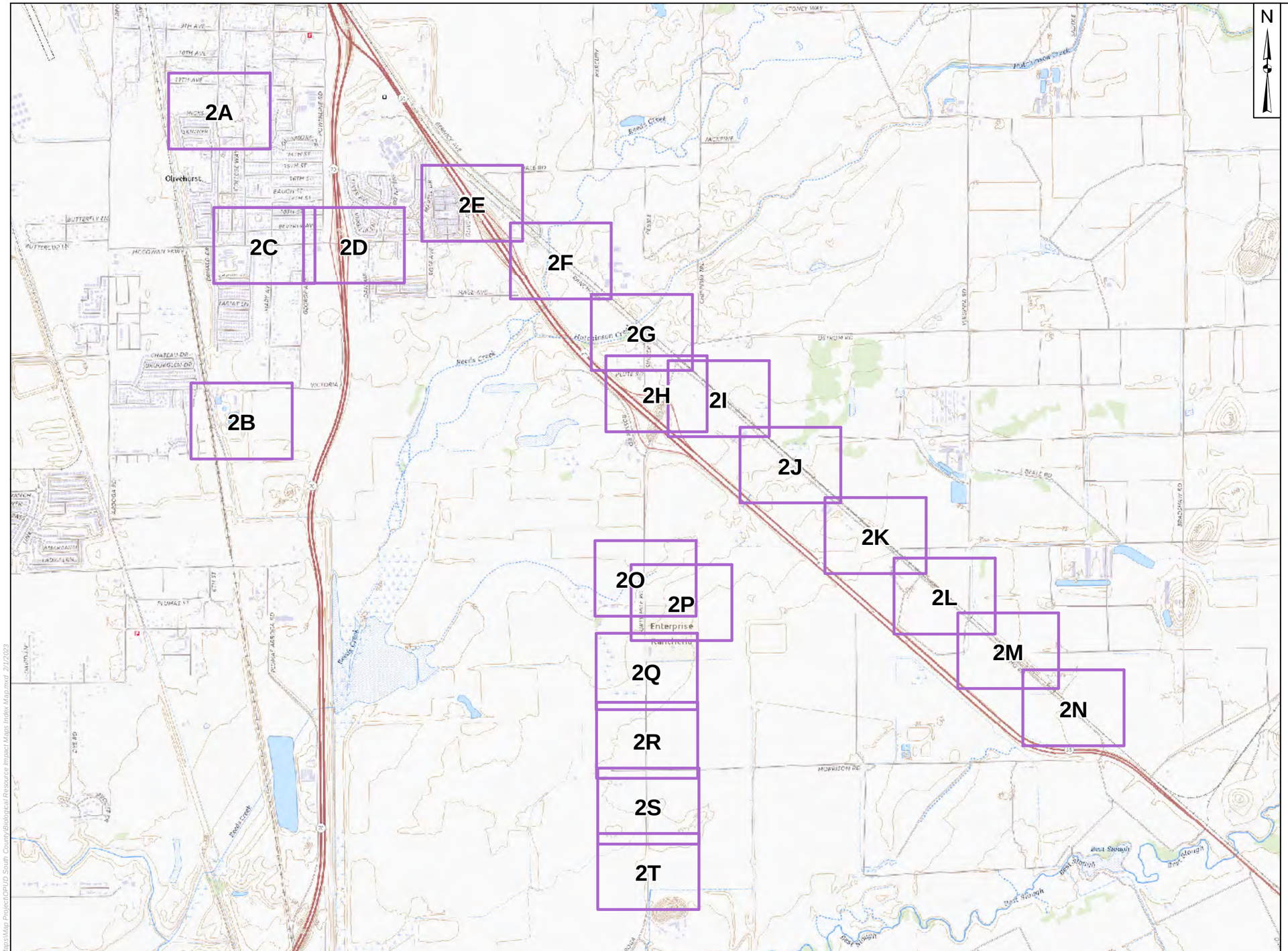
PROJECT NAME:	PROJECT NUMBER:	DATE:
OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA	2002-6911	February 2023

PROJECT VICINITY MAP

FIGURE 1

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Project Vicinity Map.mxd 2/8/2023



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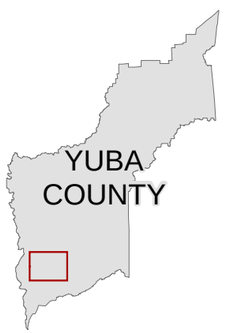
MAP EXTENT:



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1 inch = 2,500 feet

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Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD WATER/WASTEWATER IMPROVEMENTS PROJECT YUBA COUNTY, CA

PROJECT NUMBER: 2002-6911

DATE: February 2023

BIOLOGICAL RESOURCE IMPACT INDEX MAP

FIGURE 2

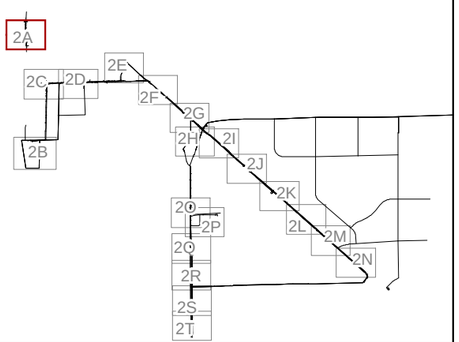
Z:\GIS Projects\GIS Mxds\Map Project\OPUD South County\Biological Resource Impact Maps Index Map.mxd 2/1/2023

N

LEGEND:

- Proposed Force Main
- Lift Station
- Pump Station

MAP EXTENT:



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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2A

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

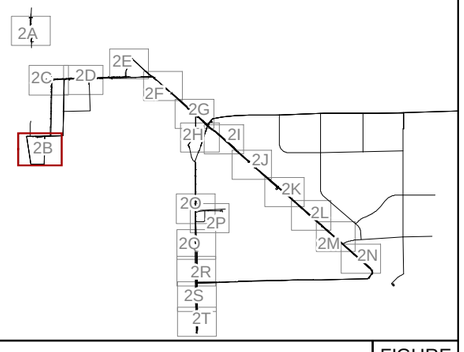
LEGEND:

- Proposed Force Main

Biological Resources

- Large Burrow Cluster

MAP EXTENT:



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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2B

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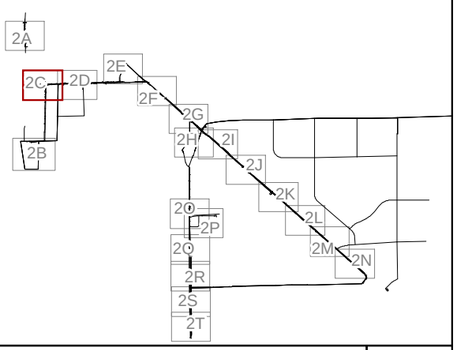
N

LEGEND:

Project Features

- △ HDD / Bore Pit Location
- Proposed Force Main
- Proposed Sanitary Sewer
- Trenchless Crossing - Sewer
- HDD / Boring Workspace
- Pump Station

MAP EXTENT:



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Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2C

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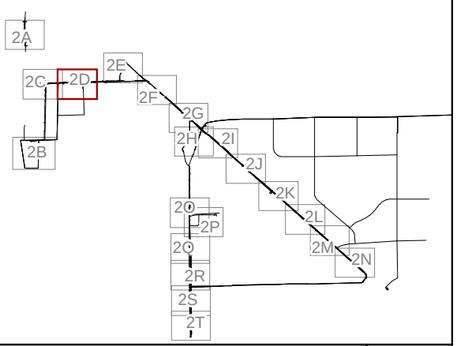
LEGEND:

Project Features

- △ HDD / Bore Pit Location
- Proposed Force Main
- Trenchless Crossing - Sewer
- HDD / Boring Workspace
- Pipe String Laydown Space
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2D

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd, 2/13/2023

LEGEND:

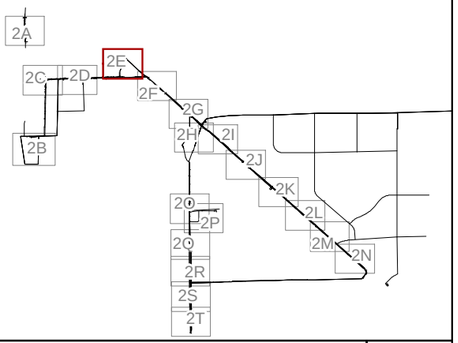
Project Features

- HDD / Bore Pit Location
- Proposed Force Main
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Pipe String Laydown Space

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2E

Z:\GIS Projects\GIS Mains\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

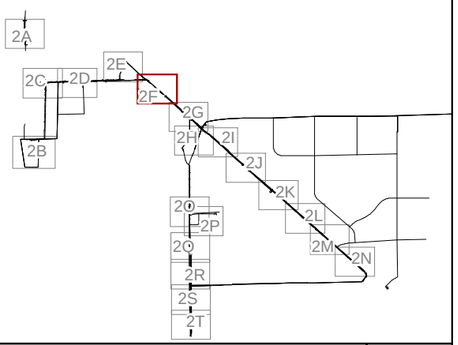
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Pipe String Laydown Space

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch, Wetland Vegetation
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2F

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

LEGEND:

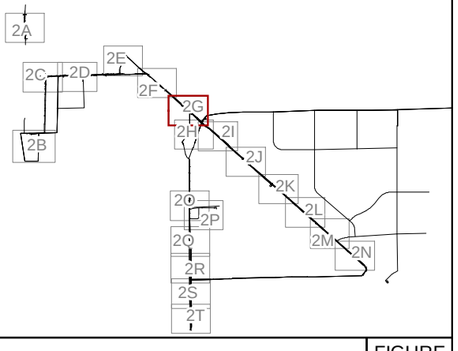
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Pipe String Laydown Space
- Pump Station

Biological Resources

- Blue Elderberry Shrub Location
- VELB Core Area (Avoidance Fencing)
- VELB Encroachment Buffer
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2G

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

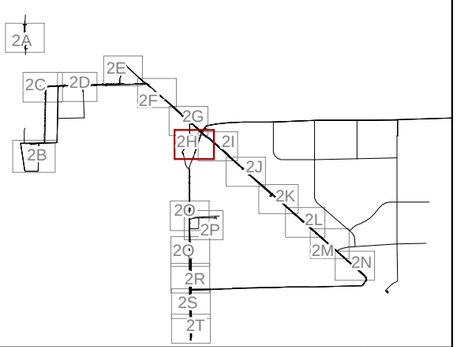
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- HDD / Boring Workspace
- Pipe String Laydown Space

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2H

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

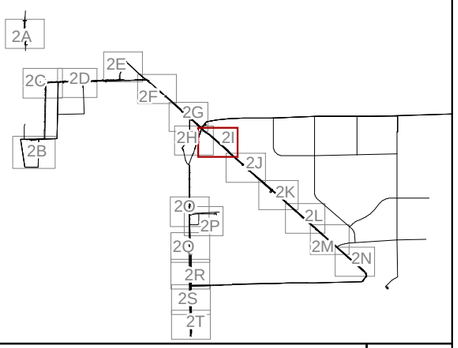
LEGEND:

- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Pipe String Laydown Space

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2I

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

LEGEND:

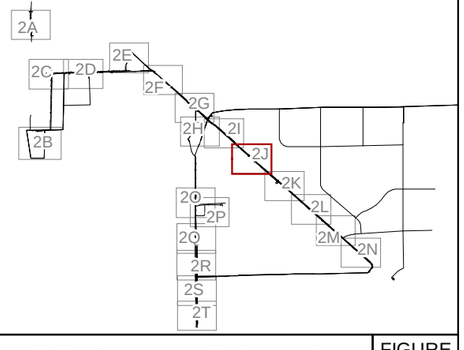
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Pipe String Laydown Space
- Pump Station

Biological Resources

- Wet Depression, Seasonally Inundated
- Wetland Vegetation
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2J

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd, 2/13/2023

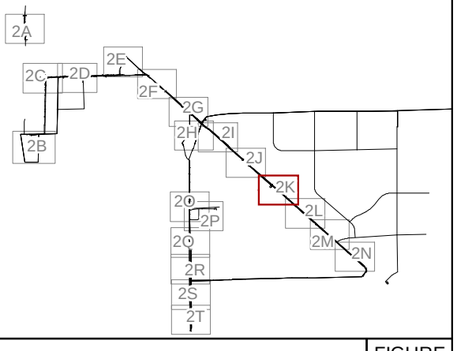
LEGEND:

- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2K

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

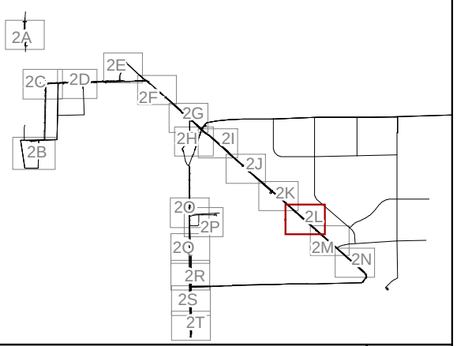
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Lift Station

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated
- Rice Field

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA

PROJECT NUMBER: 2002-6911

DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2L

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

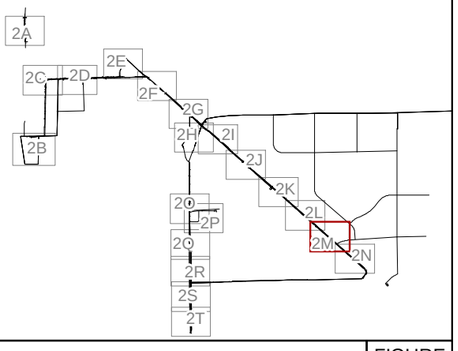
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Lift Station

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated
- Approximate Wetland Boundary
- Rice Field

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2M

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

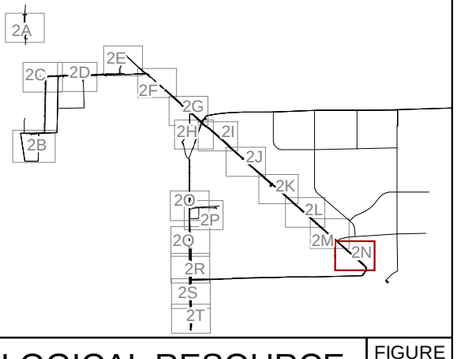
LEGEND:

- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch / Depression, Seasonally Inundated
- Approximate Wetland Boundary

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2N

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd, 2/13/2023

N

LEGEND:

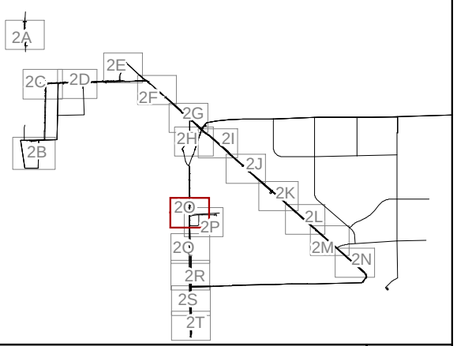
Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Lift Station

Biological Resources

- Wet Depression, Seasonally Inundated
- Roadside Ditch, Wetland Vegetation
- Rice Field

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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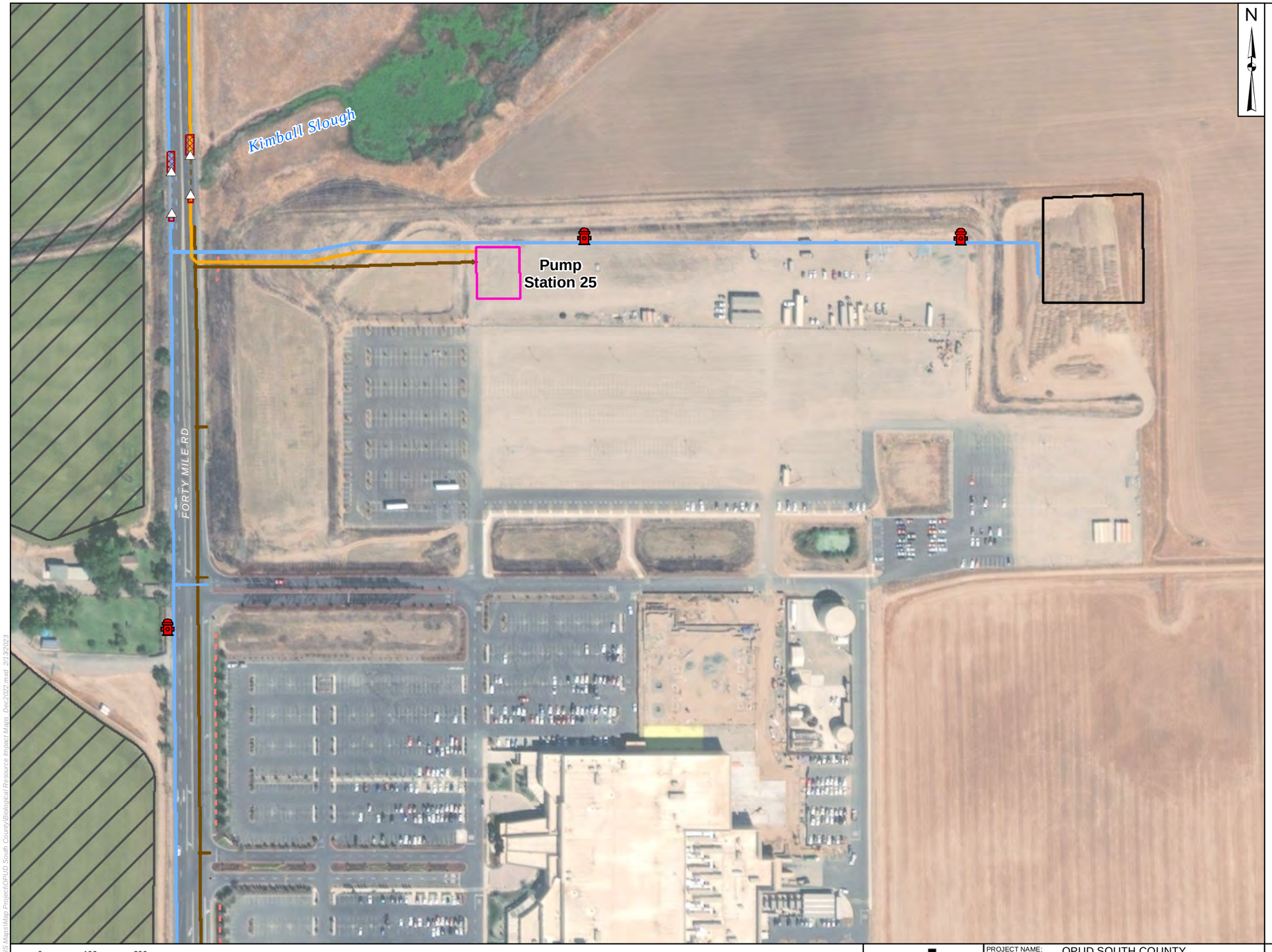
PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2O

Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd, 2/13/2023



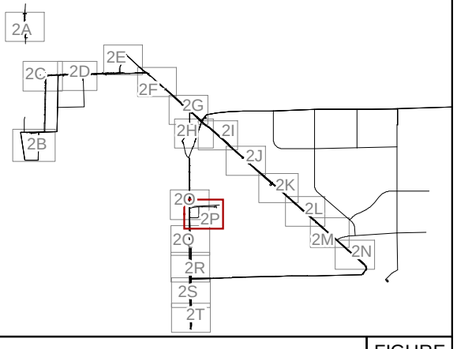
N

LEGEND:

Project Features

- HDD / Bore Pit Location
- Fire Hydrant
- Proposed Force Main
- Proposed Sanitary Sewer
- Proposed Water Main
- Trenchless Crossing - Sewer
- Trenchless Crossing - Water
- HDD / Boring Workspace
- Lift Station
- Water Plant
- Roadside Ditch, Wetland Vegetation
- Rice Field

MAP EXTENT:



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FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2P

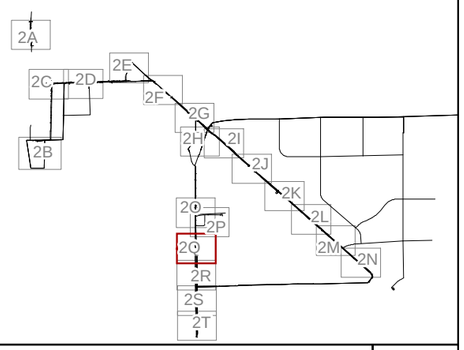
Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

- Fire Hydrant
- Proposed Sanitary Sewer
- Proposed Water Main
- Roadside Ditch, Wetland Vegetation
- Rice Field

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2Q

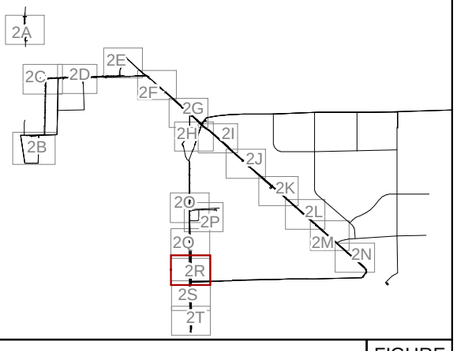
Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

N

LEGEND:

- Fire Hydrant
- Proposed Sanitary Sewer
- Proposed Water Main
- Lift Station
- Roadside Ditch, Wetland Vegetation
- Rice Field

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER: 2002-6911
DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2R

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

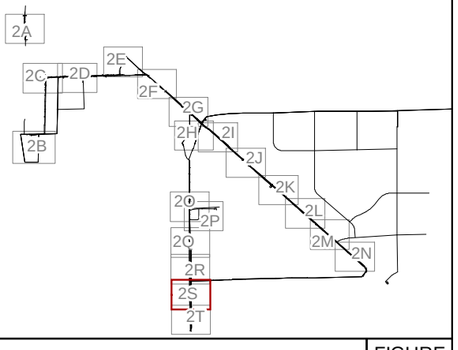
LEGEND:

- Fire Hydrant
- Proposed Sanitary Sewer
- Proposed Water Main

Biological Resources

- Blue Elderberry Shrub Location
- VELB Core Area (Avoidance Fencing)
- VELB Encroachment Buffer
- Roadside Ditch, Wetland Vegetation

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA
PROJECT NUMBER:	2002-6911
DATE:	February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2S

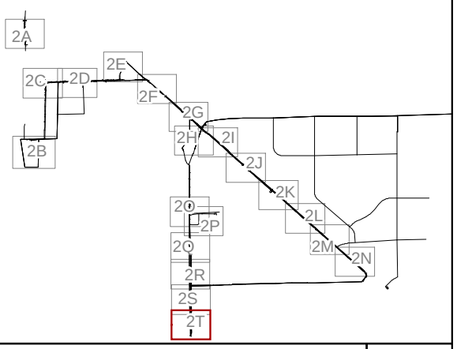
Z:\GIS Projects\GIS Maps\Map Projects\OPUD South County\Biological Resource Impact Maps - Dec2022.mxd 2/13/2023

N

LEGEND:

- Fire Hydrant
- Proposed Sanitary Sewer
- Proposed Water Main
- Roadside Ditch, Wetland Vegetation

MAP EXTENT:



0 100 200
FEET
1 inch = 200 feet

Source: Esri Online Imagery Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME: OPUD SOUTH COUNTY INFRASTRUCTURE PROJECT YUBA COUNTY, CA

PROJECT NUMBER: 2002-6911

DATE: February 2023

BIOLOGICAL RESOURCE IMPACT MAP

FIGURE 2T

Z:\GIS Projects\GIS Maps\Map Project\OPUD South County\Biological Resource Impact Maps_Dec2022.mxd 2/13/2023

Figure 3 – Special Status Species Occurrences:

CNDDB Geospatial Data is Confidential - Figure available upon request.

APPENDIX A

USFWS SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: February 02, 2023
Project Code: 2022-0002318
Project Name: Olivehurst Public Utility District Water/Wastewater Improvements Project

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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

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

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2022-0002318
Project Name: Olivehurst Public Utility District Water/Wastewater Improvements Project
Project Type: Water Supply Facility - Maintenance / Modification
Project Description: The proposed Project involves construction of a well site, water treatment plant, pump stations, and lift stations on approximately 2.5 acres of land, improvements within the existing wastewater treatment plant (WWTP) and the construction of approximately 13.6 miles of new water lines and sewer lines primarily in roadways or on the road shoulder, with some overland segments of pipeline alignment (approximately 3 miles of overland pipe). Additionally, 13 bore locations have been identified, seven bore crossings for pipeline installation under waterways, and six bore crossings for pipeline installation under highways.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.05587985,-121.49323332098848,14z

Counties: Yuba County, California

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

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

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

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

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

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Hartweg's Golden Sunburst *Pseudobahia bahiifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1704	Endangered

Critical habitats

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

IPaC User Contact Information

Agency: Padre Associates Inc.
Name: Nathan Tallman
Address: 350 University Avenue, Suite 250
City: Sacramento
State: CA
Zip: 95827
Email ntallman@padreinc.com
Phone: 9163335920

APPENDIX B

CNDDB NINE QUAD SUMMARY TABLE

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Sutter (3912126) OR Yuba City (3912125) OR Browns Valley (3912124) OR Gilsizer Slough (3912116) OR Olivehurst (3912115) OR Wheatland (3912114) OR Sutter Causeway (3812186) OR Nicolaus (3812185) OR Sheridan (3812184))

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.
Acipenser medirostris pop. 1 green sturgeon - southern DPS	G2T1 S1	Threatened None	AFS_VU-Vulnerable IUCN_EN-Endangered	24 129	14 S:4	0	0	2	0	0	2	1	3	4	0	0
Agelaius tricolor tricolored blackbird	G1G2 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	15 160	955 S:28	1	1	0	0	7	19	19	9	21	7	0
Anthicus antiochensis Antioch Dunes anthicid beetle	G1 S3	None None		20 20	6 S:1	0	0	0	0	0	1	1	0	1	0	0
Anthicus sacramento Sacramento anthicid beetle	G1 S4	None None	IUCN_EN-Endangered	20 20	13 S:1	0	0	0	0	0	1	1	0	1	0	0
Antrozous pallidus pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	92 92	420 S:1	0	1	0	0	0	0	0	1	1	0	0
Astragalus tener var. ferrisiae Ferris' milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.1		18 S:1	0	0	0	0	0	1	1	0	1	0	0
Athene cunicularia 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	150 150	2011 S:1	0	0	0	0	0	1	1	0	1	0	0
Branchinecta conservatio Conservancy fairy shrimp	G2 S2	Endangered None	IUCN_EN-Endangered	100 100	53 S:1	0	1	0	0	0	0	0	1	1	0	0
Branchinecta lynchi vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	52 174	796 S:15	2	4	0	2	0	7	2	13	15	0	0

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.
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	G5T3 S3	Delisted None	CDFW_WL-Watch List	35 35	19 S:1	0	1	0	0	0	0	1	0	1	0	0
Buteo swainsoni Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	10 130	2548 S:89	10	5	0	0	0	74	8	81	89	0	0
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	G5TH SH	None None		15 25	6 S:2	0	0	0	0	2	0	2	0	0	0	2
Circus hudsonius northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	82 120	54 S:4	0	2	2	0	0	0	4	0	4	0	0
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	G3 S2.1	None None		35 35	60 S:1	0	0	0	0	0	1	1	0	1	0	0
Coccyzus americanus occidentalis western yellow-billed cuckoo	G5T2T3 S1	Threatened Endangered	BLM_S-Sensitive NABCI_RWL-Red Watch List USFS_S-Sensitive	25 50	165 S:4	0	0	0	0	0	4	4	0	4	0	0
Delphinium recurvatum recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden		119 S:1	0	0	0	0	1	0	1	0	0	0	1
Desmocerus californicus dimorphus valley elderberry longhorn beetle	G3T2T3 S3	Threatened None		35 103	271 S:18	3	3	2	2	1	7	12	6	17	0	1
Downingia pusilla dwarf downingia	GU S2	None None	Rare Plant Rank - 2B.2	93 250	132 S:3	0	0	0	0	0	3	3	0	3	0	0
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	60 60	184 S:1	1	0	0	0	0	0	0	1	1	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	25 150	1421 S:6	2	1	0	0	0	3	6	0	6	0	0

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.
Erethizon dorsatum North American porcupine	G5 S3	None None	IUCN_LC-Least Concern	47 102	523 S:2	0	0	0	0	0	2	1	1	2	0	0
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	G2 S2.1	None None		35 50	56 S:4	0	0	2	0	0	2	4	0	4	0	0
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	G2 S2.2	None None		33 50	68 S:2	0	1	0	0	0	1	2	0	2	0	0
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	G5T3 S3	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	25 30	173 S:2	0	1	0	0	0	1	1	1	2	0	0
Laterallus jamaicensis coturniculus California black rail	G3T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_EN-Endangered NABCI_RWL-Red Watch List	40 300	303 S:8	0	0	0	0	0	8	6	2	8	0	0
Legenere limosa legenere	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	85 95	83 S:3	1	1	1	0	0	0	1	2	3	0	0
Lepidurus packardi vernal pool tadpole shrimp	G4 S3	Endangered None	IUCN_EN-Endangered	34 120	329 S:19	1	6	3	2	0	7	6	13	19	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	34 102	508 S:24	0	5	2	0	0	17	18	6	24	0	0
Melospiza melodia pop. 1 song sparrow ("Modesto" population)	G5T3?Q S3?	None None	CDFW_SSC-Species of Special Concern	60 60	92 S:1	0	0	0	0	0	1	1	0	1	0	0
Monardella venosa veiny monardella	G1 S1	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	100 100	4 S:1	0	0	0	0	1	0	1	0	0	1	0

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.
Navarretia leucocephala ssp. bakeri Baker's navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	115 115	64 S:1	0	0	0	0	0	1	1	0	1	0	0
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	G3 S3.1	None None		70 95	126 S:4	0	0	0	0	0	4	4	0	4	0	0
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened		31 S:2	0	0	0	0	0	2	0	2	2	0	0
Oncorhynchus tshawytscha pop. 11 chinook salmon - Central Valley spring-run ESU	G5T2Q S2	Threatened Threatened	AFS_TH-Threatened	120 120	13 S:1	0	0	0	0	0	1	0	1	1	0	0
Pogonichthys macrolepidotus Sacramento splittail	G3 S3	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	20 20	15 S:1	0	1	0	0	0	0	1	0	1	0	0
Pseudobahia bahiifolia Hartweg's golden sunburst	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		27 S:1	0	0	0	0	1	0	1	0	0	0	1
Riparia riparia bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	20 60	299 S:24	0	6	0	0	0	18	9	15	24	0	0
Sagittaria sanfordii Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		143 S:1	0	0	0	0	0	1	1	0	1	0	0
Spea hammondii western spadefoot	G2G3 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	103 103	1425 S:1	0	1	0	0	0	0	0	1	1	0	0
Thamnophis gigas giant gartersnake	G2 S2	Threatened Threatened	IUCN_VU-Vulnerable	20 65	373 S:38	2	24	0	0	0	12	6	32	38	0	0
Vireo bellii pusillus least Bell's vireo	G5T2 S2	Endangered Endangered	NABCI_YWL-Yellow Watch List	50 50	504 S:1	0	0	0	0	0	1	1	0	1	0	0

APPENDIX C

PLANT LIST

Plant Species Observed at the OPUD South County Infrastructure Project Site

Common Name/Family	*Scientific Name*	Growth Habit	Wetland Indicator Status	Sensitivity / Listing Status	Native Status
EQUISETACEAE (Horsetail Family)					
Scouring rush	*Equisetum hymale* ssp. affine	H	FACW	N	
ADOXACEAE (Muskroot Family)					
Blue elderberry	*Sambucus mexicana*	S	FACU	N	
APIACEAE (Carrot Family)					
Coyote thistle	*Eryngium* sp.	H		N	
Fennel	*Foeniculum vulgare*	H	NL	I	
APOCYNACEAE (Dogbane Family)					
Narrow-leaved milkweed	*Asclepias fascicularis*	H	FAC	N	
ASTERACEAE (Sunflower Family)					
Western ragweed	*Ambrosia psilostachya*	H	FACU	N	
Mayweed	*Anthemis cotula*	H	FACU	I	
Coyote brush	*Baccharis pilularis*	S	NL	N	
Italian thistle	*Carduus pycnocephalus* ssp. *pycnocephalus*	H	NL	I	
Yellow star-thistle	*Centaurea solstitialis*	H	NL	I	
Common spikeweed	*Centromadia pungens*	H	FAC	N	
Chicory	*Cichorium intybus*	H	FACU	I	
Bull thistle	*Cirsium vulgare*	H	FACU	I	
Stinkwort	*Dittrichia graveolens*	H	NL	I	
Gumplant	*Grindelia* sp.	H			
Hayfield tarweed	*Hemizonia congesta* ssp. *luzulifolia*	H	NL	N	
Cat's-ear	*Hypochaeris glabra*	H	NL	I	
Prickly lettuce	*Lactuca serriola*	H	FACU	I	
Cudweed	*Pseudognaphalium* sp.	H			
Common groundsel	*Senecio vulgaris*	H	FACU	I	
Milk thistle	*Silybum marianum*	H	NL	I	
Prickly sow thistle	*Sonchus asper* ssp. asper	H	FAC	I	
Common dandelion	*Taraxacum officinale*	H	FACU	I	
Salsify	*Tragopogon porrifolius*	H	NL	I	
Cocklebur	*Xanthium strumarium*	H	FAC	N	
BORAGINACEAE (Borage Family)					
Fiddleneck	*Amsinckia* sp.	H		N	
Common fiddleneck	*Amsinckia menziesii*	H	NL	N	
BRASSICACEAE (Mustard Family)					
Mouse-ear cress	*Arabidopsis thaliana*	H	NL	I	
Black mustard	*Brassica nigra*	H	NL	I	
Field mustard	*Brassica rapa*	H	FUPL	I	
Shepard's purse	*Capsella bursa-pastoris*	H	FACU	I	
Few-seed bittercress	*Cardamine oligosperma*	H	FAC	N	
Mediterranean mustard	*Hirschfeldia incana*	H	NL	I	
Peppergrass	*Lepidium nitidum*	H	FAC	N	
Radish	*Raphanus sativus*	H	NL	I	
CARYOPHYLLACEAE (Pink Family)					
Common chickweed	*Stellaria media*	H	FACU	I	

Plant Species Observed at the OPUD South County Infrastructure Project Site

Common Name/Family	*Scientific Name*	Growth Habit	Wetland Indicator Status	Sensitivity / Listing Status	Native Status
CHENOPODIACEAE (Goosefoot Family)					
Russian thistle	*Salsola tragus*	H	FACU	I	
CONVOLVULACEAE (Morning-Glory Family)					
Bindweed	*Convolvulus arvensis*	H	NL	I	
CRASSULACEAE (Stonecrop Family)					
Moss pygmy weed	*Crassula tillaea*	H	FACU	I	
DIPSACACEAE (Teasel Family)					
Wild teasel	*Dipsacus fullonum*	H	FAC	I	
EUPHORBIACEAE (Spurge Family)					
Turkey mullein	*Croton setiger*	H	NL	N	
Spotted spurge	*Euphorbia maculata*	H	UPL	I	
FABACEAE (Legume Family)					
Spanish clover	*Acmispon americanus* var. *americanus*	H	UPL	N	
Bird's-foot trefoil	*Lotus corniculatus*	H	FAC	I	
Miniature lupine	*Lupinus bicolor*	H	NL	N	
California burclover	*Medicago polymorpha*	H	FACU	I	
Clover	*Trifolium* sp.	H			
Rose clover	*Trifolium hirtum*	H	NL	I	
Vetch	*Vicia* sp.	H			
Spring vetch	*Vicia sativa*	H	FACU	I	
Winter vetch	*Vicia villosa*	H	NL	I	
FAGACEAE (Oak Family)					
Valley oak	*Quercus lobata*	T	FACU	N	
GERANIACEAE (Geranium Family)					
Storksbill	*Erodium* sp.	H			
Long-beaked storksbill	*Erodium botrys*	H	FACU	I	
Redstem filaree	*Erodium cicutarium*	H	NL	I	
Cut-leaf geranium	*Geranium dissectum*	H	NL	I	
Dove's-foot geranium	*Geranium molle*	H	NL	I	
JUGLANDACEAE (Walnut Family)					
Northern California black walnut	*Juglans hindsii*	T	FAC	N	1B.1
LAMIACEAE (Mint Family)					
Vinegar weed	*Trichostema lanceolatum*	H	FACU	N	
MALVACEAE (Mallow Family)					
Cheeseweed	*Malva parviflora*	H	NL	I	
MONTIACEAE (Miner's Lettuce Family)					
Red maids	*Calandrinia menziesii*	H	NL	N	
Miner's lettuce	*Claytonia perfoliata*	H	FAC	N	
MYRTACEAE (Myrtle Family)					
Eucalyptus	*Eucalyptus* sp.	T		I	
Blue gum	*Eucalyptus globulus*	T	NL	I	
OLEACEAE (Olive Family)					
Oregon ash	*Fraxinus latifolia*	T	FACW	N	
Olive	*Olea europaea*	T	NL	I	
ONAGRACEAE (Evening Primrose Family)					

Plant Species Observed at the OPUD South County Infrastructure Project Site

Common Name/Family	*Scientific Name*	Growth Habit	Wetland Indicator Status	Sensitivity / Listing Status	Native Status
Willow herb	*Epilobium* sp.				
Panicled willow herb	*Epilobium brachycarpum*	H	NL	N	
Floating water primrose	*Ludwigia peploides*	H	OBL	I	
OROBANCHACEAE (Broom-Rape Family)					
Butter-and-eggs	*Triphysaria eriantha*	H	NL	N	
OXALIDACEAE (Oxalis Family)					
Bermuda buttercup	*Oxalis pes-caprae*	H	NL	I	
PAPAVERACEAE (Poppy Family)					
California poppy	*Eschscholzia californica*	H	NL	N	
PLANTAGINACEAE (Plantain Family)					
English plantain	*Plantago lanceolata*	H	FAC	I	
POLYGONACEAE (Buckwheat Family)					
Willow weed	*Persicaria lapathifolia*	H	FACW	N	
Knotweed	*Polygonum aviculare*	H	FAC	I	
Sheep sorrel	*Rumex acetocella*	H	FACU	I	
Curly dock	*Rumex crispus*	H	FAC	I	
RANUNCULACEAE (Buttercup Family)					
Buttercup	*Ranunculus* sp.	H			
ROSACEAE (Rose Family)					
Himalayan blackberry	*Rubus armeniacus*	V	FAC	I	
RUBIACEAE (Madder Family)					
Bedstraw	*Galium* sp.	H			
California button willow	*Cephalanthus occidentalis*	S	OBL	N	
SALICACEAE (Willow Family)					
Fremont cottonwood	*Populus fremontii* ssp. *fremontii*	T	NL	N	
Lombardy poplar	*Populus nigra*	T	NL	I	
Willow	*Salix* sp.	T	OBL		
Gooding's black willow	*Salix goodingii*	T	FACW	N	
Arroyo willow	*Salix lasiolepis*	T	FACW	N	
URTICACEAE (Nettle Family)					
Stinging nettle	*Urtica dioica*	H	FACW	N	
VERBENACEAE (Vervain Family)					
Verbena	*Verbena lasiostachys*	H	FAC	N	
VISCACEAE (Mistletoe Family)					
Oak mistletoe	*Phoradendron leucarpum* ssp. *tomentosum*	H	NL	N	
ZYGOPHYLLACEAE (Caltrop Family)					
Puncture vine	*Tribulus terrestris*	H	NL	I	
CYPERACEAE (Sedge Family)					
Sedge	*Carex* sp.	H			
Tall cyperus	*Cyperus eragrostis*	H	FACW	N	
Spikerush	*Eleocharis* sp.	H			
Creeping spikerush	*Eleocharis macrostachya*	H	FACW	N	
Tule	*Schoenoplectus acutus* var. *occidentalis*	H	OBL	N	
JUNCACEAE (Rush Family)					

Plant Species Observed at the OPUD South County Infrastructure Project Site

Common Name/Family	*Scientific Name*	Growth Habit	Wetland Indicator Status	Sensitivity / Listing Status	Native Status
Rush	*Juncus* sp.	H			
Baltic rush	*Juncus balticus* ssp. *ater*	H	FACW	N	
Lamp rush	*Juncus effusus*	H	FACW	N	
Iris-leaved rush	*Juncus xiphoides*	H	OBL	N	
POACEAE (Grass Family)					
Slender wild oat	*Avena barbata*	G	NL	I	
Wild oat	*Avena fatua*	G	NL	I	
Little quaking grass	*Briza minor*	G	FAC	I	
Ripgut grass	*Bromus diandrus*	G	NL	I	
Soft chess	*Bromus hordeaceus*	G	FACU	I	
Bermuda grass	*Cynodon dactylon*	G	FACU	I	
Salt grass	*Distichlis spicata*	G	FAC	N	
Barnyard grass	*Echinochloa crus-galli*	G	FACW	I	
Medusa head	*Elymus caput-medusae*	G	NL	I	
Brome fescue	*Festuca bromoides*	G	FACU	I	
Rattail sixweeks grass	*Festuca myuros*	G	FACU	I	
Rye grass	*Festuca perennis*	G	FAC	I	
Mediterranean barley	*Hordeum marinum* ssp. *gussoneanum*	G	FAC	I	
Hare barley	*Hordeum murinum* ssp. *leporinum*	G	FACU	I	
Dallis grass	*Paspalum dilatatum*	G	FAC	I	
Harding grass	*Phalaris aquatica*	G	FACU	I	
Annual blue grass	*Poa annua*	G	FAC	I	
Rabbitfoot grass	*Polypogon monspeliensis*	G	FACW	I	
Johnson grass	*Sorghum halepense*	G	FACU	I	
Purple needlegrass	*Stipa pulchra*	G	NL	N	
THEMIDACEAE (Brodiaea Family)					
Brodiaea	*Brodiaea* sp.	H		N	
Blue dicks	*Dipterostemon capitatus*	H	FACU	N	
TYPHACEAE (Cattail Family)					
Broad-leaved cattail	*Typha latifolia*	H	OBL	N	

Wetland Indicator Status

OBL = Obligate wetland species, occurs almost always in wetlands (>99% probability)
FACW = Facultative wetland species, usually found in wetlands (67-99% probability)
FAC = Facultative species, equally likely to occur in wetland and non-wetlands (34-66% probability)
FACU = Facultative upland species, not usually found in wetlands (1-33% probability)
UPL = Upland species, almost never found in wetlands (<1% probability)
NI = No indicator has been assigned due to a lack of information to determine indicator status
NL = Not listed, assumed upland species

Growth Habit	Native Status
G = Grass H = Herb S = Shrub T = Tree	N = Native I = Introduced

APPENDIX D

WILDLIFE LIST

Wildlife Species Observed at the OPUD South County Infrastructure Project Site

Common Name/ Family	*Scientific Name*	Sensitivity / Listing Status[1]
AMPHIBIANS		
HYLIDAE (Tree Frogs)		
Pacific Treefrog	*Pseudacris sierra*	
REPTILES		
PHRYNOSOMATIDAE (spiny lizards)		
Western Fence Lizard	*Sceloporus occidentalis*	
BIRDS		
ANATIDAE (Ducks, Geese, and Swans)		
Greater White-fronted Goose	*Anser albifrons*	M
Snow Goose	*Chen caerulescens*	M
Canada Goose	*Branta canadensis*	M
Mallard	*Anas platyrhynchos*	M
PHASIANIDAE (Partridges, Grouse, Turkeys, and Old World Quail)		
Ring-necked Pheasant	*Phasianus colchicus*	
Wild Turkey	*Meleagris gallopavo*	
COLUMBIDAE (Pigeons and Doves)		
Rock Pigeon	*Columba livia*	
Eurasian Collared-Dove	*Streptopelia decaocto*	
Mourning Dove	*Zenaida macroura*	M
TROCHILIDAE (Hummingbirds)		
Anna's Hummingbird	*Calypte anna*	M
CHARADRIIDAE (Lapwings and Plovers)		
Killdeer	*Charadrius vociferus*	M
SCOLOPACIDAE (Sandpipers, Phalaropes, and Allies)		
Greater Yellowlegs	*Tringa melanoleuca*	M
LARIDAE (Gulls, Terns, and Skimmers)		
California Gull	*Larus californicus*	M, WL
Herring Gull	*Larus argentatus*	M
PHALACROCORACIDAE (Cormorants)		
Double-crested Cormorant	*Phalacrocorax auritus*	M, WL
ARDEIDAE (Bitterns, Herons, and Allies)		M
Great Blue Heron	*Ardea herodias*	M
Great Egret	*Ardea alba*	M
CATHARTIDAE (New World Vultures)		
Turkey Vulture	*Cathartes aura*	M
ACCIPITRIDAE (Hawks, Kites, Eagles, and Allies)		
White-tailed Kite	*Elanus leucurus*	M, FP
Northern Harrier	*Circus hudsonius*	M, CSC
Red-shouldered Hawk	*Buteo lineatus*	M
Red-tailed Hawk	*Buteo jamaicensis*	M
PICIDAE (Woodpeckers and Allies)		
Nuttall's Woodpecker	*Picoides nuttallii*	M
Northern Flicker	*Colaptes auratus*	M
FALCONIDAE (Caracaras and Falcons)		
American Kestrel	*Falco sparverius*	M
TYRANNIDAE (Tyrant Flycatchers)		

Wildlife Species Observed at the OPUD South County Infrastructure Project Site

Common Name/ Family	*Scientific Name*	Sensitivity / Listing Status[1]
Black Phoebe	*Sayornis nigricans*	M
CORVIDAE (Jays and Crows)		
California Scrub-Jay	*Aphelocoma californica*	M
American Crow	*Corvus brachyrhynchos*	M
Common Raven	*Corvus corax*	M
SITTIDAE (Nuthatches)		
Red-breasted Nuthatch	*Sitta canadensis*	M
TROGLODYTIDAE (Wrens)		
Marsh Wren	*Cistothorus palustris*	M
REGULIDAE (Kinglets)		
Ruby-crowned Kinglet	*Regulus calendula*	M
TURDIDAE (Thrushes)		
American Robin	*Turdus migratorius*	M
MIMIDAE (Mockingbirds and Thrashers)		
Northern Mockingbird	*Mimus polyglottos*	M
STURNIDAE (Starlings)		
European Starling	*Sturnus vulgaris*	
PASSERIDAE (Old World Sparrows)		
House Sparrow	*Passer domesticus*	
FRINGILLIDAE (Fringilline and Cardueline Finches and Allies)		
House Finch	*Haemorhous mexicanus*	M
Lesser Goldfinch	*Spinus psaltria*	M
American Goldfinch	*Spinus tristis*	M
PARULIDAE (Wood-Warblers)		
Yellow-rumped Warbler	*Setophaga coronata*	M
EMBERIZIDAE (Emberizids)		
Savannah Sparrow	*Passerculus sandwichensis*	M
Song Sparrow	*Melospiza melodia*	M
White-crowned Sparrow	*Zonotrichia leucophrys*	M
Golden-crowned Sparrow	*Zonotrichia atricapilla*	M
ICTERIDAE (Blackbirds)		
Red-winged Blackbird	*Agelaius phoeniceus*	M
Tricolor Blackbird	*Agelaius tricolor*	ST, CSC
Western Meadowlark	*Sturnella neglecta*	M
Brewer's Blackbird	*Euphagus cyanocephalus*	M
MAMMALS		
TALPIDAE (Moles)		
Broad-footed Mole	*Scapanus latimanus*	
LEPORIDAE (Rabbits and Hares)		
Black-tailed Hare	*Lepus californicus*	
SCIURIDAE (Chipmunks, Squirrels, and Marmots)		
California Ground Squirrel	*Spermophilus beecheyi*	
GEOMYIDAE (Pocket Gophers)		
Botta's Pocket Gopher	*Thomomys bottae*	
CRICETIDAE (Deer Mice, Voles, and Relatives)		
Western Harvest Mouse	*Reithrodontomys megalotis*	

Wildlife Species Observed at the OPUD South County Infrastructure Project Site

Common Name/ Family	*Scientific Name*	Sensitivity / Listing Status[1]
California Vole	*Microtus californicus*	
CANIDAE (Foxes, Wolves, and Relatives)		
Coyote	*Canis latrans*	
PROCYONIDAE (Raccoons and Relatives)		
Raccoon	*Procyon lotor*	
MUSTELIDAE (Weasels, Badgers, and Relatives)		
Mink	*Mustela vison*	
Striped Skunk	*Mephitis mephitis*	
FELIDAE (Cats)		
Domestic Cat	*Felis catus*	

Sensitivity / Listing Status[1]	
M = Protected under the federal Migratory Bird Treaty Act (MBTA) FE = Federally Endangered FT = Federally Threatened FDL = Federally Delisted FSS = Forest Service Sensitive SE = California State Endangered	ST = California State Threatened CSC = California Species of Special Concern FP = California Fully Protected Species BCC = USFWS Birds of Conservation Concern WL = CDFW Watch List

APPENDIX E

NRCS CUSTOM SOIL RESOURCE REPORT

United States Department of Agriculture

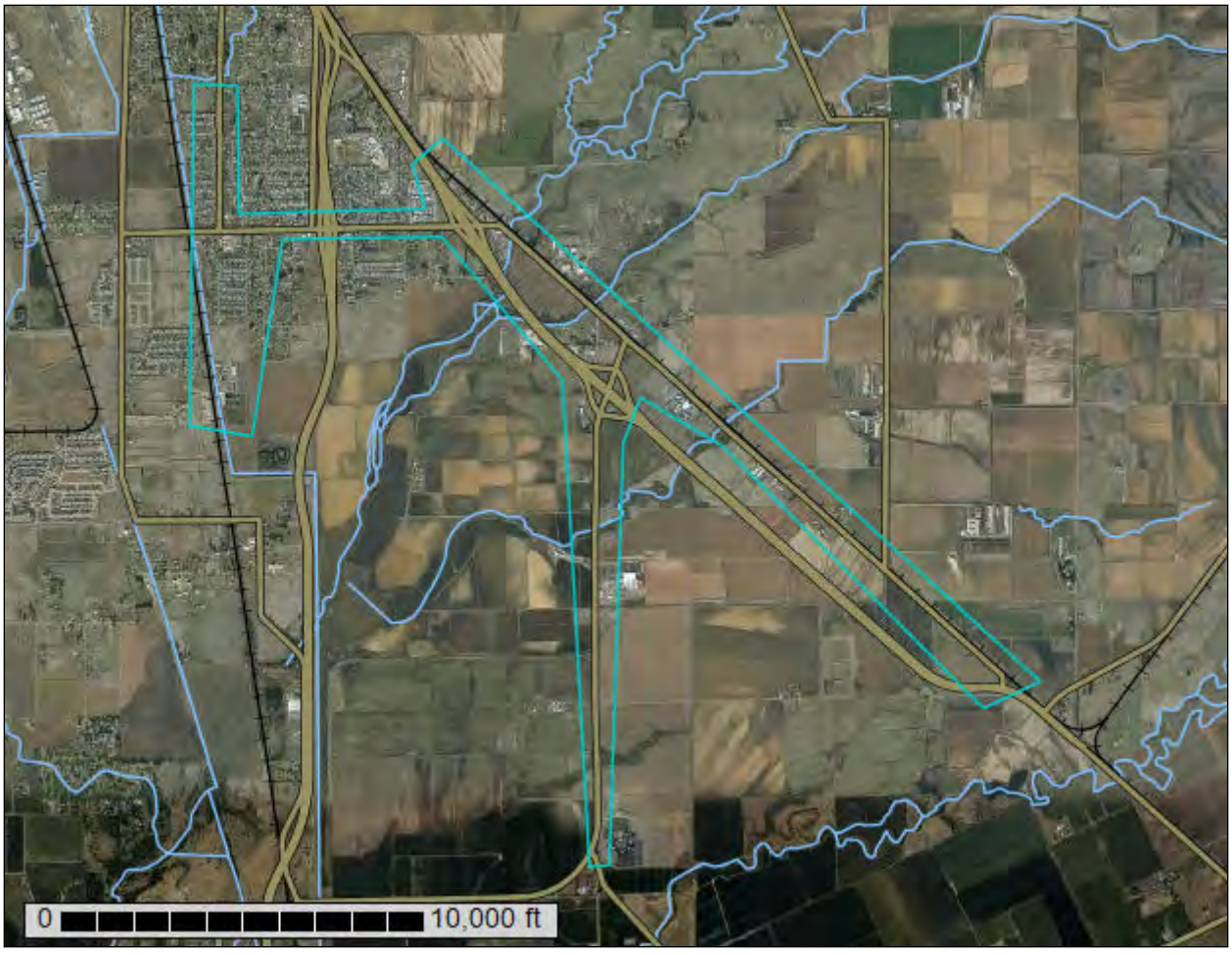
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Yuba County, California

OPUD Water/Wastewater Improvement Project



February 24, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

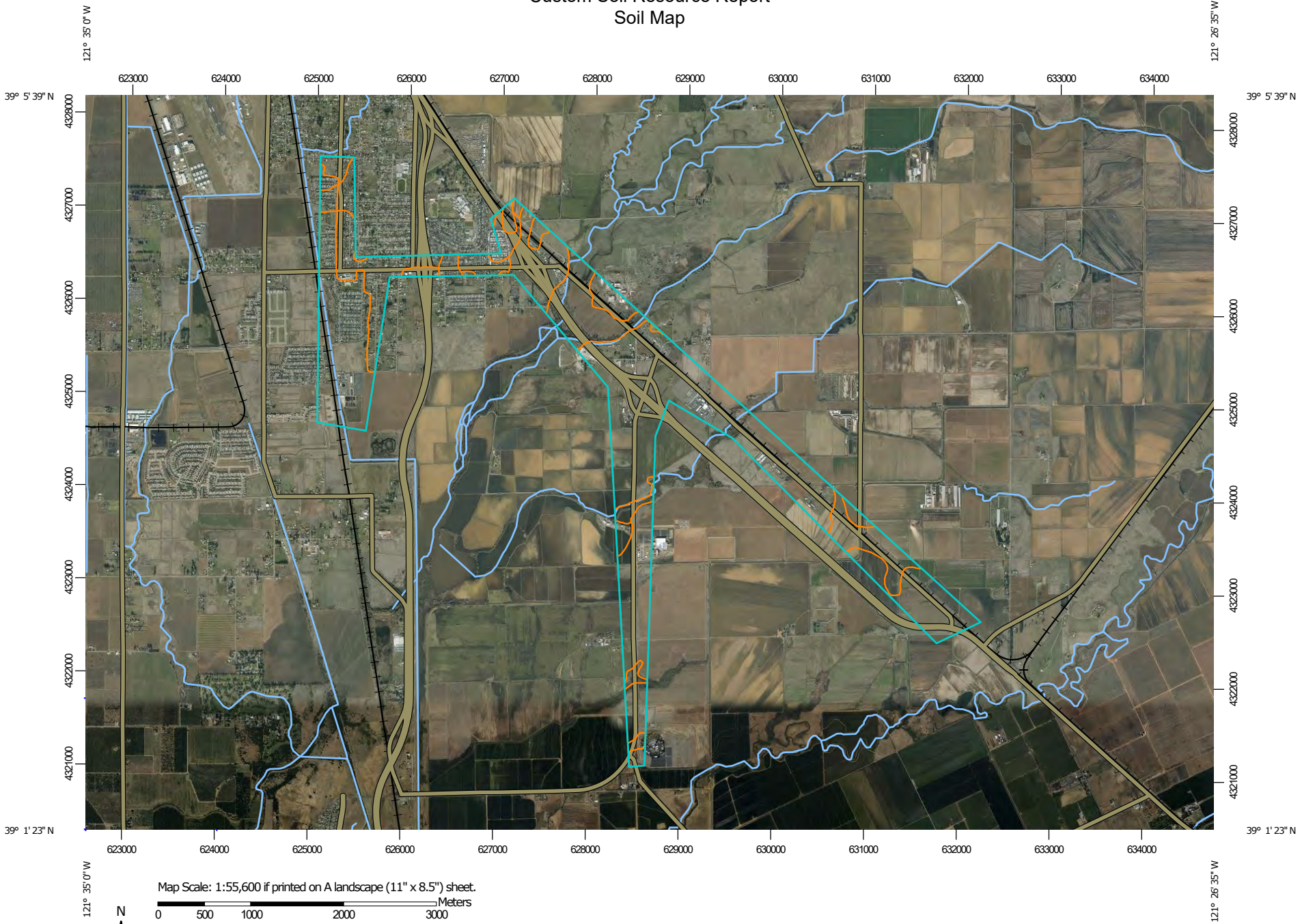
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Yuba County, California
Survey Area Data: Version 15, Sep 6, 2021

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

Date(s) aerial images were photographed: Dec 6, 2018—Jul 2, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
131	Hollenbeck silty clay loam, 0 to 1 percent slopes	106.7	6.4%
134	Hollenbeck-Urban land complex, 0 to 1 percent slopes	22.8	1.4%
141	Conejo loam, 0 to 1 percent slopes, MLRA 17	11.6	0.7%
142	Conejo loam, 0 to 2 percent slopes, occasionally flooded, MLRA 17	132.4	7.9%
143	Conejo-Urban land complex, 0 percent slopes, MLRA 17	21.5	1.3%
197	Oakdale sandy loam, 0 to 5 percent slopes	10.7	0.6%
198	Oakdale-Urban land complex, 0 to 1 percent slopes	11.8	0.7%
214	San Joaquin loam, 0 to 1 percent slopes	1,200.6	71.7%
217	Urban land-San Joaquin complex, 0 to 1 percent slopes	156.2	9.3%
Totals for Area of Interest		**1,675.1**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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

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

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

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

Yuba County, California

131—Hollenbeck silty clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hg3g
Elevation: 30 to 120 feet
Mean annual precipitation: 18 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Hollenbeck, Silty Clay Loam

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 43 inches: silty clay
H3 - 43 to 47 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 39 to 65 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: No

Minor Components

Capay
Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Kimball
Percent of map unit: 5 percent

San joaquin
Percent of map unit: 5 percent

134—Hollenbeck-Urban land complex, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hg3n
Elevation: 50 to 60 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Hollenbeck, silty clay loam, and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollenbeck, Silty Clay Loam

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

Typical profile
H1 - 0 to 8 inches: silty clay loam
H2 - 8 to 43 inches: silty clay
H3 - 43 to 47 inches: clay loam

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: 43 to 65 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 1 percent
Frequency of flooding: Rare

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

San joaquin

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

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Hydric soil rating: Yes

Unnamed

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

141—Conejo loam, 0 to 1 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2xc97
Elevation: 30 to 140 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 62 to 62 degrees F
Frost-free period: 319 to 328 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Conejo, Loam

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from igneous and metamorphic rock

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 30 inches: loam
Bw - 30 to 62 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Marcum

Percent of map unit: 7 percent
Hydric soil rating: No

Tisdale

Percent of map unit: 7 percent
Hydric soil rating: No

Perkins

Percent of map unit: 3 percent

Horst

Percent of map unit: 3 percent

142—Conejo loam, 0 to 2 percent slopes, occasionally flooded, MLRA 17

Map Unit Setting

National map unit symbol: 2y0fl
Elevation: 50 to 100 feet
Mean annual precipitation: 21 to 26 inches
Mean annual air temperature: 62 to 62 degrees F
Frost-free period: 319 to 327 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Conejo, loam, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conejo, Loam

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and metamorphic rock

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 12 inches: clay loam
Bw2 - 12 to 24 inches: clay loam
Bw3 - 24 to 48 inches: loam
Bw4 - 48 to 57 inches: loam
BC - 57 to 65 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.64 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains

Hydric soil rating: No

Minor Components

Horst

Percent of map unit: 5 percent
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

143—Conejo-Urban land complex, 0 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2y0fp
Elevation: 60 feet
Mean annual precipitation: 22 to 22 inches
Mean annual air temperature: 62 to 62 degrees F
Frost-free period: 320 to 321 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Conejo, loam, and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conejo, Loam

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and metamorphic rock

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 12 inches: clay loam
Bw2 - 12 to 24 inches: clay loam
Bw3 - 24 to 48 inches: loam
Bw4 - 48 to 57 inches: loam
BC - 57 to 65 inches: loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.64 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare

Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 percent
Runoff class: Very high
Frequency of flooding: Rare

Minor Components

Columbia

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

San joaquin

Percent of map unit: 4 percent

Capay

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

Unnamed

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

197—Oakdale sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hg5z
Elevation: 50 to 150 feet
Mean annual precipitation: 18 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Oakdale, Sandy Loam

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 53 inches: sandy clay loam
H3 - 53 to 70 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

San joaquin

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

Oakdale, steep

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

Unnamed

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

198—Oakdale-Urban land complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hg60
Elevation: 50 to 150 feet
Mean annual precipitation: 18 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Oakdale, sandy loam, and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oakdale, Sandy Loam

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 53 inches: sandy loam
H3 - 53 to 70 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

San joaquin

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed

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

214—San Joaquin loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hg6j
Elevation: 60 to 130 feet
Mean annual precipitation: 18 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of San Joaquin, Loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 25 inches: clay
H4 - 25 to 35 inches: duripan

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Ecological site: R017XD079CA - CLAYPAN TERRACE
Hydric soil rating: No

Minor Components

Unnamed

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

Perkins

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

Unnamed

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Redding

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

217—Urban land-San Joaquin complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hg6m
Elevation: 20 to 500 feet
Mean annual precipitation: 18 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 270 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent

San joaquin, loam, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 1 percent
Frequency of flooding: Rare

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of San Joaquin, Loam

Setting

Landform: Fan terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 25 inches: clay
H4 - 25 to 35 inches: duripan

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Unnamed

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

Kilaga

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

Perkins

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

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