BUREAU OF RECLAMATION

Orestimba Creek Recharge and Recovery Expansion Project

CGB-EA-2022-013
Draft Environmental Assessment/Initial Study and Mitigated Negative Declaration

U.S. Department of the Interior

January 2022

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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1 Introduction

This Environmental Assessment (EA)/Initial Study (IS) was jointly prepared by the United States Bureau of Reclamation (Reclamation) as the lead federal agency and Central California Irrigation District (CCID) as lead state agency to satisfy the requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Throughout this document, Proposed Action and Proposed Project are used interchangeably and both terms reflect the Project as described below.

1.1 Background/Project Overview

In 2015, CCID was awarded a $600,000 Bay-Delta Restoration Program: CALFED Water Use Efficiency Grant by Reclamation for the proposed *Central California Irrigation District and Del Puerto Water District Orestimba Creek Groundwater Recharge and Recovery Project* (Pilot Project). The Pilot Project proposed to construct a 20-acre groundwater recharge facility near Orestimba Creek that would allow the recharge of 500 acre-feet per year (AFY) of surface water from the Delta-Mendota Canal (DMC). Reclamation analyzed the Pilot Project in an EA/IS in 2017 (Reclamation 2017). The EA/IS evaluated the impacts of the Pilot Project on the following environmental resources: aesthetics, agriculture, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, utilities and service systems, Indian Sacred Sites, Indian Trust Assets, and Environmental Justice. None of the resources were found to have potentially significant impacts and Reclamation issued a Finding of No Significant Impact on June 20, 2017. The FONSI and EA/IS hereby incorporated by reference.

In 2018, CCID as lead State agency and Del Puerto Water District (DPWD) as a responsible agency constructed the Pilot Project and proved that providing excess surface water into the recharge pond during wet periods allowed for extraction during dry periods and established a potential recharge rate for future expansion.

Due to the success of the 2017 Pilot Project, the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors) represented by CCID and DPWD (Project Participants) desire to expand the Pilot Project (Proposed Action/Project).

1.2 Purpose and Need for the Proposed Action/Project Objectives

The State of California is currently experiencing unprecedented water management challenges due to severe drought in recent years. Both the State and Federal water projects are forecasting very low storage conditions in all major reservoirs. In addition, south of Delta Central Valley Project (CVP) contractors frequently experience reduced water supply allocations due to hydrologic conditions and/or regulatory requirements.

During dry periods, when surface water supplies are scarce, growers rely on groundwater or other sources of supply to meet their irrigation needs. Excessive groundwater pumping strains aquifers that are already in a state of overdraft, dropping the water level in some wells substantially and causing other wells to go dry. Additional constraints under California's Sustainable Groundwater Management Act (SGMA) and the applicable Groundwater Sustainability Plan(s) (GSP) that apply to CCID and DPWD may limit the amount of groundwater pumping available, further reducing water supplies when they are most needed. As such, water purveyors, such as CCID and DPWD, need to find alternative sources of water to fulfill existing demands to stave off substantial impacts to crop production, the regional economy, loss of jobs, disadvantaged communities, etc. The purpose of the Proposed Action/Project is to provide a long-term solution to support regional agricultural operations by using excess storm and floodwaters with the objective to recharge groundwater supplies for future extraction with a 10% leave behind that would also help to prevent subsidence and reduce groundwater basin overdraft.

2 Alternatives Including Proposed Action

This EA/IS considers two possible actions: the No Action Alternative and the Proposed Action/Project. The No Action Alternative reflects future conditions without the Proposed Action/Project and serves as a basis of comparison for determining potential effects to the human environment. For purposes of analysis, the No Action Alternative is the same as baseline conditions.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not allow the use of their facilities to move the water in and/or under the DMC to the additional groundwater recharge ponds. Recharge benefits from the Proposed Action/Project would not be available for future dry year recovery and basin well extraction which could aggravate groundwater overdraft conditions and potential subsidence during dry periods.

2.2 Proposed Action/Project

Under the Proposed Action/Project Reclamation would issue a land use authorization to CCID for the installation, operation, and maintenance of facilities on Reclamation land as described in more detail below. In addition, CCID and DPWD propose to construct various infrastructure and recharge ponds that would expand the previously constructed Pilot Project (**Figure 1 of Appendix E**).

The Proposed Action/Project includes five main components: (1) Securing a temporary and permanent water rights from Orestimba Creek, (2) Constructing diversion facilities and pipelines between Orestimba Creek, the DMC, and the recharge ponds, (3) Constructing recharge ponds (4) Developing recovery wells and associated pipelines, and (5) Conducting geotechnical and soil investigations to help determine the final design and delineate aquatic resources. In addition to the main components, staging areas for loading, unloading, and temporary storage of equipment and

materials would be delineated within the work area boundaries. Maintenance would be done semi-annually. Maintenance activities include the removal of sediment, vegetation, and other materials to improve percolation capacity. The Proposed Action/Project components are described as follows.

2.2.1 Securing temporary and permanent water rights from Orestimba Creek

CCID and DPWD are jointly simultaneously pursuing a Streamlined 5-Year Temporary Water Right Permit, as well as a Streamlined Standard Water Right Permit to divert and recharge available unappropriated flood water supplies from Orestimba Creek, during high flow flood events. The Project Participants anticipate recharging approximately 4,000 AF of floodwater during wet years (560 AFY on average), with an anticipated recovery of recharged Orestimba Creek water at 3,780 AFY in a dry year.

2.2.2 Diversion Structures and Pipelines

2.2.2.1 Orestimba Creek

A new gravity turnout on Orestimba Creek would be constructed on the west side of Bell Road about 500 feet north of Stuhr Road (**Figure 2 of Appendix E**). The new turnout would consist of a concrete control box and headgate, measuring 6 feet to 10 feet tall and 6 feet to 8 feet wide, which would be constructed in the Bell Road embankment adjacent to an overflow area south of the Orestimba Creek channel (**Figure 3 of Appendix E**). The overflow embankment where the turnout would be constructed consists of a dirt access road that runs parallel along the west paved edge of Bell Road. This dirt access road, Bell Road, and the unpaved shoulder between the two totals approximately 50 feet wide and is situated approximately 7 feet above the Orestimba Creek overflow plain. Excavation to install the turnout would measure up to 10 feet deep below the existing ground surface.

A new 48-inch diameter, 140-foot long, gasketed reinforced concrete pipeline would convey water from the new turnout under Bell Road to an existing toe drain channel that parallels the west side of the DMC. The new pipeline would be installed in an open cut trench across the road measuring approximately 20 feet wide and 8 feet deep. The discharge into the existing toe drain ditch would require minor grading and addition of rock slope protection to prevent scour from the Orestimba Creek flow into the ditch. From the toe drain channel, water would flow through an existing 30-inch by 36-inch concrete box culvert that conveys water beneath the DMC into an existing linear recharge channel on the east side of the DMC between Orestimba Creek and Stuhr Road. The entrance of the box culvert in the toe drain on the west side of the DMC would be lined with gunite to prevent scouring in the toe drain if it is found to be structurally sound. A check structure would be constructed in the linear recharge channel on the east side of the DMC, between 50 and 330-feet east of the existing box culvert discharge, along with a pump station on the south side of the linear recharge channel. The pump station would consist of two lift pumps with 60-inch diameter concrete standpipe pump bays (**Figure 4 of Appendix E**). A 36-inch diameter pipeline extending 1,900 feet, paralleling the DMC outside of the DMC right of way (ROW) (oriented north-south), would connect this pump station to a new cast in place or precast concrete junction box east of the existing DMC turnout at milepost (MP) 51.65L.

2.2.2.2 DMC Turnout MP 51.65L

The new junction box would be located approximately 26-feet southwest of an existing 5-feet 4-inch by 4-feet 4-inch concrete distribution box east of the DMC MP 51.65L turnout (**Figure 5 of**

Appendix E). The replacement distribution box would measure 8-feet by 5-feet and connect to the new 6-foot by 6-foot junction box via a 35-foot long, 36-inch diameter pipeline (**Figure 5 of Appendix E**). An existing 16-foot long, 24-inch diameter pipe insert within a 36-inch diameter concrete pipe located upstream of the existing distribution box would be removed and replaced with a 36-inch diameter concrete pipe of the same length (**Figure 5 of Appendix E**).

A new 42-inch diameter, 5,100-feet long pipeline, connected to the new junction box near the existing DMC turnout at MP 51.65L, would convey water to the new recharge ponds. This pipeline would run from west to east through the middle of an existing greenhouse operation and orchards within the same alignment as the existing 18-inch diameter pipeline that connects to the existing 20 acres of recharge ponds and water deliveries to other landowners. The new 42-inch diameter pipeline would replace this existing 18-inch diameter pipeline.

The existing DMC turnout at MP 51.65L is licensed for use by DPWD. Appurtenant gate and meter east of the DMC turnout gate would be improved to deliver DPWD and CCID CVP or other water supplies approved for conveyance in the DMC to the groundwater recharge ponds. Replacing the distribution box, installing the connecting pipeline, and constructing the new junction box would require excavation in a portion of the easterly canal berm and adjacent ROW area to a maximum depth of 10 feet below the existing ground surface.

2.2.2.3 Turnout MP52.40L

The existing 5-foot 4-inch by 4-foot 4-inch concrete diversion box at MP 52.40L would be replaced by a larger 8-foot by 5-foot box. An existing 16-foot long, 18-inch diameter pipe insert within a 36-inch diameter concrete pipe that connects the turnout slide gate to the existing distribution box would be removed and replaced with a 36-inch diameter concrete pipe of the same length (**Figure 6 of Appendix E**). Replacing the box would require excavation in the canal berm measuring approximately 16 feet between the turnout slide gate and the diversion box to a maximum depth of 13 feet below the existing ground surface. A new 36-inch diameter pipeline would extend 3,100 feet to connect the replacement diversion box at the existing DMC turnout MP 52.40L with the new recharge ponds. This pipeline would cross Orestimba Road, then run from west to east along the north side of Orestimba Road to the proposed ponds (**Figure 6 of Appendix E**).

The existing DMC turnout at MP52.40L is licensed for use by DPWD. Appurtenant gate and meter east of the DMC turnout gate would be improved to deliver water to the groundwater recharge ponds. Replacing the distribution box and installing the connecting pipeline would require excavation in a portion of the easterly canal berm and adjacent ROW area to a maximum depth of 10 feet below the existing ground surface.

2.2.2.4 Newman Wasteway Turnout MP54.38L

An additional 48-inch pipeline just south of the existing turnout may be required to convey CCID CVP water from the DMC to the CCID Main Canal. No Orestimba Creek water will be conveyed in DMC or the pipeline parallel to the Newman Wasteway for delivery into the CCID Main Canal. An over the liner slant pump turnout would be constructed on the south side of the wasteway to lift the water from the DMC into the pipeline and convey it to the Main Canal. The new pipeline would run west to east parallel to and south of the Newman Wasteway ROW for approximately 1.75 miles (**Figure 7 of Appendix E**). This pipeline would discharge into the CCID Main Canal via an open discharge pipe above the canal liner. Alternatively, this same pump and pipeline system could be constructed on the north side of the Newman Wasteway if the route along the south side is inaccessible.

All pipeline trenches would be open cut and measure a maximum of approximately 17 feet wide and 10 feet deep (**Figure 8 of Appendix E**).

2.2.3 Recharge Ponds

Approximately 60 acres of new recharge ponds, four ponds at 15 acres each, would be constructed on an agricultural parcel of land about one half mile south of Stuhr Road (**Figure 9 of Appendix E**). The new ponds would be adjacent to 20 acres of existing recharge ponds built in 2018 under the Pilot Project. Each pond would measure approximately 1,200 feet long north to south and 500 feet wide east to west and would be excavated to a maximum depth of 3 feet below the existing ground surface. The interior pond levees would be built from soil excavated from the pond bottoms. The outer berm surrounding all of the ponds would measure approximately 5 feet above the existing ground surface with a 50-feet base width and 12-feet top width. A service road would be situated on top of this berm. A conveyance ditch would be placed between the existing 20 acres of ponds and the proposed 60 acres of ponds to deliver water to each individual pond. This ditch would measure approximately 2,800-feet long, 17-feet wide, and 3 to 5 feet deep. This new segment of ditch would connect to the existing ditch on the northern portion of the parcel that currently conveys water to/from the existing recharge ponds. Maintenance in the ponds would be done semi-annually. Maintenance activities include the removal of sediment, vegetation, and other materials to improve percolation capacity.

2.2.4 Recovery Wells.

Up to eight new recovery wells and their associated pipelines would be constructed along existing roads to convey the recharged water to CCID's Main Canal and/or the DMC (**Figure 1 of Appendix E**). The precise location and number of the proposed recovery wells and pipelines are not determined at this time but would fall within the Proposed Action/Project footprint. A geotechnical investigation that includes up to 60 boring locations is part of this undertaking and would be used to finalize the well locations. The construction equipment for drilling each well would consist of a truck-mounted drilling rig to a depth of approximately 400 feet. A 36-inch diameter drill bit for a 30-inch diameter conductor pipe casing would be used for the first 50 feet to stabilize the hole and a 24-inch diameter drill bit for an 18-inch diameter casing would be used for the remainder of the well depth. The work area around each well would measure approximately 100 feet in diameter.

Construction equipment for the recovery pipelines would consist of an excavator, back-hoe, and loader. The pipelines would measure between 12 inches and 24 inches in diameter and would be placed within excavated trenches (**Figure 8 of Appendix E**). The typical trench depth for the recovery well pipelines would be approximately 5 feet, though utility crossings may require trench segments measuring up to 8 feet deep. Pipeline length would range from approximately 100 feet to 2 miles depending on which well locations are chosen.

2.2.5 Geotechnical and Soil Investigation

The proposed geotechnical investigation is in support of the Proposed Action/Project and is intended to help inform the final design of each Project component. The proposed geotechnical investigation would involve drilling a series of up to 60 total bore holes throughout the areas of proposed construction (**Figure 1 of Appendix E**). A truck-mounted drill rig with an 8-inch diameter auger would be used for boring to depths ranging between 10-feet and 50-feet. A small water trailer would be used at each location to provide water for the sediment sampling process.

The total work area around each bore hole location would be approximately 40-feet by 25-feet. All holes would be backfilled with neat cement grout per Stanislaus County Department of Environmental Resources requirements. Excess excavated soil would be spread loosely at each drill site.

A total of 12 soil cores for aquatic resources delineation would be excavated using a wetland shovel with a 4-inch to 6-inch diameter cylinder to a depth of 12-inches below the existing ground surface. After examining and recording the soil characteristics, excavated soil would be returned to the hole and tamped down (**Figure 1 of Appendix E**).

2.2.6 Access and Staging

Access would be via existing roads and staging areas would be located near proposed Project component area. Each Project component area would have a different staging area for equipment and materials loading, unloading and temporary storage.

2.2.7 Sources of Recharged Water

2.2.7.1 Central California Irrigation District.

CCID in conjunction with the other members of the Exchange Contractors, would generate up to 16,500 AFY for recharge when supplies are available. The 16,500 AFY is comprised of existing water rights and the potential Water Right being pursued as part of the Proposed Action/Project. Supplies would consist of a combination of water from various sources such as conserved water, storm water and flood flows from adjoining watersheds for placement in the recharge ponds. The conserved water would be generated pursuant to the "Water Transfer Program for the San Joaquin River Exchange Contractors, 2014 – 2038", approved by Reclamation in a Record of Decision dated July 30, 2013. In addition, diversion of up to 35 cfs of Orestimba Creek storm flows is a potential source of water to be captured and delivered into the recharge ponds, as well as flood flows (through exchange via the DMC) from both the San Joaquin and Kings Rivers. The Proposed Action/Project is sized for recovery in two dry years and recharge in one wet year per 10 years. CCID may have 8 years of recharge to develop the account to draw from in the two dry years. However, the Project design is based on one wet year per 10 years to achieve storage sufficient for recovery in two dry years.

2.2.7.2 Del Puerto Water District.

The DPWD is under contract with Reclamation for its water supply, which is delivered from the DMC, a feature of the Central Valley Project (CVP). The contract provides for the delivery of up to 140,210 AFY. DPWD will develop and provide up to 16,500 AFY for recharge when supplies are available. The 16,500 AFY will be made available from its CVP contract supplies and will be generated through DPWD's use of various conservation and water resources projects to make the CVP water available in certain year types. These include DPWD's water conservation program, DPWD's program to generate water for its own use and for use by the local refuges through several existing contracts with Reclamation to develop CVPIA Level 2 (L2) supplies (GWD Exchange/Volta Wells Exchange and the North Valley Regional Recycled Water Program (NVRRWP)), as well as the use of non-CVP supplies developed under the terms and conditions of various Warren Act contracts. These sources, as well as the delivery of Section 215 water directly to the Proposed Action/Project when made available by Reclamation, would allow DPWD to generate up to 16,500 AFY of supply. Additionally, diversion of up to 35 cfs of Orestimba Creek storm

flows is a potential source of water to be recharged in the Proposed Action/Project. It is assumed that there would be two dry years and one wet year per recharge and recovery cycle.

2.2.8 Environmental Commitments

CCID and DPWD shall implement the environmental protection measures included in **Table 1**.

Table 1 - Environmental Protection Measures and Commitments

Resource	Protection Measure
Biological Resources	Mitigation Measure (Avoidance). The Project should be designed to avoid impacts to the onsite population of spiny-sepaled button celery. Avoidance would entail establishing a 20-foot disturbance-free buffer around the population. This buffer would be delineated on the ground with temporary construction fencing.
Biological Resources	Mitigation Measure (Minimization). If complete avoidance is not possible, but some of the plants can be avoided, then a qualified botanist shall identify all avoidance areas and establish buffer zones of sufficient size around these areas to eliminate any unnecessary disturbance to the avoided plants during construction. Furthermore, construction fencing would be placed around the buffer zones, as directed by the botanist.
Biological Resources	Mitigation Measure (Salvage). Areas occupied by this plant species that cannot be avoided would require a salvage effort directed by a qualified botanist. The salvage effort would include the collection of seed and topsoil. Seed would be collected at a time of year when the species is most prolific, and stored in a ventilated container in a cool dry location. Soil would be collected and stockpiled at a nearby location. The stockpiled soil, and then the seed, would be returned to the disturbed area in which it was collected once construction in the area is complete.
Biological Resources	Mitigation Measure (Construction Timing). If feasible, Project elements within 0.5 miles of riparian habitat at the intersection of Bell Road and Orestimba Creek would be constructed outside the Swainson's hawk nesting season, typically defined as March 1-September 15.
Biological Resources	Mitigation Measure (Surveys). If Project elements within 0.5 miles of riparian habitat at the intersection of Bell Road and Orestimba Creek must be initiated between March 1 and September 15, a qualified biologist would conduct surveys for Swainson's hawk nests on and within ½ mile of the Project APE following the survey methods and timing prescribed by the Swainson's hawk Technical Advisory Committee (SHTAC) 2000 Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.
Biological Resources	Mitigation Measure (Avoidance). Should any active nests be discovered in or near proposed construction zones, the biologist would identify a suitable construction-free buffer around the nest. This buffer would be identified on the ground with flagging or fencing, and would be maintained until the biologist has determined that the young have fledged.
Biological Resources	Mitigation Measure (Construction Timing). If feasible, the Project would be implemented outside of the avian nesting season, typically defined as February 1 to August 31.

Resource	Protection Measure
Biological Resources	Mitigation Measure (Preconstruction Surveys). If construction is to occur between February 1 and August 31, a qualified biologist would conduct pre-construction surveys for active bird nests within 10 days prior to the start of construction. The survey area would encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e. birds of prey).
Biological Resources	Mitigation Measure (Avoidance of Active Nests). Should any active nests be discovered in or near proposed construction zones, the biologist would identify a suitable construction-free buffer around the nest. This buffer would be identified on the ground with flagging or fencing, and would be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.
Cultural Resources	In the event that previously unidentified subsurface deposits believed to be cultural or human in origin are discovered during implementation of this undertaking, then all work must halt within a 50-foot radius of the discovery. Reclamation Cultural Resource Staff would be notified and would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13(b). A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, shall be retained to evaluate the significance of the find on non-Federal lands, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find: 1. If the professional archaeologist determines that the find does not represent a cultural resource, then work may resume immediately and no agency notifications are required. 2. If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, then he or she shall immediately notify the Bureau of Reclamation and applicable landowner. The agency shall consult on a finding of eligibility and implement appropriate treatment measures if the find is determined to be eligible for inclusion in the NRHP. Work cannot resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either: 1) is not eligible for the NRHP; or 2) that the treatment measures have been completed to their satisfaction.
Cultural Resources	<u>Human Remains</u> Different laws govern the disposition of human remains inadvertently discovered on private, State, Tribal, and Federal lands. It is, therefore, imperative that Reclamation contractors, and other CRM contractors, understand the ownership status of lands on which archaeological work is to be conducted to ensure that the appropriate laws are followed. The following summarizes of the applicable laws that govern the inadvertent (i.e. unplanned) discovery of human remains and the procedures to be

Resource	Protection Measure
	followed should human remains be discovered during the course of archaeological work permitted by Reclamation or other underlying landowner. <u>Federal and Tribal Lands</u> Under the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001) and implementing regulations 43 CFR Part 10, Reclamation is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains must be treated with respect and dignity at all times. In the event that suspected human remains are discovered during proposed project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in 43 CFR § 10.4 Inadvertent Discoveries. The Reclamation Region 10 Cultural Resource Officer will be immediately notified by telephone and will take responsibly for the discovery by contacting the appropriate law enforcement and Reclamation officials. Within three (3) working days of confirmation of the discovery [see 43 CFR Part 10.4(d)(1)(iii)], the Regional Archaeologist will notify by telephone or in person, with written confirmation, the Indian tribes likely to be affiliated with the discovered human remains (e.g., lineal descendant, culturally affiliated Indian tribe, Indian tribe with other cultural relationship, and Indian tribe that aboriginally occupied area). Treatment and handling of the remains will be determined through consultation between Reclamation and consulting tribes. <u>Other Public and Private Lands in California</u> There are numerous California State laws and codes that direct the preservation of prehistoric and historic cultural resources, establish the procedures for protecting inadvertently discovered Native American human remains, and impose penalties and punishments for persons acting in violation of the legal code. Specifically, Section 7050.5 of the California Health and Safety Code deals with the discovery of human remains in any location other than a dedicated cemetery and directs that in such cases the coroner of the county in which the remains are discovered be contacted and further excavation or disturbance in the location of discovery be discontinued until the coroner has examined the remains and made recommendations concerning their treatment and disposition. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the coroner is required to contact the California Native American Heritage Commission (NAHC), by telephone, within 24 hours. Stipulations encouraging private landowners to work with the NAHC and the most likely descendant identified by the NAHC to establish and carry

Resource	Protection Measure
	out appropriate treatment of the remains are outlined in Section 5097.98 of the California Public Resources Code.
Cultural Resources	If construction is conducted within 1,500 feet of the cemetery, a qualified archaeologist shall be present during ground-disturbing activities.

Environmental consequences for resource areas assume the measures specified would be fully implemented.

3 Affected Environment and Environmental Consequences

3.1 Federal Required Resources Disclosures

Department of Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of Native American Indian sacred sites, Indian Trust Assets, and Environmental Justice when preparing environmental documentation. Impacts to these resources were considered and found to be minor or absent.

3.1.1 Indian Trust Assets

Indian Trust Assets are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are no Indian reservations, rancherias or allotments in the Proposed Action area. The nearest Indian Trust Asset is a public domain allotment about 45 miles to the south. Based on the nature of the Proposed Action it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the Proposed Action will not have any impacts on Indian Trust Assets.

3.1.2 Indian Sacred Sites

Executive Order 13007 (May 24, 1996) a requires that federal agencies accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoids adversely affecting the physical integrity of such sacred sites. The Proposed Action would not limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or affect the physical integrity of such sacred sites. There would be no impacts to Indian sacred sites as a result of the Proposed Action.

3.1.3 Environmental Justice

Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. The Proposed Action/Project would allow the recharge of excess surface water supplies within existing and proposed recharge facilities for use during dry periods when needed benefitting agricultural

activities and would, therefore, not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.

3.2 Other Resources

This section of the EA/IS includes the NEPA and CEQA analysis portion of the potentially affected environment and the environmental consequences involved with the Proposed Action/ Project.

3.2.1 Aesthetics

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

3.2.1.1 Affected Environment

The general characteristic of the region includes agricultural lands and support facilities, canals and ditches of varied sizes which are used to convey water for irrigation. Water sources for the region include surface water supplies from the CVP (typically from the DMC), recovered tailwater from irrigation activities, and pumped groundwater. The Project area is predominately surrounded with active agriculture, including orchards and annual field crops, as well as agricultural support features, including farm shops and produce distribution centers.

3.2.1.2 Environmental Consequences

No Action

There would be no impact to aesthetics since there would be no construction of the Proposed Action/Project and conditions would remain the same as existing conditions. The area would continue to be used for agricultural production and surrounding agricultural support uses.

Proposed Action/Project

The Proposed Action/Project would have no impact on aesthetic resources. The Proposed Action/Project features that would be visible to the public include the pump station (**Figure 4 of Appendix E**), the new diversion box and standpipe at Turnout 51.65L (**Figure 5 of Appendix E**), a new slant-mount pump on the DMC next to the Newman Wasteway (**Figure 5 of Appendix E**), additional groundwater recharge pond levees and the monitoring wells (**Figure 9 of Appendix E**), all of which are consistent with the existing agricultural support facilities. The delivery pipelines would be below ground and would not be visible.

Cumulative Impacts

The Proposed Action/Project would not be precedent setting, nor have a cumulative adverse impact. There are not any past, present, or future projects in the area that could potentially contribute to a cumulative effect to aesthetic resources.

3.2.2 Agricultural Resources

Pursuant to CEQA, in determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to	☐	☐	☐	☒

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
non-agricultural use or conversion of forest land to non-forest use?				

3.2.2.1 Affected Environment

The lands surrounding the Project area consist of 20 acres of existing recharge ponds, and irrigated agriculture properties or support agricultural activities (farmyards and shops, water distribution features including canals, ditches, drains, and pump stations). California Department of Conservation inventoried 425,378 acres of designated important farmland in Stanislaus County in 2016, out of a total county area of 970,169 acres. Of these, 249,967 acres were designated as prime farmland, 33,172 acres as farmland of statewide importance, 116,210 acres as unique farmland, and 26,029 acres as farmland of local importance (California Department of Conservation 2016). The Project area includes Prime Farmland, Semi-Agricultural and Rural Commercial, Unique Farmland and Grazing Land (**Figure 10 of Appendix E**). Although the majority of the Project area is listed as "Prime Farmland" and the property is enrolled in a Williamson Act contract, insufficient water supplies have resulted in fallowing of the recharge pond site for the past five years, leaving the site unproductive. The remaining Project area is largely along the DMC and would not remove any farmland from production.

3.2.2.2 Environmental Consequences

No Action

Under the No-Action alternative, groundwater levels within the regional area may continue to decline, potentially jeopardizing the long-term viability of agriculture for growers within CCID and DPWD and throughout the regional area (**Figure 11 of Appendix E**). If insufficient groundwater exists to sustain agriculture at current levels, at least some lands within the affected area may require either fallowing or conversion to other uses not dependent on irrigation (e.g., dry-land grazing) at some point in the future. The area could also lose the benefit of future direct recharge opportunities.

The continued demand for water to meet irrigation needs would force landowners to increase groundwater pumping and the depth to groundwater within CCID and DPWD would continue to increase. The increased groundwater depth would result in greater energy use to pump the amount water needed for continued agricultural production. Without this Proposed Action/Project the Groundwater Sustainability Area (GSA) would have to identify other projects that would maximize the use of other water supplies to help meet the Subbasin sustainability goals. As part of the Tier 1 management action items for the GSA, lower aquifer pumping rules for minimizing subsidence are being put into place (Delta-Mendota GSP, 2019).

Proposed Action/Project

The Proposed Action/Project would convert approximately 60 acres of prime farmland into groundwater recharge ponds. This Proposed Action/Project is identified as a Tier 1 project by the GSP and is supposed to be implemented by 2025. It would benefit agriculture activities by increasing groundwater recharge in the upper aquifer, reducing groundwater pumping and reducing

declines in groundwater elevations in the area (Delta-Mendota GSP, 2019). All other acres of the Project would not convert farmland. Water recharged by this Project during wet periods would be extracted and used locally to support irrigation demands for up to 800 acres. Water would be used to keep existing agricultural land in production during dry years. No new land would be brought into production as a result of the Proposed Action/Project.

Recharge facilities are permitted uses in agricultural zoning districts and agricultural preserves. The Proposed Action/Project is compatible with the GSP's goal of protecting agricultural resources through the beneficial use of percolation recharge ponds and the Project would help reduce the potential for agricultural lands to be fallow. By recharging the groundwater basin, groundwater would be available for irrigation during drier periods and could reduce the need to leave lands fallow, thereby providing a benefit to the agricultural resources and associated work force and support businesses in the region.

Cumulative Impacts

The canals, groundwater recharge facilities, rivers, and conveyance facilities associated with the Proposed Action/Project are managed primarily for agricultural supplies. The Proposed Action/Project would not interfere with water deliveries, facility operation, or cause substantial adverse changes to the conveyance facilities. The Proposed Action/Project would not have a considerable contribution to a cumulative adverse impact on agriculture.

3.2.3 Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

3.2.3.1 Affected Environment

The Proposed Action/Project lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in the State. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley

experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Despite years of improvements, the SJVAB does not meet some State and Federal health-based air quality standards. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by Federal law to adopt stringent control measures to reduce emissions. On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action equal or exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. **Table 2** below presents a summary of ambient air quality standards and attainment designation of the SJVAB, while **Table 3** presents the emissions thresholds of the SJVAPCD covering the Proposed Action/Project location.

Table 2 - Summary of Ambient Air Quality Standards and Attainment Designations

Pollutant	**Averaging Time**	**California Standards***		**National Standards***	
		Concentration*	**Attainment Status**	**Primary**	**Attainment Status**
Ozone (O_3)	1-hour	0.09 ppm	Non-Attainment	-	Non-Attainment (Extreme)**
	8-hour	0.070 ppm		0.075 ppm	
Particulate Matter (PM_{10})	AAM	20 µg/m3	Non-Attainment	-	Attainment
	24-hour	50 µg/m3		150 µg/m3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m3	Non-Attainment	12 µg/m3	Non-Attainment
	24-hour	No Standard		35 µg/m3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Maintenance
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		-	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	0.053 ppm	Attainment/ Unclassified
	1-hour	0.18 ppm		0.100	
Sulfur Dioxide (SO_2)	AAM	-	Attainment	0.03 ppm	Attainment/ Unclassified
	24-hour	0.04 ppm		0.14 ppm	
	3-hour	-		-	
	1-hour	0.25 ppm		75 ppb	
Lead	30-day Average	1.5 µg/m3	Attainment	-	No Designation/ Classification
	Calendar Quarter	-		1.5 µg/m3	
	Rolling 3-Month Average	-		0.15 µg/m3	
Sulfates	24-hour	25 µg/m3	Attainment		

Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Hydrogen Sulfide	1-hour	0.03 µg/m3 (42 µg/m3)	Unclassified	No federal standards.	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m3)	Attainment		
Visibility-Reducing Particulate Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles of more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.	Unclassified		

Sources SJVAPCD, November 2021.

Table 3 - San Joaquin Valley Air Pollution Control District Thresholds of Significance

Pollutant	Construction Emissions (Tons/year)	Operation Emissions (Tons/year)
VOC/ROG (as an ozone precursor)	10	10
NO_x (as an ozone precursor)	10	10
PM_{10}	15	15
$PM_{2.5}$	15	15
CO	100	100
SO_x	27	27

Sources SJVAPCD, November 2021.

Emissions from the Proposed Action/Project would be associated with construction activities, and operation activities such as maintenance. Construction of the Proposed Action/Project would be accomplished with scrapers, graders, compactors, trenchers, backhoes, forklifts, front end loaders, water trucks, and materials and equipment hauling trucks. Construction is anticipated to involve 10-12 workers who would work in single shifts, five days per week. It has been estimated that construction activities would take approximately four months to complete.

3.2.3.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to air quality since no construction would take place. However, pumps would have to work harder to lift the water from diminished aquifers.

Proposed Action

Proposed Action/Project operations would not substantially contribute to criteria pollutant emissions, as water distribution through the facilities would be a passive process; however, there would be emissions associated with construction.

In years of surplus water, the Proposed Action/Project would help reduce energy usage and pollution. As the recharge efforts reduce the decline of groundwater levels, the well pumps in the area would not have to work as hard to lift the water as compared to conditions that would exist under the No Action Alternative, again reducing energy consumption and air pollution.

There are no sensitive receptors (as defined by the Stanislaus County Noise Element) within the Project vicinity. Short-term air quality impacts would be associated with construction and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM_{10} (particulate matter less than 10 microns in diameter) and $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter). Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide (NO_2), CO (carbon monoxide), carbon dioxide (CO_2), ROG (reactive organic gases), sulfur dioxide, and small amounts of air pollutants. **Table 4** below provides a summary of the estimated emissions during construction of the Proposed Action/Project. Construction and operation criteria air pollutant

emissions were estimated using CalEEMod Version 2016.3.2. A summary of construction emissions is included in **Table 4.** Operation emissions are included in **Table 5**.

Table 4 - Estimated Annual Construction Criteria Air Pollutant Emissions in Tons per Year

	ROG	NO_X	CO	SO_X	PM10	PM2.5
2022	0.0761	0.7893	0.5426	0	0.9265	0.2493
2023	0.0382	0.3745	0.3953	0	0.6669	0.0995
SJVAPCD Threshold	10	10	100	27	15	15
Threshold Exceeded?	No	No	No	No	No	No

Notes: SJVAPCD = San Joaquin Valley Air Pollution Control District
ROG = reactive organic gases NO_X = nitrogen oxides CO = Carbon monoxide SO_X = sulfur oxides
PM_{10} = inhalable particulate matter between 2.5 and 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

Comparing the estimated Proposed Action/Project construction emissions as seen above in Table 4 with the thresholds for federal conformity determinations indicates that Proposed Action/Project emissions are estimated to be below these thresholds. As shown by **Table 5** below, the Proposed Action/Project would be largely passive during operation so there would be minimal operational emissions generated by its implementation. Emissions would be a result of the groundwater recharge pond maintenance which would be done semi-annually. Maintenance activities include the removal of sediment, vegetation, and other materials to improve percolation capacity. This work would include the operation of two excavators and two trucks to remove accumulated sediment and vegetation for approximately four weeks every year. These types of emissions are comparable to standard farming practices that are currently occurring on the site. Electrically-driven pumps and motors would be used during operations and would not contribute emissions. Emissions would be minimal and not exceed SJVAPCD thresholds or the federal threshold.

Table 5 - Estimated Annual Operation Criteria Air Pollutant Emissions in Tons per Year

	ROG	NO_X	CO	SO_X	PM10	PM2.5
Annual	0.0358	0.3564	0.3074	0	0.1110	0.0534
SJVAPCD Threshold	10	10	100	27	15	15
Threshold Exceeded?	No	No	No	No	No	No

Notes: SJVAPCD = San Joaquin Valley Air Pollution Control District
ROG = reactive organic gases NO_X = nitrogen oxides CO = Carbon monoxide SO_X = sulfur oxides
PM_{10} = inhalable particulate matter between 2.5 and 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

Therefore, construction and operation under the Proposed Action/Project would not result in adverse impacts to air quality by exceeding federal thresholds.

Cumulative Impacts

The geographic scope of potential cumulative air quality impacts encompasses the immediate Project vicinity for particulates and the San Joaquin Valley Air Basin for ozone precursor pollutants. SJVAPCD considers a Project would not have a cumulative effect if the Project complies with the requirements in an approved plan or mitigation program, including, an air quality attainment or

maintenance plan. SJVAPCD developed air quality plans to attain State and Federal standards for ozone and particulate matter. As part of SJVAPCD's air quality attainment plan, Regulation VIII reduces ambient concentrations of fine particulate matter by controlling fugitive dust and compliance with District Rule 9510 would reduce construction exhaust NOx and PM10 emissions by 20 percent and 45 percent, respectively. Since Regulation VIII measures would be implemented and the Project would also comply with District Rule 9510, the Project complies with SJVAPCD's air quality attainment plan. Therefore, the Proposed Action/Project would not incrementally contribute to a cumulative effect.

Emissions for the Proposed Action/Project are well below the *de minimis* thresholds established by the SJVAPCD and would not have a considerable contribution to a cumulative adverse impact on air quality.

3.2.4 Biological Resources

Would the Project:	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a) 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 California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) 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?	☐	☒	☐	☐
d) 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 sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community	☐	☐	☐	☒

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
Conservation Plan, or other approved local, regional, or state habitat conservation plan?				

3.2.4.1 Affected Environment

Live Oak Associates (LOA) conducted a biological resources investigation of approximately 209 acres for the development of the Proposed Action/Project and evaluated potential Project-related impacts to biological resources.

A field survey of the Project site was conducted on June 3 and 4, 2021 by LOA biologist Jeff Gurule. The survey consisted of walking the proposed Orestimba Creek turnout area (**Figure 2 of Appendix B**) and walking and/or driving the linear area of the Project site while identifying the principal land uses of the Project site and the constituent plants and animals of each land use. The field survey conducted for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the Project site. The survey also included an investigation of hydrologic features potentially subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or Regional Water Quality Control Board (RWQCB). Likely jurisdictional waters within the APE comprise of the DMC and riparian areas, and possibly sections of the toe drain on the east and west side of the DMC. Proposed facilities will only impact small areas of these potentially jurisdictional waters. The exact area of impact is unknown at the time but will most likely be less than 0.10 acres. Such a small area of impact is considered less than significant under CEQA. An Aquatic Resources Delineation will be completed in accordance with the USACE guidelines in order to assess the accurate amount of impact and obtain the necessary permits.

The following site description and analysis of impacts includes excerpts from the Biological Resources Evaluation report which is available in its entirety as Appendix B (Biological Evaluation). this document. The 60 acres of ponds were evaluated in the previous biological study performed as part of the environmental document prepared for the pilot project (Reclamation 2017). Approximately 20 acres of the surveyed area were built in 2018 and the remaining 60 acres of ponds would be constructed in conjunction with the construction of the Project elements described in the Project description above and covered in this analysis. While associated with the current Project, the recharge ponds were not surveyed as part of the Project covered in this analysis because they were previously surveyed.

Agricultural areas within the Project area consisted of orchards, fields, and agricultural ditches or basins along existing roads or canals. Vegetation within agricultural areas at the time of the field survey was either dominated by the crop species or barren of vegetation due to recent discing.

At the time of the field survey, the Project site consisted primarily of an irrigated oat field, several residences and associated outbuildings, and disturbed lands bordering these uses. Five land uses/biotic habitats were identified within the Project site: agricultural, residential, canal, ruderal/developed, and riparian.

The Project site is absent of any critical habit and there are no habitat conservation plans that pertain to the site. The Project design is consistent with the goals and policies of the Stanislaus County General Plan.

3.2.4.2 Environmental Consequences

No Action

Under the No Action Alternative, any flood water would stay in the existing Orestimba Creek and would not be diverted to the recharge ponds. The conditions of special-status wildlife species and habitats under the No Action Alternative would remain the same as they would be under existing conditions. Therefore, there would be no additional impacts to biological resources since conditions would remain the same as existing conditions.

Proposed Action/Project

Five species may utilize the site for foraging but would nest and roost elsewhere. These species are the Swainson's hawk, bald eagle, northern harrier, western red bat, and pallid bat. Since these species are highly mobile while foraging, the Proposed Action/Project is not expected to result in construction related mortality of individuals that may occur on the site prior to or during construction. The Project site does not represent unique or important foraging habitat for these species, with many square miles of similar habitat present in the region. Furthermore, upon Proposed Action/Project completion, foraging habitat conditions would remain essentially unchanged from pre-Project conditions. If Swainson's hawks are nesting in this riparian area at the time of construction of the turnout and pump station, these activities could compromise Swainson's hawk nesting success. As a result, construction-related disturbance of nesting Swainson's hawks within 0.5 miles of known nesting habitat near the intersection of Bell Road and Orestimba Creek is considered a potentially significant impact of the Project under CEQA; however, with implementation of required environmental commitments the potential impact has been reduced to less than significant. Proposed Action/Project impacts to the bald eagle, northern harrier, western red bat, and pallid bat are considered less than significant under CEQA. Environmental commitments (**Table 1**) have been included into the Proposed Action/Project to avoid and/or reduce potential environmental effects. With the implementation of these measures potential impacts would be less than significant.

Based on the available hydrologic information, Project design plans, and correspondence with Project engineers, the following conclusions have been made. The Proposed Action/Project would not alter the course of riparian distributary channel flows before reaching the proposed turnout at the downgradient area of the riparian zone. During flood events the Proposed Action/Project would divert a maximum of 35-40 cfs of creek flows through a controllable turnout. The criteria the Project Proponents are using to divert is the SWRCB's 90^{th} percentile/20% methodology identified under a Streamlined Water Right application. Additionally, the Project Proponents would bypass the first 100 cfs of creek flow. The spill elevation of the proposed turnout would allow approximately 6.0 inches of water to continue to pond in the near vicinity of the turnout. The proposed turnout would lower the surface water elevation around the turnout and likely reduce the amount of time that water would pond in this area. Based on these conclusions, it is anticipated that the altered hydrologic regime from Proposed Action/Project implementation, while diminishing surface water accumulations in the area around the proposed turnout, would continue to support

riparian habitat in the Project vicinity and that the Project would not result in a substantial loss of riparian habitat (i.e. less than 0.1 acres as noted above).

Likely jurisdictional waters on the site comprise riparian areas within the Action area, and possibly sections of the toe drain on the east and west side of the DMC within the APE. Proposed facilities would only impact small areas of these potentially jurisdictional waters. The exact area of impact is unknown at the time of this analysis but is anticipated to be less than 0.10 acres. CCID and DPWD will acquire any applicable permits for working within waters of the U.S. that would include required avoidance and minimization measures reducing potential impacts.

While the DMC and CCID Main Canal may provide some movement opportunity for common terrestrial wildlife and non-native fish species, they would not be considered a regionally important movement corridor due to abundant movement opportunity within surrounding agricultural lands and the lack of native fish species anticipated in the canals. After construction, locally occurring, common fish and wildlife species would utilize these canals in the same manner as before Proposed Action/Project build-out. As a result, the Project would not have a substantial effect on wildlife movement corridors.

The Project has the potential to impact the following: Spiny-sepaled Button Celery, Swainson's Hawk, and nesting birds including the Tricolored Blackbird and Loggerhead Shrike. Implementing the measures from **Table 1** would reduce these impacts to a less than significant level under CEQA and avoid potential adverse impacts under NEPA.

With the implementation of the environmental commitments included in **Table 1**, Reclamation has determined that there would be "no effect" to proposed or listed species or designated critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.) and no take of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.) and The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).

Cumulative Impacts

The construction and operation of the diversion facilities during times of heavy precipitation, when added to other actions, represents an improvement of existing groundwater conditions and is unlikely to result in cumulative impacts to biological resources of the study area.

3.2.5 Global Climate Change/Greenhouse Gas Emissions

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.2.5.1 Affected Environment

Greenhouse gases and climate change are cumulative global issues. The California Air Resources Board (CARB) and the EPA regulate greenhouse gas emissions in California and the U.S., respectively. While CARB has the primary regulatory responsibility for greenhouse gas emissions in California, local agencies such as SJVAPCD can also adopt policies for greenhouse gas emission reduction.

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases, such as carbon dioxide (CO_2), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: CO_2, methane (CH_4), nitrous oxide, and fluorinated gasses (EPA 2019).

3.2.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no increase resulting from the Proposed Action/Project's construction or operational emissions. However, existing pumps would have to work harder to lift the water from diminished aquifers. Therefore, no impacts or changes to climate change are anticipated under No Action.

Proposed Action/Project

The Proposed Action/Project implementation would result in relatively minimal emissions during construction. CalEEMod projects CO_2 output emission would be a total of 166.98 metric tons/year, amortized over 30 years for a total of 5.57 metric tons/year (see **Table 4**). Operational emissions would be a result of the additional electric pumps running during wet years. During a dry year, the emissions for up to nine, 100 horsepower pumps running for 214 days per dry year, and two 140 horsepower pumps running for 214 days per year would be 806 metric tons CO_2 equivalent annually. This is the maximum that would occur during a dry year. SB350 requires that by 2030 50% of electricity procurement originates from renewable sources. Therefore, over time as utility companies reach this goal greenhouse gas emissions from the pumps would decrease. Construction and operation under the Proposed Action/Proposed Project would result in below *de minimis* impacts to the global climate.

Cumulative Impacts

Greenhouse gas emissions are considered cumulatively significant; however, the estimated annual CO_2 emissions required to install and operate the proposed facility is well below the 25,000 metric tons per year threshold for reporting greenhouse gas. As a result, the Proposed Action/Project is not expected to contribute to cumulative adverse impacts to global climate change.

3.2.6 Cultural Resources

The Proposed Action/Project requires compliance with CEQA as well as the National Historic Preservation Act (NHPA) of 1966, as amended. Both the NHPA and CEQA essentially mandate that government agencies take into consideration the effects of their actions on cultural resources listed on or eligible for inclusion in the California Register of Historical Resources (CRHR) (defined as historical resources at 14 CCR § 15064.5[a]) and the National Register of Historic Places (NRHP)

(defined as historic properties at 36 CFR § 800.16[l]). While the NRHP and CRHR significance criteria are similar, the former is given precedence in this analysis because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but the reverse is not necessarily true (PRC 5024.1[c]). Therefore, employing the federal standards will be applicable in both federal and state regulatory contexts.

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Title 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800, is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Resources are historic properties if they are on or eligible for inclusion in the National Register.

The Section 106 process is in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that area of potential effects, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The Proposed Action is the type of action that has the potential to cause effects to historic properties pursuant to 36 CFR §800.3 of the Section 106 implementing regulations. The issuance of a Federal authorization and execution of a Federal contract requires compliance with Title 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800. As a result of this determination, Reclamation implemented the steps in the Section 106 process as outlined at §800.3 to §800.6.

Would the project:	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

3.2.6.1 Affected Environment

In an effort to identify historic properties, a cultural resources investigation of the APE was conducted by Applied EarthWorks Incorporated (Applied Earthworks), including a geoarchaeological site sensitivity assessment and a review of previous project investigations and previous National Register of Historic Places (National Register) evaluations. Applied Earthworks assessed the potential for subsurface cultural resources in the APE and concluded that there is no to low sensitivity for buried sites. This investigation identified 13 historic-era cultural resources in the APE: the CCID Main Canal (4 segments): the DMC (2 segments): the Newman Wasteway (1 segment): 4 bridges (Anderson Road Bridge and Stuhr Road Bridge over the CCID Main Canal, the Eastin Bridge over Newman Wasteway, and the Stuhr Road Bridge over the DMC), and segments of 6 historic-era roads (Orestimba Road, Anderson Road, Eastin Road, Bell Road, Hale Road, and Stuhr Road [two segments]).

The CCID Main Canal (P-50-000065), an approximately 80-mile-long canal constructed circa 1871, was originally known as the San Joaquin and Kings River Irrigation Company Canal. Four segments of the CCID Main Canal are in the APE. All are earthen, flat, and winding with road access on either side of the canal. The entirety of the CCID Main Canal has not been recorded or evaluated and doing so is outside the scope of this project; therefore, for the purposes of this undertaking only, we are treating the CCID Main Canal as a historic property potentially eligible for listing on the National Register of Historic Places (National Register) under Criterion A as an early main irrigation canal and for its association with the renowned Miller and Lux Company ranching enterprise. Applied Earthworks recorded and evaluated the segments in the APE and recommended them not eligible as contributing elements to the potentially eligible CCID Main Canal due to a lack of integrity.

The DMC was completed in 1951 as part of the Delta Division of Reclamation's Central Valley Project (CVP) to convey irrigation water southeast from the Tracy Pumping Plant along the west side of the San Joaquin Valley. Reclamation treats the DMC as significant under National Register Criterion A under the theme of development, construction, and operation of the CVP, with a period of significance of 1946-1971. Under this theme and in this period, the DMC contributed to California's economic and agricultural development and growth as a water conveyance component of the CVP.

The Newman Wasteway, an 8.2-mile-long canal built in 1951, is one of five wasteway structures associated with the DMC, and one of two connected to the DMC that uses a concrete-lined chute instead of a stilling basin. A previously unrecorded segment of the Newman Wasteway measuring 1.4 miles long from its headworks on the DMC to the CCID Main Canal was documented in the APE. The Newman Wasteway was previously evaluated and determined it to be a contributing element of the DMC with consensus from your office.

Applied Earthworks recorded and evaluated the four bridges and six road segments in the APE and recommended that these cultural resources are not eligible for inclusion on the National Register.

Pursuant to the regulations at 36 CFR § 800.3(f)(2), we identified the Tule River Indian Tribe and the Tuolumne Band of Me-Wuk Indians as Indian tribes who might attach religious and cultural significance to historic properties, including sites of a sacred nature pursuant to Executive Order 13007, in the APE. Our office sent letters on September 28, 2021, to invite the participation of these tribes in the Section 106 process pursuant to 36 CFR § 800.4(a)(4). We also sent letters to the Calaveras Band of Mi-Wuk Indians, the Confederated Villages of Lisjan, the North Valley Yokuts Tribe, the Southern Sierra Miwuk Nation, and the Wuksache Indian Tribe Eshom Valley Band, who were identified as Native American organizations likely to have knowledge of or concerns with cultural resources in the area, requesting their assistance in identifying historic properties which may be affected by the proposed undertaking pursuant to 36 CFR § 800.4(a)(3). No responses have been received from the contacted tribes and Native American organizations and no historic properties have been identified through these efforts. If Native American concerns are subsequently raised, we will work to address them.

The only identified historic properties in the APE are the DMC and the Newman Wasteway, which are components of the CVP, as well as the potentially eligible CCID Main Canal. Applied Earthworks applied the criteria of adverse effect, 36 CFR § 800.5(a), for the current undertaking and found that the proposed activities would result in no significant alterations to the physical characteristics that make the DMC, the Newman Wasteway, or the CCID Main Canal eligible for the National Register. Since there will be no alterations to any character defining features of the DMC or the Newman Wasteway, the CVP will also be unaffected.

3.2.6.2 Environmental Consequences

No Action

Under the no action alternative, construction of the turnout, pipeline, and additional recharge ponds would not proceed. There would be no change in operations. Conditions related to cultural resources would remain the same as existing conditions and there would be no impacts to cultural resources.

Proposed Action/Project

The Proposed Action is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a). A records search, a cultural resources survey, and Tribal consultation identified three historic properties: the DMC and the Newman Wasteway, which are components of the CVP, and the potentially eligible CCID Main Canal, which is assumed eligible for the purposes of this undertaking only. Applied Earthworks applied the criteria of adverse effect, 36 CFR § 800.5(a), for the current undertaking and found that the proposed activities would result in no significant alterations to the physical characteristics that make the DMC, the Newman Wasteway, or the CCID Main Canal eligible for the National Register. Since there will be no alterations to any character defining features of the DMC or the Newman Wasteway, the CVP will also be unaffected. Reclamation consulted with the SHPO on November 24, 2021, requesting concurrence on our finding of "no adverse effects to historic properties pursuant to 36 CFR § 800.5(b)." SHPO responded on December 16, 2021 with no objections to Reclamations' findings and determination.

Consequently, there will be no significant effect to cultural resources as a result of the Proposed Action.

Should changes be made to this project, or cultural resources discovered during construction, additional NHPA Section 106 compliance may be necessary, in accordance with 36 CFR § 800.13(b).

Cumulative Impacts

Reclamation has determined that the Proposed Action/Project would not result in impacts to cultural resources; therefore, there would be no cumulative impacts.

3.2.7 Energy

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

3.2.7.1 Affected Environment

Pacific Gas & Electric currently provides electric and natural gas service to the Project area.

3.2.7.2 Environmental Consequences

No Action

Under the No Action alternative, there would be a potential for increased energy use as depth to groundwater would increase resulting in more energy use to pump historic amounts of groundwater.

Proposed Action/Project

Operation of the nine new pumps as part of the recharge and recovery facilities would directly consume energy. However, when compared to increased pumping from deeper aquifers that is currently occurring in the Project area the energy use would be similar to existing conditions. Construction of the Project would require energy use for equipment operation, but this use would not be wasteful or inefficient, nor would it require new or expanded electric power or natural gas facilities. No features of the Proposed Action/Project would conflict with or obstruct state or local plans for renewable energy or energy efficiency. The Proposed Action/Project would not require the relocation or construction of new or expanded electric power or natural gas facilities. The impact on energy use and energy plans would be less than significant.

Cumulative Impacts

There would be no cumulative impacts to energy use or conflict with energy plans from this Proposed Action/Project.

3.2.8 Geology/Soils

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒

3.2.8.1 Affected Environment

The Project area consists of deep soils derived from alluvial sources. The soil types in the Project area contain 13 soil mapping units from six different soil series. **Appendix D**, summarizes all these soils, which are well drained and none of them are hydric (NRCS, 2021). The topography of the Project area is relatively flat. There are no known active faults near the Project area and the Proposed Action/Project is not located in an Alquist-Priolo Earthquake Fault Zones. The nearest fault is the Ortigalita Fault located approximately 12 miles to the west (California Geological Survey, 2021).

3.2.8.2 Environmental Consequences

No Action

Under the No Action alternative, the continued demand for water to meet irrigation needs would force landowners to increase groundwater pumping from below the Corcoran Clay, potentially causing compaction and reducing storage in the lower confined aquifer continuing to cause subsidence issues (Delta-Mendota GSP, 2019). Without this Proposed Action/Project the GSA would have to identify other projects that would maximize the use of other water supplies to help meet the Subbasin sustainability goals. As part of the Tier 1 management action items for the GSA, lower aquifer pumping rules for minimizing subsidence are being put into place (Delta-Mendota GSP, 2019). With the No Action alternative, there would be no ground disturbance or digging performed on site, other than on going farming and canal maintenance activities.

Proposed Action/Project

The Project area is not located within a fault zone, therefore the Alquist-Priolo Earthquake Fault Zoning Act does not apply to this Proposed Action/Project. Common secondary seismic hazards include ground-shaking, liquefaction, subsidence and seiches. The Proposed Action/Project components would be designed to meet California Uniform Building Codes design standards for secondary hazards.

Localized areas of the Project area would be disturbed during construction due to excavation associated with construction of the recharge ponds, pipelines and appurtenant structures. All suitable material from excavation would be reused in the Project area to the extent feasible. Prior to construction, a Stormwater Pollution Protection Plan (SWPPP) would be prepared, and BMPs would be proposed to reduce potential erosion and runoff during rain events. Potential erosion during construction would be addressed through the implementation of the SWPPP and BMPs. The Proposed Action/Project would not have an effect on soil erosion or expose people or structures to potential adverse effects.

Increased groundwater recharge from the Project will directly contribute to increased groundwater levels in the Upper Aquifer, above the Corcoran Clay. Providing alternative sources of water during dry/critically dry periods for irrigation, thereby offsetting groundwater pumping and reducing declines in groundwater elevations (Delta-Mendota GSP, 2019).

Cumulative Impacts

No cumulative adverse impacts are anticipated to Geology and Soils.

3.2.9 Hazards/Hazardous Materials

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

3.2.9.1 Affected Environment

The Hazardous Waste and Substances Sites List (Cortese List) is a planning document used to comply with the requirements for providing information about the location of hazardous materials release sites. A search of the Cortese List was conducted to identify any known hazardous release sites located within one mile of the Project area. The records search identified one leaking underground storage tank cleanup site (RB Case # 500281) located adjacent to the Project area. However, the site has been cleaned up and the case was closed in March 1996. There are no schools or airports within two miles of the Project area.

3.2.9.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no potential impact from hazards or hazardous materials as conditions would remain the same as existing conditions.

Proposed Action/Project

Hazardous materials (e.g., gasoline, oil, and lubricants) used during construction could be accidently released. Compliance with Federal, State, and local regulations would reduce the potential for accidental release of hazardous materials during construction. The contractor would also be required to prepare a SWPPP, which details the contractors plan to prevent discharge from the site. The implementation of the SWPPP and associated best management practices (BMPs) would ensure that the risk of accidental spills and releases into the environment would be minimal. BMPs could include (but are not limited to) the following:

- Vehicle maintenance plan to prevent fluid leaks.
- Designated refueling station.
- Installation of tarps and/or straw waddles to prevent soil runoff.

Cumulative Impacts

No cumulative adverse impacts from hazards are anticipated.

3.2.10 Hydrology and Water Quality

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or				
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

3.2.10.1 Affected Environment

Portions of the Project area are located adjacent to Orestimba Creek and the DMC. The Project area is completely surrounded by cultivated agriculture (row crops, olive and almond orchards). Irrigation water (surface water and groundwater) is applied either through pressurized irrigation systems (within the orchards) or furrow irrigation supplied by a head ditch. Due to restricted water supplies groundwater levels within the regional area have historically decreased at a rate averaging about 0.8 feet per year (**Figure 11 of Appendix E**).

3.2.10.2 Environmental Consequences

No Action

Under the No-Action alternative, groundwater levels within the regional area may continue to decline at a rate of about 0.8 feet per year (**Figure 11 of Appendix E**), potentially jeopardizing the long-term viability of agriculture within portions of CCID and DPWD and throughout the regional area.

The continued demand for water to meet irrigation needs would force landowners to increase groundwater pumping and the depth to groundwater within CCID and DPWD would continue to increase. Without this Proposed Action/Project the GSA would have to identify other projects that would maximize the use of other water supplies to help meet the Subbasin sustainability goals. As part of the Tier 1 management action items for the GSA, lower aquifer pumping rules for minimizing subsidence are being put into place (Delta-Mendota GSP, 2019).

Proposed Action/Project

The Proposed Action/Project would construct the diversion facilities and pipelines between Orestimba Creek, the DMC, and the recharge ponds, associated pipelines, and recovery wells.

The Proposed Action/Project also includes two water right applications, a 5-Year Temporary Water Right application, and a Streamlined Standard Application for unappropriated available flood/stormwater off the Orestimba Creek during high flow flood events. The Proposed Action/Project is anticipated to recharge approximately 33,000 AFY in the Orestimba Creek

recharge ponds during wet years. The 33,000 AFY would come from various sources and would vary from year to year, as flood/storm water would be diverted off Orestimba Creek and other supplies available to DPWD and CCID would be conveyed in DMC per existing contracts.

As part of the 2017 Pilot Project, monitoring wells were installed at key locations to monitor the rate of groundwater recharge, migration, and recovery. These wells would continue to be monitored monthly during operations and daily during start up and shut down. The monitoring well data would be used to determine the volume of water that can be extracted without negatively impacting the local aquifer. At least 10% of the water recharged would not be recovered, however, the monitoring well data could determine if that percentage needs to be greater. The proposed recharge ponds would not be within an existing or historic streambed.

In compliance with State regulations, a SWPPP would be developed. Standard storm water and erosion BMPs would be implemented to prevent the discharge of silt or other pollutants into runoff.

The Proposed Action/Project would not cause a significant change to the drainage pattern or stormwater drainage system; or place housing within a 100-year flood hazard area. The majority of the Project site is not in the 100-year floodplain (**Figure 12 of Appendix E**). The portions that are within the floodplain would only involve geotechnical borings, the Orestimba Creek turnout structure and well locations. These Project components would not impede or redirect flood flows.

The Project Participants are part of the Exchange Contractor's Groundwater Sustainability Area (GSA) and the Northern and Central Delta Mendota Subbasin Groundwater Sustainability Area. The Groundwater Sustainability Plans (GSPs) have been submitted to the Department of Water Resources (DWR) and are currently being reviewed. The Proposed Action/Project would not conflict with any of the GSA or GSP goals and policies.

This Proposed Action/Project is identified as a Tier 1 project by the GSP and is supposed to be implemented by 2025. It would benefit hydrology in the area by increasing groundwater recharge in the upper aquifer, reducing groundwater pumping and reducing declines in groundwater elevations in the area (Delta-Mendota GSP, 2019).

Cumulative Impacts

The Proposed Action/Project would not interfere with water deliveries, facility operations, or cause substantial adverse changes to the conveyance facilities. Any non-Project water introduced into the DMC would require prior approval and coordination and can only be done when excess capacity is available and meets water quality criteria that does not impair beneficial uses of the DMC. Therefore, there would be no cumulative adverse impacts to CVP operations. The Proposed Action/Project would not trigger other water service actions and does not contribute to cumulative effects to physical resources when added to other water service actions. The Proposed Action/Project would have beneficial impacts on water resources and public health; and therefore, would not contribute to adverse cumulative impacts on these areas.

3.2.11 Land Use/Planning

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

3.2.11.1 Affected Environment

The majority of Stanislaus County has been actively farmed for the last century. Crops typically include almonds, alfalfa, annual fruit, vegetable, and field crops (such as tomatoes, beans, and corn) and the soil is tilled annually. The Project area is zoned as general agricultural and is surrounded by cultivated agriculture and agriculture-supporting infrastructure. The Project area that would be 60 acres of additional recharge ponds is listed as Prime Farmland but has the potential to be left fallow due to insufficient water. A variety of water conveyance facilities exist near the Project area including the DMC, small canal laterals, pipelines, and drainage ditches.

The Project area is zoned General Agriculture – 40 acres (AG-40) by Stanislaus County (**Figure 13 of Appendix E**.

3.2.11.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to land use as conditions would remain the same as existing conditions. Proposed Action/Project

The Project features support agricultural activities and would be consistent with the property zoning designation. The pipelines would be located below ground and not interfere with agricultural activities or irreversibly convert agricultural lands into non-agricultural uses. There would be no change in land use or planning in the Project area.

Cumulative Impacts

In recent years, land use changes within the San Joaquin Valley have involved the urbanization of agricultural lands. These types of changes are typically driven by economic pressures and are as likely to occur with or without the Proposed Action/Project. As there would be no change in land use or planning in the Project area, there would be no cumulative adverse impacts.

3.2.12 Mineral Resources

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

3.2.12.1 Affected Environment

Although there are no known mineral resources at the Project site, a portion of the Project site is located less than a mile from an active sand and gravel mine. The mine is owned and operated by Frank B. Marks & Son, Inc.

3.2.12.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to mineral resources as conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project does not have the potential to impact the availability of any known mineral resources or mineral resource recovery sites. Additionally, the Proposed Action/Project implementation would not preclude mineral extraction from the area, thus there would be no impact.

Cumulative Impacts

There would be no cumulative impacts to mineral resources.

3.2.13 Noise

Would the Project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

Would the Project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
b) Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

3.2.13.1 Affected Environment

The Project area is surrounded by cultivated agriculture and agriculture-supporting infrastructure. Ambient noises are typical of agricultural practices, including vehicle traffic, farm equipment operations, and aviation operations (including airplane and helicopter crop dusting). There are no sensitive receptors (as defined by the Stanislaus County Noise Element) within the Project vicinity.

3.2.13.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no potential noise impacts as conditions would remain the same as existing conditions.

Proposed Action/Project

Construction of the Proposed Action/Project would generate temporary, short-term noise due to activities associated with the excavation of the additional recharge ponds and pipeline, drilling the soil borings and wells, and pouring concrete. All construction activities would be during daylight hours. Any construction related noise would be temporary. Ground-borne vibration could be generated during construction, but it would not be different from existing agricultural activities in terms of duration or intensity. Operation of the Project would include the operation of up to eight recovery wells which would not produce significant noise or vibration when compared to the normal agricultural operations of the site. Maintenance would be generally limited to periodic site visits to review the site conditions and maintain equipment. Excavation of accumulated silt would likely occur semi-annually and require the operation of a single excavator and truck for up to two weeks twice a year. Project operations are not significantly different from existing agricultural operations and would be similar to the operation of a tractor. Other activities, such as water deliveries into the recharge ponds, would not be a source of noise and vibration.

Cumulative Impacts

The Proposed Action/Project would not have a cumulatively considerable contribution to a cumulative adverse impact on noise.

3.2.14 Population and Housing

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.2.14.1 Affected Environment

The Proposed Action/Project would be located in western Stanislaus County. The eastern most portion of the Project site is located approximately one miles west of the City of Newman. Rural residences and farmworker housing complexes are scattered throughout the landscape surrounding the Project area. The area is zoned General Agriculture - 40 acres.

3.2.14.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to population and housing as conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project does not include any features that would require the destruction or relocation of existing housing or the construction of replacement housing. In addition, the Proposed Action/Project would not increase or decrease the number of available dwelling units in the area. The Project would not displace any people. The Proposed Action/Project would have no effect on population growth.

Cumulative Impacts

There would be no cumulative impacts to population and housing from this Proposed Action/Project.

3.2.15 Public Services

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

3.2.15.1 Affected Environment

Law enforcement for the Project area is provided through the Stanislaus County Sherriff's Department and fire protection is provided through the West Stanislaus County Fire Protection District. The Project area falls within the Newman-Crows Landing Unified School District.

3.2.15.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to public services as conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project does not include any features or facilities that would require additional or unusual fire protection resources, enhanced levels of police protection, nor does it have the potential to increase or decrease the area's population and therefore would not impact demand for schools or parks. The Proposed Action/Project would not result in adverse physical impacts associated with the provision of new or physically altered governmental facilities. No habitable structures would be constructed on the site that would require any public services.

The Project Participants would be responsible for any operation or maintenance on the facility.

Cumulative Impacts

There would be no cumulative impacts to public services from this Proposed Action/Project.

3.2.16 Recreation

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.2.16.1 Affected Environment

No habitable structures are proposed as part of this Proposed Action/Project and therefore would not increase the use of local parks. The closest recreation facility is Lions Park, located approximately one mile from the eastern edge of the Project area.

3.2.16.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to recreation as conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project does not have the potential to increase or decrease the area's population and would therefore not result in increased or decreased use of parks or other recreational facilities. Additionally, the Proposed Action/Project does not include recreational facilities and would not require the construction or expansion of any recreational facilities. Project implementation would have no impact on area parks.

Cumulative Impacts

There would be no cumulative impacts to parks and recreation from this Proposed Action/Project.

3.2.17 Transportation/Traffic

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☒	☐

3.2.17.1 Affected Environment

Traffic corridors near the Proposed Action/Project area includes county roads, Highway 33, and Interstate 5. Bell Road, Orestimba Road, Eastin Road, West Stuhr Road and Anderson Road are two lane arterial roadways closest to the Project area. Traffic on these roads varies from light to moderate and fluctuates seasonally, mostly as a function of farming activities.

3.2.17.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no additional impact to existing traffic patterns in the area. Conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project would result in a small increase in traffic during the construction period as construction workers commute to the Project site and construction vehicles are mobilized and demobilized. Construction workers would commute to the Project site daily via county roads and state highways while the equipment would be stored in the Project area. The increase in traffic would be short term and limited to the construction period. Estimates anticipate two round trips of 12 tractor-trailer rigs to transport heavy construction vehicles (one trip for mobilization and one for demobilization), and daily trips of approximately 10 to 12 workers for the duration of construction. The Proposed Action/Project would not generate a substantial increase to the existing traffic load nor exceed the capacity of existing roads or highways. The construction of the pipeline under Bell Road would be installed by open cut procedures. The road would be closed for up to two days, with an approximately 3.5-mile detour and expected delays up to 10 minutes. No other Project components would require a road closure. Impacts to local residence or emergency services would be less than significant. Therefore, construction-related traffic would not adversely affect traffic conditions and this impact would be less than significant.

Cumulative Impacts

The Proposed Action/Project, when added to other Projects, would not contribute to significant road improvements or degradation in environmental conditions. The Proposed Action/Project would not be precedent setting.

3.2.18 Tribal Cultural Resources

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in the local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.2.18.1 Affected Environment

Æ contacted the NAHC to request a search of its Sacred Lands File to identify recorded Native American resources in the APE and to obtain the names and contact information for individuals with knowledge of such resources. The NAHC responded on January 12, 2021, with its findings and attached a list of Native American tribes and individuals culturally affiliated with the APE. The Project area was later expanded, and Æ submitted an additional search of its Sacred Lands File on July 22, 2021. Using the contents of the original request, on March 9, 2021, and August 16, 2021, Æ sent letters summarizing the Project and known cultural resource investigations to each of the contacts identified by the NAHC. In the letters, Æ sought input on known sacred areas within the APE.

3.2.18.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to tribal cultural resources as conditions would remain the same as existing conditions.

Proposed Action/Project

No evidence of archaeological resources was found in the APE. The NAHC Sacred Lands File search identified no previously recorded tribal resources, and Native American outreach to date has not identified areas of concern. No archaeological sites or isolated finds were discovered as a result of the intensive pedestrian survey, and the buried site sensitivity assessment concluded that the APE has low potential for the survival of paleosols that would harbor well-preserved archaeological deposits at any depth. Although there is there is no evidence that tribal cultural resources exist within the APE, Reclamation and CCID have included environmental commitments (see) to avoid and/or reduce potential environmental effects.

Cumulative Impacts

There would be no cumulative impacts to Tribal Cultural Resources from this Project.

3.2.19 Utilities and Service Systems

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

3.2.19.1 Affected Environment

No habitable structures are a part of this Project and therefore no wastewater or solid waste disposal would be required for the Project.

3.2.19.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to utilities and service systems as conditions would remain the same as existing conditions.

Proposed Action/Project

The Proposed Action/Project would not result in any impact to public utilities in terms of exceeding existing capacity, increasing demand of use, or violating water quality or waste regulations. The Proposed Action/Project would include up to eight recovery wells, and up to eight new booster pumps, these pumps would be electric and would not exceed available capacity for energy in the area. All suitable material from excavation would be reused to the extent feasible and balanced on site. If construction-related solid waste is generated, the contractor would be required to properly dispose of all construction related solid waste, including soil, at appropriate disposal facilities and in compliance with applicable state and local regulations.

Cumulative Impacts

There would be no cumulative impacts to utilities and service systems from this Project.

3.2.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of wildfire?	☐	☐	☐	☒

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

3.2.20.1 Affected Environment

The entirety of the Proposed Project area is located in a Local Responsibility Area. The area is predominately flat with the only elevation being berms that are located around the DMC and the CCID Main Canal. Surrounding lands are predominately farmed and any brush is regularly maintained.

3.2.20.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impact to wildfire risks as conditions would remain the same as existing conditions.

Proposed Action/Project

Portions of the Project site are less than one mile from the moderate state responsibility zone. The Proposed Action/Project involves the installation of water recharge and recovery facilities. There would be no habitable structures built, and the Project area is relatively level. Therefore, the Proposed Action/Project would not impact any emergency response plan or evacuation plan. It would not have any occupants and would therefore not expose people to pollutant concentrations from wildfire or uncontrolled spread of wildfire. No new infrastructure would need to be constructed to reduce fire risks as a result of the Proposed Action/Project, and no people or structures would be exposed to flooding or landslides as a result of the Proposed Action/Project. There would be no impacts.

Cumulative Impacts

There would be no cumulative impacts to wildfire risks from this Project.

3.3 CEQA Mandatory Findings of Significance

Does the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

The analysis conducted in this document results in a determination by Reclamation and CCID that the Proposed Action/Project would have a less than significant effect on the local environment. As described in the sections above, the potential for impacts to biological resources from the construction of the additional recharge ponds, turnout, and pipeline would be less than significant with the incorporation of mitigation measures, see **Appendix B (Biological Evaluation).**

Accordingly, the Proposed Action/Project would involve no potential for significant impacts through the degradation of the quality of the environments, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or example of a major period of California history or prehistory.

As discussed above, the Proposed Action/Project would result in less than significant impacts to biological, and cultural resources, with mitigation incorporation listed in **Table 1** and described in Sections **3.34** and **3.36** respectively of this environmental document. For maintenance purposes, it is anticipated that there would be an estimated two annual trips to the Project site. As such, the Proposed Action/Project would generate minimal vehicle trips upon Project implementation. The turnout, pipeline, and additional recharge ponds would not result in ongoing impacts that are individually limited or cumulatively considerable. Executing the identified Proposed Action/Project-specific mitigation measures and compliance in **Table 1** combined with applicable codes,

ordinances, laws, and other required regulations would reduce the magnitude of any impacts associated with Project implementation to a less than significant level.

The Proposed Action/Project would not result in substantial adverse effects on human beings, either directly or indirectly. Mitigation measures are listed in **Table 1** and described in **Sections 3.34** and **3.36** respectively of this environmental document. The implementation of the identified mitigation measures would reduce the Proposed Action/Project's potential environmental effects on the public and the environment to less than significant levels. No additional mitigation measures would be required. Adverse effects on human beings resulting from implementation of the Proposed Action/Project would be less than significant.

4 Consultation and Coordination

4.1 Agencies and Persons Consulted

Reclamation and CCID consulted and coordinated with the DPWD, DWR, CDFW, SWRCB, USACE, RWQCB, the State Historic Preservation Office, Tule River Indian Tribe, Tuolumne Band of Me-Wuk Indians, Calaveras Band of Mi-Wuk Indians, Confederated Villages of Lisjan, North Valley Yokuts Tribe, Southern Sierra Miwuk Nation, and the Wuksache Indian Tribe Eshom Valley Band, in the preparation of this EA/IS.

4.2 Public Involvement

Reclamation intends to provide the public with an opportunity to comment on the Draft EA/IS during a 14-day public review period. Through the State Clearing House, CCID (acting as Lead Agency for CEQA) has made the CEQA portion of the draft EA/IS and the proposed adoption of a mitigated negative declaration available to the public. Reclamation and CCID would consider all comments received on the EA/IS prior to determining whether to issue a Finding of No Significant Impact and Mitigated Negative Declaration.

4.3 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 301 of the Clean Water Act (33 U.S.C. § 1311) prohibits the discharge of any pollutants into waters of the United States, except as allowed by permit issued pursuant to various sections of the Clean Water Act.

4.3.1 Section 401

Section 401 of the Clean Water Act (33 U.S.C. § 1341) requires any applicant for an individual USACE dredge and fill discharge permit (see Section 404, below) to first obtain certification from the state that the activity associated with dredging or filling would comply with applicable state

effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

CCID has applied for a Section 401 permit. Construction activities would not occur until the district has received this Permit.

4.3.2 Section 404

Section 404 of the Clean Water Act (33 U.S.C. § 1344) authorizes the USACE to issue permits to regulate the discharge of "dredged or fill materials into waters of the United States". Due to impacts to potential wetlands (less than 0.10 of an acre) a permit is required to be obtained in compliance with CWA section 404 permit.

CCID has applied for a Section 404 permit. Construction activities would not occur until the district has received this Permit.

4.4 Title 54 U.S.C. § 306108, Commonly Known as Section 106 of the National Historic Preservation Act

Title 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (formerly 16 U.S.C. 470 et seq.), requires Federal agencies to consider the effects of their undertakings on historic properties, properties determined eligible for inclusion in the National Register, and to afford the Advisory Council on Historic Preservation an opportunity to comment. Compliance with Section 106 follows a series of steps, identified in its implementing regulations found at 36 CFR Part 800, that include identifying consulting and interested parties, identifying historic properties within the area of potential effect, and assessing effects on any identified historic properties, through consultations with the SHPO, Indian tribes and other consulting parties.

Reclamation entered into consultation with the SHPO on November 24, 2021, requesting concurrence on our finding of "no adverse effects to historic properties pursuant to 36 CFR § 800.5(b)." SHPO responded on December 16, 2021 with no objections to Reclamations' findings and determination. Reclamation subsequently concluded the Section 106 process. However, should changes be made to this project, or cultural resources discovered during construction, additional NHPA Section 106 compliance in accordance with 36 CFR § 800.13(b) may be necessary.

4.5 California Fish and Game Code (Sections 1600 et seq.)

Section 1602 of the California Fish and Game Code requires an entity to notify DFW of any proposed activity that may substantially modify a river, stream, or lake.

CCID has applied for a Lake and Streambed Alteration Agreement. Construction activities would not occur until the district has received this Permit.

5 Preparers and Reviewers

5.1 Bureau of Reclamation

Shauna McDonald, Wildlife Biologist, SCCAO
Amy Barnes, Archaeologist, CGB-153
Rain L. Emerson, Environmental Compliance Branch Chief, SCCAO
David E. Hyatt, Resources Management Division Chief, SCCAO – reviewer
Cathy James, Repayment Specialist – reviewer

5.2 Central California Irrigation District

Jarrett Martin, General Manager
Ben Fenters, Deputy General Manager

5.3 Del Puerto Water District

Anthea Hansen, General Manager

5.4 Provost & Pritchard Consulting Group

Rick Iger, PE
Calvin Monreal, PE
John Gudino, Senior Engineering Technician
Dawn E. Marple, Principal Planner
Dena Giacomini, Senior Planner/Senior Biologist
Amy Wilson, Associate Planner
Ryan McKelvey, Assistant Planner
Cheryl Hunter, GIS
Jackie Lancaster, Project Assistant

6 References

California Emission Estimator Model Version 2016.3.2.

Demarais, Lisa, Ward Stanley, and Carlos van Onna. 2021. *Cultural Resource Inventory and Evaluation for the Orestimba Creek Recharge and Recovery Expansion Project Stanislaus County, California*. Project Number 21-SCAO-119. Prepared for Provost & Pritchard Consulting Group by Applied EarthWorks Incorporated, Fresno, California. August 2021.

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EPA (U.S. Environmental Protection Agency). 2019. "Overview of Greenhouse Gases." Accessed September 4, 2020 at: https://www.epa.gov/ghgemissions/overview-greenhouse-gases.

ICF International. 2013. Stanislaus Countywide Regional Community Greenhouse Gas Inventory. July (ICF 00203.10) San Francisco, CA. Prepared for Stanislaus County, Modesto, CA.

California Geological Survey, 2007

Reclamation 2017. Central California Irrigation District and Del Puerto Water District Orestimba Creek Groundwater Recharge Project. https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28394

Delta-Mendota GSP, 2019. Northern & Central Delta-Mendota Region GSP – Delta-Mendota SGMA (deltamendota.org)

Appendix A: Air Quality Output Files

Orestimba Creek Project

Stanislaus County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	256.00	Acre	256.00	11,151,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Approximately four months of construction time.

Trips and VMT - 10-12 construction workers per day.

Vehicle Trips -

Construction Off-road Equipment Mitigation -

Stationary Sources - User Defined -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	4,650.00	13.00
tblConstructionPhase	NumDays	465.00	31.00
tblConstructionPhase	NumDays	330.00	19.00
tblConstructionPhase	NumDays	180.00	23.00
tblConstructionPhase	PhaseEndDate	4/11/2044	2/1/2023
tblConstructionPhase	PhaseEndDate	6/15/2026	1/13/2023
tblConstructionPhase	PhaseEndDate	7/17/2045	2/28/2023
tblConstructionPhase	PhaseEndDate	9/2/2024	12/1/2022
tblConstructionPhase	PhaseStartDate	6/16/2026	1/14/2023
tblConstructionPhase	PhaseStartDate	9/3/2024	12/2/2022
tblConstructionPhase	PhaseStartDate	4/12/2044	2/2/2023
tblConstructionPhase	PhaseStartDate	12/26/2023	11/1/2022
tblGrading	AcresOfGrading	77.50	1,162.50
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblTripsAndVMT	VendorTripNumber	1,828.00	20.00
tblTripsAndVMT	WorkerTripNumber	4,684.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0761	0.7893	0.5426	1.1200e-003	0.8907	0.0357	0.9265	0.2164	0.0329	0.2493	0.0000	98.5797	98.5797	0.0310	0.0000	99.3556
2023	0.0382	0.3745	0.3953	7.6000e-004	0.6504	0.0166	0.6669	0.0842	0.0153	0.0995	0.0000	67.1501	67.1501	0.0188	0.0000	67.6204
Maximum	**0.0761**	**0.7893**	**0.5426**	**1.1200e-003**	**0.8907**	**0.0357**	**0.9265**	**0.2164**	**0.0329**	**0.2493**	**0.0000**	**98.5797**	**98.5797**	**0.0310**	**0.0000**	**99.3556**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0761	0.7893	0.5426	1.1200e-003	0.4027	0.0357	0.4384	0.0979	0.0329	0.1308	0.0000	98.5796	98.5796	0.0310	0.0000	99.3554
2023	0.0382	0.3745	0.3953	7.6000e-004	0.2948	0.0166	0.3113	0.0384	0.0153	0.0538	0.0000	67.1500	67.1500	0.0188	0.0000	67.6203
Maximum	**0.0761**	**0.7893**	**0.5426**	**1.1200e-003**	**0.4027**	**0.0357**	**0.4384**	**0.0979**	**0.0329**	**0.1308**	**0.0000**	**98.5796**	**98.5796**	**0.0310**	**0.0000**	**99.3554**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.74**	**0.02**	**52.95**	**54.65**	**0.00**	**47.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2022	1-31-2023	1.1497	1.1497
2	2-1-2023	4-30-2023	0.1155	0.1155
		Highest	1.1497	1.1497

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9537	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9537**	**2.0000e-005**	**2.3500e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9537	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9537**	**2.0000e-005**	**2.3500e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	11/1/2022	12/1/2022	5	23	
2	Grading	Grading	12/2/2022	1/13/2023	5	31	
3	Building Construction	Building Construction	1/14/2023	2/1/2023	5	13	
4	Paving	Paving	2/2/2023	2/28/2023	5	19	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 256

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	20.00	20.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2078	0.0000	0.2078	0.1142	0.0000	0.1142	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0365	0.3805	0.2265	4.4000e-004		0.0185	0.0185		0.0171	0.0171	0.0000	38.4553	38.4553	0.0124	0.0000	38.7662
Total	**0.0365**	**0.3805**	**0.2265**	**4.4000e-004**	**0.2078**	**0.0185**	**0.2263**	**0.1142**	**0.0171**	**0.1313**	**0.0000**	**38.4553**	**38.4553**	**0.0124**	**0.0000**	**38.7662**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9000e-004	5.0000e-004	5.5300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6700e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4212	1.4212	4.0000e-005	0.0000	1.4222
Total	**7.9000e-004**	**5.0000e-004**	**5.5300e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6700e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4212**	**1.4212**	**4.0000e-005**	**0.0000**	**1.4222**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0935	0.0000	0.0935	0.0514	0.0000	0.0514	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0365	0.3805	0.2265	4.4000e-004		0.0185	0.0185		0.0171	0.0171	0.0000	38.4553	38.4553	0.0124	0.0000	38.7662
Total	**0.0365**	**0.3805**	**0.2265**	**4.4000e-004**	**0.0935**	**0.0185**	**0.1120**	**0.0514**	**0.0171**	**0.0685**	**0.0000**	**38.4553**	**38.4553**	**0.0124**	**0.0000**	**38.7662**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9000e-004	5.0000e-004	5.5300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6700e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4212	1.4212	4.0000e-005	0.0000	1.4222
Total	**7.9000e-004**	**5.0000e-004**	**5.5300e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6700e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4212**	**1.4212**	**4.0000e-005**	**0.0000**	**1.4222**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6797	0.0000	0.6797	0.1013	0.0000	0.1013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0381	0.4079	0.3049	6.5000e-004		0.0172	0.0172		0.0158	0.0158	0.0000	57.2613	57.2613	0.0185	0.0000	57.7243
Total	**0.0381**	**0.4079**	**0.3049**	**6.5000e-004**	**0.6797**	**0.0172**	**0.6968**	**0.1013**	**0.0158**	**0.1171**	**0.0000**	**57.2613**	**57.2613**	**0.0185**	**0.0000**	**57.7243**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	5.1000e-004	5.6100e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4418	1.4418	4.0000e-005	0.0000	1.4428
Total	**8.1000e-004**	**5.1000e-004**	**5.6100e-003**	**2.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4418**	**1.4418**	**4.0000e-005**	**0.0000**	**1.4428**

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3058	0.0000	0.3058	0.0456	0.0000	0.0456	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0381	0.4079	0.3049	6.5000e-004		0.0172	0.0172		0.0158	0.0158	0.0000	57.2613	57.2613	0.0185	0.0000	57.7243
Total	**0.0381**	**0.4079**	**0.3049**	**6.5000e-004**	**0.3058**	**0.0172**	**0.3230**	**0.0456**	**0.0158**	**0.0614**	**0.0000**	**57.2613**	**57.2613**	**0.0185**	**0.0000**	**57.7243**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	5.1000e-004	5.6100e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4418	1.4418	4.0000e-005	0.0000	1.4428
Total	**8.1000e-004**	**5.1000e-004**	**5.6100e-003**	**2.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4418**	**1.4418**	**4.0000e-005**	**0.0000**	**1.4428**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6465	0.0000	0.6465	0.0831	0.0000	0.0831	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1726	0.1403	3.1000e-004		7.1200e-003	7.1200e-003		6.5500e-003	6.5500e-003	0.0000	27.2676	27.2676	8.8200e-003	0.0000	27.4881
Total	**0.0166**	**0.1726**	**0.1403**	**3.1000e-004**	**0.6465**	**7.1200e-003**	**0.6537**	**0.0831**	**6.5500e-003**	**0.0897**	**0.0000**	**27.2676**	**27.2676**	**8.8200e-003**	**0.0000**	**27.4881**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.4400e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6609	0.6609	2.0000e-005	0.0000	0.6613
Total	**3.6000e-004**	**2.2000e-004**	**2.4400e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6609**	**0.6609**	**2.0000e-005**	**0.0000**	**0.6613**

3.3 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2909	0.0000	0.2909	0.0374	0.0000	0.0374	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1726	0.1403	3.1000e-004		7.1200e-003	7.1200e-003		6.5500e-003	6.5500e-003	0.0000	27.2676	27.2676	8.8200e-003	0.0000	27.4880
Total	**0.0166**	**0.1726**	**0.1403**	**3.1000e-004**	**0.2909**	**7.1200e-003**	**0.2981**	**0.0374**	**6.5500e-003**	**0.0440**	**0.0000**	**27.2676**	**27.2676**	**8.8200e-003**	**0.0000**	**27.4880**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.4400e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6609	0.6609	2.0000e-005	0.0000	0.6613
Total	**3.6000e-004**	**2.2000e-004**	**2.4400e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6609**	**0.6609**	**2.0000e-005**	**0.0000**	**0.6613**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0935	0.1056	1.8000e-004		4.5500e-003	4.5500e-003		4.2800e-003	4.2800e-003	0.0000	15.0673	15.0673	3.5800e-003	0.0000	15.1569
Total	**0.0102**	**0.0935**	**0.1056**	**1.8000e-004**		**4.5500e-003**	**4.5500e-003**		**4.2800e-003**	**4.2800e-003**	**0.0000**	**15.0673**	**15.0673**	**3.5800e-003**	**0.0000**	**15.1569**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	0.0108	1.8000e-003	3.0000e-005	8.6000e-004	1.0000e-005	8.7000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	3.3277	3.3277	1.9000e-004	0.0000	3.3326
Worker	4.6000e-004	2.8000e-004	3.1700e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8592	0.8592	2.0000e-005	0.0000	0.8597
Total	**7.2000e-004**	**0.0110**	**4.9700e-003**	**4.0000e-005**	**1.9000e-003**	**2.0000e-005**	**1.9200e-003**	**5.3000e-004**	**2.0000e-005**	**5.4000e-004**	**0.0000**	**4.1869**	**4.1869**	**2.1000e-004**	**0.0000**	**4.1923**

3.4 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0935	0.1056	1.8000e-004		4.5500e-003	4.5500e-003		4.2800e-003	4.2800e-003	0.0000	15.0673	15.0673	3.5800e-003	0.0000	15.1569
Total	**0.0102**	**0.0935**	**0.1056**	**1.8000e-004**		**4.5500e-003**	**4.5500e-003**		**4.2800e-003**	**4.2800e-003**	**0.0000**	**15.0673**	**15.0673**	**3.5800e-003**	**0.0000**	**15.1569**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	0.0108	1.8000e-003	3.0000e-005	8.6000e-004	1.0000e-005	8.7000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	3.3277	3.3277	1.9000e-004	0.0000	3.3326
Worker	4.6000e-004	2.8000e-004	3.1700e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.8592	0.8592	2.0000e-005	0.0000	0.8597
Total	**7.2000e-004**	**0.0110**	**4.9700e-003**	**4.0000e-005**	**1.9000e-003**	**2.0000e-005**	**1.9200e-003**	**5.3000e-004**	**2.0000e-005**	**5.4000e-004**	**0.0000**	**4.1869**	**4.1869**	**2.1000e-004**	**0.0000**	**4.1923**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8100e-003	0.0968	0.1386	2.2000e-004		4.8500e-003	4.8500e-003		4.4600e-003	4.4600e-003	0.0000	19.0255	19.0255	6.1500e-003	0.0000	19.1794
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.8100e-003**	**0.0968**	**0.1386**	**2.2000e-004**		**4.8500e-003**	**4.8500e-003**		**4.4600e-003**	**4.4600e-003**	**0.0000**	**19.0255**	**19.0255**	**6.1500e-003**	**0.0000**	**19.1794**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1000e-004	3.1000e-004	3.4700e-003	1.0000e-005	1.1400e-003	1.0000e-005	1.1500e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9418	0.9418	2.0000e-005	0.0000	0.9424
Total	**5.1000e-004**	**3.1000e-004**	**3.4700e-003**	**1.0000e-005**	**1.1400e-003**	**1.0000e-005**	**1.1500e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**0.9418**	**0.9418**	**2.0000e-005**	**0.0000**	**0.9424**

3.5 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8100e-003	0.0968	0.1386	2.2000e-004		4.8500e-003	4.8500e-003		4.4600e-003	4.4600e-003	0.0000	19.0255	19.0255	6.1500e-003	0.0000	19.1793
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.8100e-003**	**0.0968**	**0.1386**	**2.2000e-004**		**4.8500e-003**	**4.8500e-003**		**4.4600e-003**	**4.4600e-003**	**0.0000**	**19.0255**	**19.0255**	**6.1500e-003**	**0.0000**	**19.1793**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1000e-004	3.1000e-004	3.4700e-003	1.0000e-005	1.1400e-003	1.0000e-005	1.1500e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9418	0.9418	2.0000e-005	0.0000	0.9424
Total	**5.1000e-004**	**3.1000e-004**	**3.4700e-003**	**1.0000e-005**	**1.1400e-003**	**1.0000e-005**	**1.1500e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**0.9418**	**0.9418**	**2.0000e-005**	**0.0000**	**0.9424**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.523108	0.032399	0.174639	0.117529	0.020918	0.005040	0.027575	0.089674	0.001843	0.001079	0.004521	0.000833	0.000841

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9537	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Unmitigated	0.9537	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2326					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7208					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Total	**0.9537**	**2.0000e-005**	**2.3500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2326					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7208					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Total	**0.9537**	**2.0000e-005**	**2.3500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Fire Pump	0	0	0	0	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Fire Pump - Diesel (0 - 11 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.0 Vegetation

Orestimba Creek Project

Stanislaus County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	60.00	Acre	60.00	2,613,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Basin silt removal

Construction Phase - two weeks of silt removal each year.

Trips and VMT - 10-12 construction workers per day.

Vehicle Trips -

Construction Off-road Equipment Mitigation -

Stationary Sources - User Defined -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Two Excavators, Two Tractors for silt clean out annually.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	110.00	11.00
tblConstructionPhase	PhaseEndDate	8/28/2024	4/15/2024
tblConstructionPhase	PhaseStartDate	3/28/2024	4/1/2024
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblTripsAndVMT	WorkerTripNumber	20.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0179	0.1782	0.1537	3.5000e-004	0.0481	7.3500e-003	0.0555	0.0199	6.7600e-003	0.0267	0.0000	30.3353	30.3353	9.7100e-003	0.0000	30.5779
Maximum	**0.0179**	**0.1782**	**0.1537**	**3.5000e-004**	**0.0481**	**7.3500e-003**	**0.0555**	**0.0199**	**6.7600e-003**	**0.0267**	**0.0000**	**30.3353**	**30.3353**	**9.7100e-003**	**0.0000**	**30.5779**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0179	0.1782	0.1537	3.5000e-004	0.0219	7.3500e-003	0.0293	9.0200e-003	6.7600e-003	0.0158	0.0000	30.3353	30.3353	9.7100e-003	0.0000	30.5779
Maximum	**0.0179**	**0.1782**	**0.1537**	**3.5000e-004**	**0.0219**	**7.3500e-003**	**0.0293**	**9.0200e-003**	**6.7600e-003**	**0.0158**	**0.0000**	**30.3353**	**30.3353**	**9.7100e-003**	**0.0000**	**30.5779**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.49**	**0.00**	**47.29**	**54.67**	**0.00**	**40.81**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	2-1-2024	4-30-2024	0.1910	0.1910
		Highest	0.1910	0.1910

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2235	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2235**	**0.0000**	**5.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2235	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2235**	**0.0000**	**5.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	4/1/2024	4/15/2024	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 27.5

Acres of Paving: 60

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Excavators	2	8.00	158	0.38
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0477	0.0000	0.0477	0.0198	0.0000	0.0198	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0177	0.1781	0.1525	3.4000e-004		7.3400e-003	7.3400e-003		6.7600e-003	6.7600e-003	0.0000	29.9857	29.9857	9.7000e-003	0.0000	30.2282
Total	**0.0177**	**0.1781**	**0.1525**	**3.4000e-004**	**0.0477**	**7.3400e-003**	**0.0550**	**0.0198**	**6.7600e-003**	**0.0265**	**0.0000**	**29.9857**	**29.9857**	**9.7000e-003**	**0.0000**	**30.2282**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.1000e-004	1.2400e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3496	0.3496	1.0000e-005	0.0000	0.3498
Total	**1.8000e-004**	**1.1000e-004**	**1.2400e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3496**	**0.3496**	**1.0000e-005**	**0.0000**	**0.3498**

3.2 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0215	0.0000	0.0215	8.9000e-003	0.0000	8.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0177	0.1781	0.1525	3.4000e-004		7.3400e-003	7.3400e-003		6.7600e-003	6.7600e-003	0.0000	29.9857	29.9857	9.7000e-003	0.0000	30.2282
Total	**0.0177**	**0.1781**	**0.1525**	**3.4000e-004**	**0.0215**	**7.3400e-003**	**0.0288**	**8.9000e-003**	**6.7600e-003**	**0.0157**	**0.0000**	**29.9857**	**29.9857**	**9.7000e-003**	**0.0000**	**30.2282**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.1000e-004	1.2400e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3496	0.3496	1.0000e-005	0.0000	0.3498
Total	**1.8000e-004**	**1.1000e-004**	**1.2400e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3496**	**0.3496**	**1.0000e-005**	**0.0000**	**0.3498**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.529564	0.031735	0.175601	0.112621	0.019191	0.004761	0.027424	0.090197	0.001836	0.001047	0.004420	0.000822	0.000781

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2235	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Unmitigated	0.2235	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1690					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.2235**	**0.0000**	**5.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1690					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.2235**	**0.0000**	**5.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Fire Pump	0	0	0	0	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Fire Pump - Diesel (0 - 11 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.0 Vegetation

Appendix B: Biological Evaluation

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

ORESTIMBA CREEK RECHARGE & RECOVERY EXPANSION PROJECT
BIOLOGICAL EVALUATION
STANISLAUS COUNTY, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.
Austin Pearson, Vice President
Jeff Gurule, Senior Project Manager

Prepared for

Dawn E. Marple
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130 North Garden Street
Visalia, CA 93291

September 21, 2021 PN 2527-01

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EXECUTIVE SUMMARY

Live Oak Associates, Inc. (LOA) conducted an investigation of the biological resources of approximately 209 acres of land potentially impacted by proposed water recharge improvements ("area of potential effect (APE)", "Action Area", or "project site") by the Del Puerto Water District (DPWD) and Central California Irrigation District (CCID) ("districts"), and assessed potential project impacts to those resources pursuant to the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and Section 7 of the federal Endangered Species Act. The project site is located east of Interstate 5 and west of State Route 33 in the vicinity of Newman, in western Stanislaus County.

The proposed project includes the following project elements: 1) A 35 to 40 cfs diversion of Orestimba Creek through the construction of a turnout, diversion pipes, and pumping station that will result in temporary impacts to ruderal habitats and an anticipated permanent impact to less than 0.10 acres of potential wetlands; 2) The drilling of 60 geotechnical borings in ruderal and agricultural areas; and 3) The development of an unknown number of recovery wells, individually incurring small areas of permanent impact, at selected geotechnical boring sites and temporary impacts from the trenching and placement of associated pipelines in ruderal and agricultural areas.

Biotic habitats identified on the site include ruderal/developed, agricultural, canal, and riparian. With the exception of the small area of riparian habitat, lands within the APE are highly disturbed and situated within an intensive agricultural landscape, offering limited habitat for native flora and fauna. However, the project may result in significant impacts to a single rare plant species, spiny-sepaled button celery, and nesting birds, including the Swainson's hawk, tricolored blackbird, and the loggerhead shrike.

Impacts to the spiny-sepaled button celery will be mitigated to a less than significant level per the provisions of NEPA or CEQA through avoidance, or, if avoidance is not feasible, through seed and soil collection prior to disturbance and replaced after project completion. Impacts to nesting birds will be reduced either by constructing the project outside the nesting season, or through preconstruction surveys and avoidance of active nests if construction must occur during the nesting season.

Impacts would be less than significant for all other locally occurring special status plant species, 23 locally occurring special status animal species that would not be expected to occur within the project site, four special status animal species (bald eagle, northern harrier, western red bat, and pallid bat) that could potentially forage over the project site but would roost or nest elsewhere, wildlife movement corridors, sensitive habitats, and jurisdictional waters. The project also appears to be in compliance with local policies and no habitat conservation plans are in effect for the project area. The project will not result in the significant loss of habitat for special status animal species.

TABLE OF CONTENTS

1.0 INTRODUCTION

The following technical report, prepared by Live Oak Associates, Inc. (LOA), in support of the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and Section 7 of the federal Endangered Species Act, describes the biotic resources of approximately 209 acres of land that may be impacted by proposed project activities ("area of potential effect (APE)" or "Action Area"), and evaluates potential impacts to those resources that could result from the project.

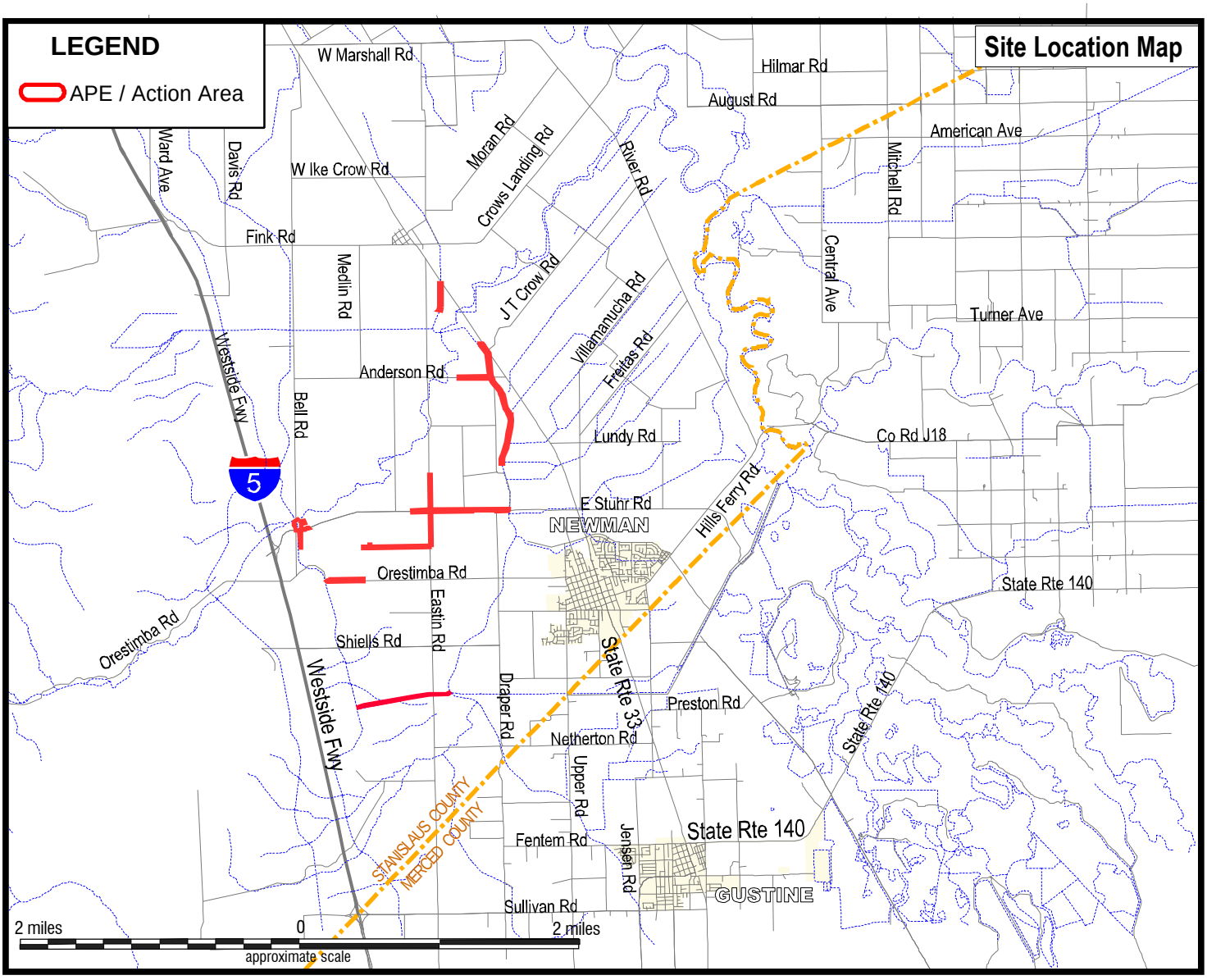
The project APE (also referred to as "project site" or "site") is primarily linear and is located west and north of the community of Newman in western Stanislaus County (Figure 1). The site may be found almost entirely on the *Newman* U.S. Geological Survey (USGS) 7.5-minute quadrangle in Sections 1, 2, 11, 12, 14, 15, 16, 17, and 21 in Township 7 South, Range 8 East. A small portion of the project site extends into the *Crows Landing* USGS 7.5-minute quadrangle Section 26 and 35 in Township 6 South, Range 8 East (Figure 2).

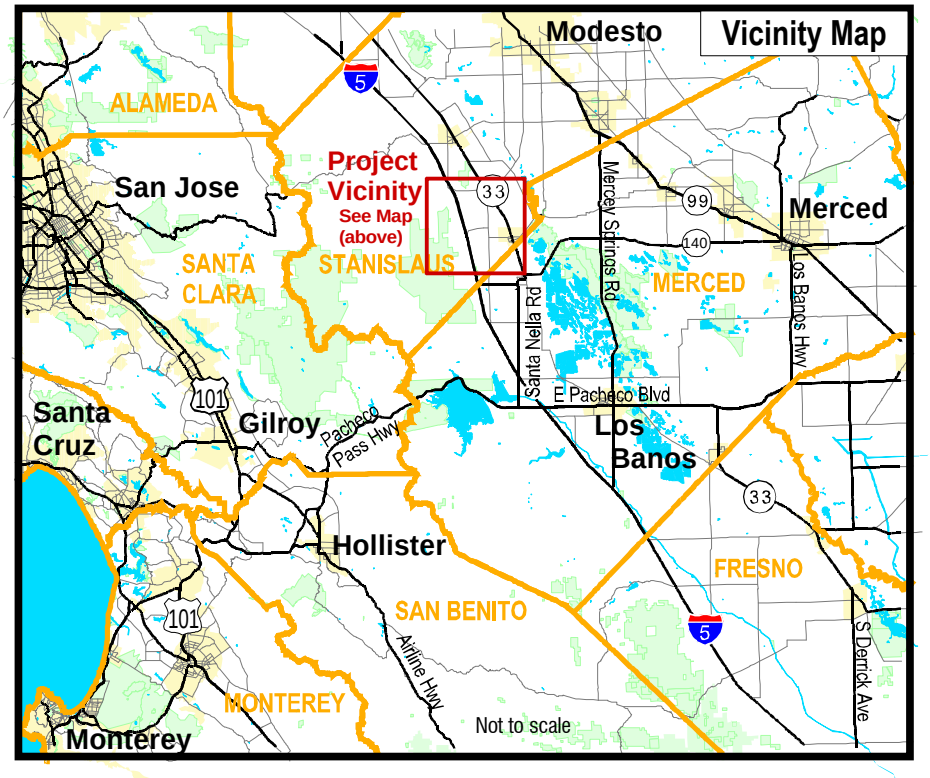
1.1 PROJECT DESCRIPTION

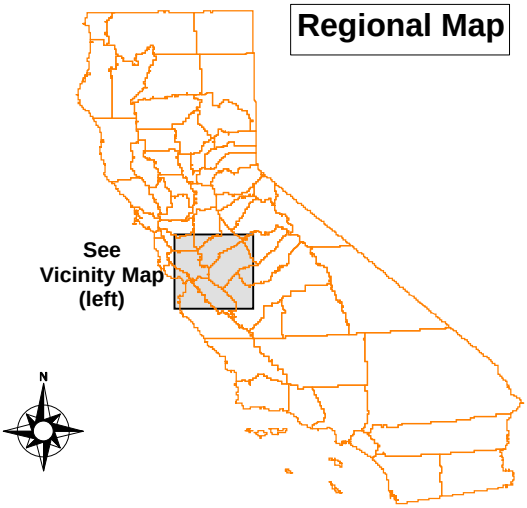
The project is an effort by the San Joaquin River Exchange Contractors Water Authority, represented by Central California Irrigation District (CCID), and the Del Puerto Water District (DPWD) to divert flood flows from Orestimba Creek, which in times of heavy precipitation can potentially cause substantial flood damage, as well as to divert excess water supplies, when available, from the Delta-Mendota Canal (DMC) to the project partners. The project includes three main components: (1) Geotechnical borings, (2) Development of recovery wells, and (3) Construction of diversion facilities out of Orestimba Creek to capture flood flows. Each project component is described in more detail below. Technical figures and graphs are presented in Appendix A.

Geotechnical Borings

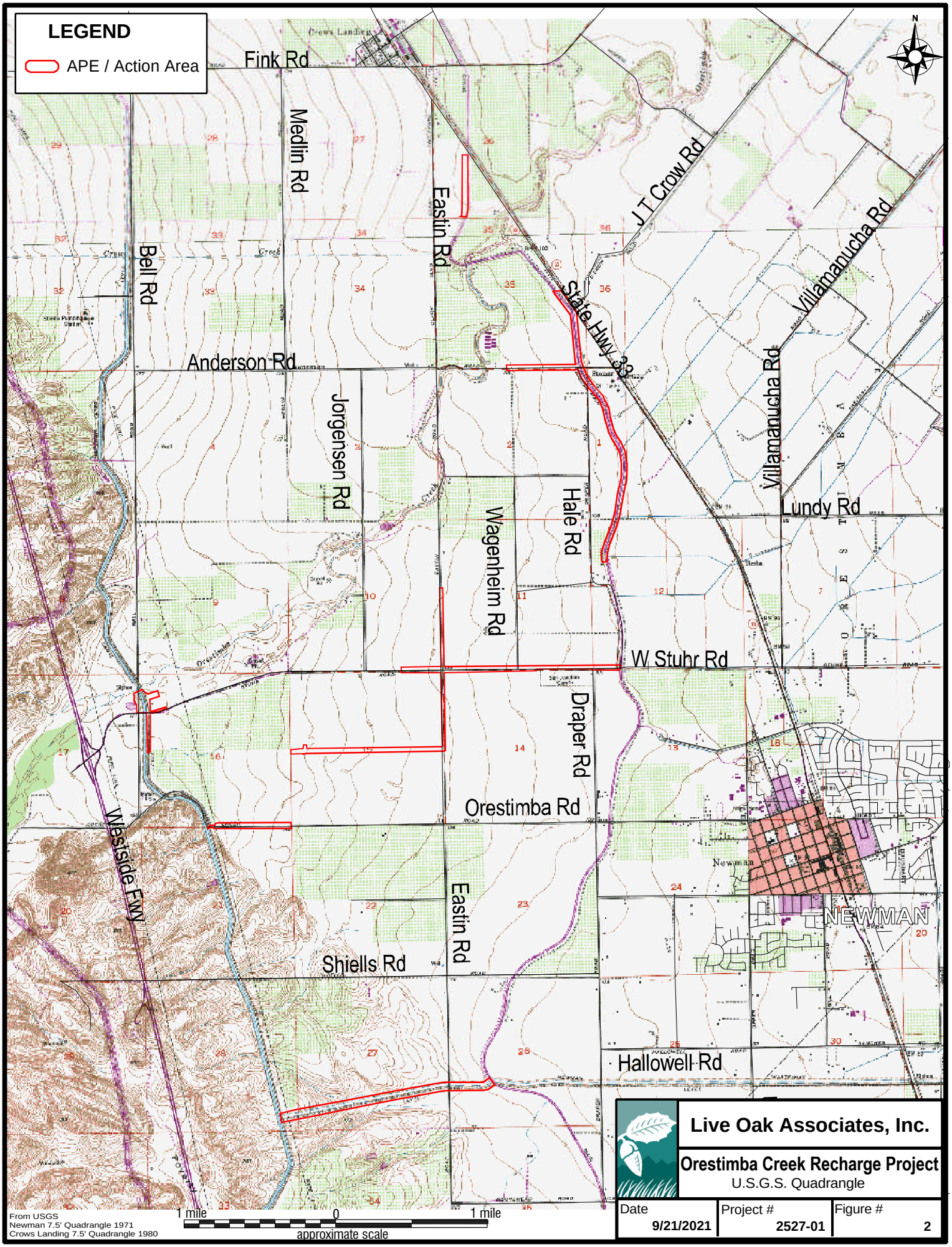
The project would include 60 geotechnical borings. Drilling equipment would consist of a truck-mounted drill rig, water tender, drill crew cab and geologist/engineer vehicles.







Live Oak Associates, Inc.		
Orestimba Creek Recharge Project Site / Vicinity Map		
Date 9/21/2021	Project # 2527-01	Figure # 1


LEGEND
APE / Action Area
Fink Rd
Medlin Rd
Eastin Rd
J T Crow Rd
Villamanucha Rd
Bell Rd
State Hwy 33
Anderson Rd
Jorgensen Rd
Wagenheim Rd
Hale Rd
Lundy Rd
W Stuhr Rd
Draper Rd
Orestimba Rd
Westside Fwy
Eastin Rd
Shiells Rd
Hallowell Rd
NEWMAN
N
From USGS
Newman 7.5' Quadrangle 1971
Crows Landing 7.5' Quadrangle 1980
1 mile
0
1 mile
approximate scale
Live Oak Associates, Inc.
Orestimba Creek Recharge Project
U.S.G.S. Quadrangle
Date
9/21/2021
Project #
2527-01
Figure #
2

Recovery Wells

The project would also include a sufficient number of recovery wells to recover up to 10,000-acre feet per year. Recovery wells in the sphere of influence of the project exist and may be used in addition to newly constructed recovery wells to recover the banked water. These wells and associated pipelines would be placed along existing roads and would convey water to CCID's Main Canal and/or the DMC. The water from the proposed recovery wells would be utilized to augment demands when surface water supplies are insufficient. Well depths are estimated to be 400 feet; final depths for wells are to be determined at the time of drilling. The location of the proposed recovery wells and associated pipelines are not known at this time; however, additional alignment areas have been designated in the APE to encompass any potential future well sites.

Diversion Facilities

A 40 cfs gravity turnout from Orestimba Creek would be constructed on the west side of Bell Road about 500 feet north of Stuhr Road in Section 17 of Township 7 South, Range 8 East. The turnout, expected to be from 6 to 10 feet tall and 6 to 8 feet wide depending on existing field conditions, would convey flows via a 48-inch pipeline under Bell Road to an existing toe drain channel. The maximum excavation is expected to be 10-feet deep. The toe drain channel that runs along the west side of the DMC would then convey the flood flows through an existing box culvert which siphons beneath the DMC and emerges on the east side into an existing linear recharge channel, which runs parallel to Orestimba Creek and is located between Orestimba Creek and Stuhr Road. This linear recharge channel would be improved to contain a 1.5 acre settling basin. A pumping plant would be located along the south side of the settling basin.

The diversion facilities would also include a pumping plant with two lift pumps with a total flow capacity of 10 to 35 cfs, connected to a 36-inch diameter pipeline running north to south parallel to the DMC, outside the DMC Right of Way, for approximately 1,900 linear feet from the pump station to the vicinity of the distribution box near an existing DMC turnout at milepost marker (MP) 51.65L. The existing turnout is licensed for use by DPWD and appurtenant gates and meters would be improved to deliver water to the groundwater recharge facility.

The existing 5'-4"x4'-4" distribution box at MP 51.65L will need to be removed and replaced by a larger box sized for up to 35 cfs. According to record documents, there is an existing 24-inch pipe insert in the 36-inch concrete turnout discharge pipe for 16 feet upstream of the distribution box toward the DMC turnout. This 16 feet of concrete pipe along with the 24-inch pipe insert will need to be removed and replaced with a 36-inch concrete pipe to increase capacity to 35 cfs. Excavation is expected to be a maximum depth of 10-feet. From east of the distribution box, pipeline would connect to convey the combined flows from the DMC turnout at MP 51.65L and flood flows captured from Orestimba Creek in a newly constructed 48-inch diameter pipeline. This pipeline would run from west to east through the middle of an existing greenhouse operation and orchards to the proposed ponds for approximately 5,100 linear feet.

Finally, the existing 5'-4"x4'-4" distribution box at MP 52.40L will need to be removed and replaced by a larger box sized for up to 35 cfs. According to record documents, there is an 18-inch pipe insert in the 36-inch concrete turnout discharge pipe for 12 feet upstream of the distribution box toward the DMC turnout at MP 52.40L. This 12 feet of concrete pipe along with the 18-inch pipe insert will need to be removed and replaced with a 36-inch concrete pipe to increase capacity to 35 cfs. Excavation is expected to be a maximum depth of 13-feet. The diversion facilities would include a 36-inch pipeline which would cross Orestimba Road, then run from west to east from DMC turnout MP 52.40L along the north side of Orestimba Road to the proposed ponds for approximately 3,100 linear feet. An additional 48-inch pipeline from DMC turnout MP 54.38L may be required and would run from west to east parallel to Newman Wasteway along the north or, less likely, the south side for approximately 1.75 miles. Turnouts 51.65L and 52.40L are currently licensed for use by DPWD.

The maximum depth of trenching to accommodate the pipelines will be 10-feet and the maximum width of the trench will be 17-feet.

1.2 PROJECT BACKGROUND

A previous CEQA/NEPA approved project for the construction of 80 acres of new recharge ponds within DPWD's boundaries and located approximately 1.0 mile east of the DMC is associated with the project covered in this analysis. Approximately 20 acres of the approved

ponds were built in 2018 and the remaining 60 acers of ponds will be constructed in conjunction with the construction of the project elements described in the project description above and covered in this analysis. While associated with the current project, the recharge ponds are not part of the project covered in this analysis.

1.3 REPORT OBJECTIVES

Water distribution projects such as that proposed by the project partners may damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to review under CEQA and/or NEPA, and/or subject to local policies and ordinances. This report addresses issues related to: 1) sensitive biotic resources occurring within the project site; 2) the federal, state, and local laws regulating such resources; and 3) mitigation measures that may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources.
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range.
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development.
- Identify and discuss project impacts to biological resources that may occur within the project site within the context of CEQA and NEPA guidelines and relevant state and federal laws.
- Identify avoidance and mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and NEPA and that are generally consistent with recommendations of the resource agencies regulating affected biological resources.
- Make effects determinations pursuant to Section 7 of the federal Endangered Species Act for federally listed species with the potential to occur in the project vicinity.

1.4 STUDY METHODOLOGY

A reconnaissance-level field survey of the project site was conducted on June 3 and 4, 2021 by LOA biologist Jeff Gurule. The survey consisted of walking the proposed turnout area and walking and/or driving the linear area of the APE while identifying the principal land uses of the project site and the constituent plants and animals of each land use. The field survey conducted for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the project site.

LOA conducted an analysis of potential project impacts based on the known and potential biotic resources of the project site discussed in Section 2.0. Sources of information used in the preparation of this analysis included: (1) results of the June 2021 reconnaissance-level survey, (2) the *California Natural Diversity Data Base* (CDFW 2021), (3) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2021), and (4) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

LOA's field investigation did not include an aquatic resources delineation or focused surveys for special status species. However, such an analysis is planned for a later date after completion of this analysis. The field survey was sufficient to generally describe those features of the project site that could be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB), and to assess the significance of possible biological impacts associated with development of the project site.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located in the northern San Joaquin Valley. The San Joaquin Valley is bordered by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the California coastal ranges to the west, and the Sacramento-San Joaquin Delta to the north.

Like most of California, the San Joaquin Valley experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 100 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely exceed 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation in the vicinity of the project is about 11.5 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The project site is situated within agricultural lands dominated by orchards and field crops at the eastern edge of undeveloped rangeland within the lower foothills of the Diablo Range. The principal drainage of the project vicinity is Orestimba Creek that flows southwest from the Diablo Range, northeast to the San Joaquin River.

2.2 PHYSICAL CONDITIONS OF PROJECT SITE

The topography of the project site is relatively flat with elevations ranging from approximately 170 feet National Geodetic Vertical Datum (NGVD) at the western extent of the site and 107 feet NGVD at the northeastern extent.

The project APE contains 13 soil mapping units from six soil series (NRCS 2021). These soils are summarized in Table 1 below.

TABLE 1: SOILS OF THE PROJECT SITE

Soil Mapping Unit	Parent Material	Drainage Class	Hydric Rating
122: Vernalis loam, 0 to 2 percent slopes	Alluvium from mixed rock	Well drained	No
125: Vernalis clay loam, 0 to 2 percent slopes	Alluvium from mixed rock	Well drained	No
126: Vernalis-Zacharias complex, 0 to 2 percent slopes, rarely flooded	Alluvium from mixed rock	Well drained	No
127: Vernalis loam, 0 to 2 percent slopes, rarely flooded	Alluvium from mixed rock	Well drained	No
130: Stomar clay loam, 0 to 2 percent slope	Alluvium from sedimentary rock	Well drained	No
140: Zacharias clay loam, 0 to 2 percent slopes	Alluvium from mixed rock	Well drained	No
142: Zacharias gravelly clay loam, 0 to 2 percent slopes	Alluvium from mixed rock	Well drained	No
144: Zacharias gravelly clay loam, 2 to 5 percent slopes	Alluvium from mixed rock	Well drained	No
146: Zacharias clay loam, 0 to 2 percent slopes, rarely flooded	Alluvium from mixed rock	Well drained	No
210: Cortina gravelly sandy loam, 0 to 5 percent slopes, rarely flooded	Alluvium from mixed rock	Somewhat excessively drained	No
270: Elsalado fine sandy loam, 0 to 2 percent slopes, rarely flooded	Alluvium derived from sandstone-shale	Well drained	No
271: Elsalado loam, 0 to 2 percent slopes, rarely flooded	Alluvium derived from sandstone-shale	Well drained	No
301: Damluis clay loam, 2 to 8 percent slopes	Alluvium from mixed rock	Well drained	No

None of the soils within the project APE are considered hydric. As a result, onsite soils do not have the propensity to pond water in depressions and form vernal pools. Furthermore, soils within the project APE and surrounding lands have been subjected to decades of soil-disturbing activities associated with agricultural use, road and canal construction, and urban and rural development, and therefore no longer maintain their native soil characteristics. Therefore, soil characteristics of the site are of no significance to rare or endangered plant or animal species within the region.

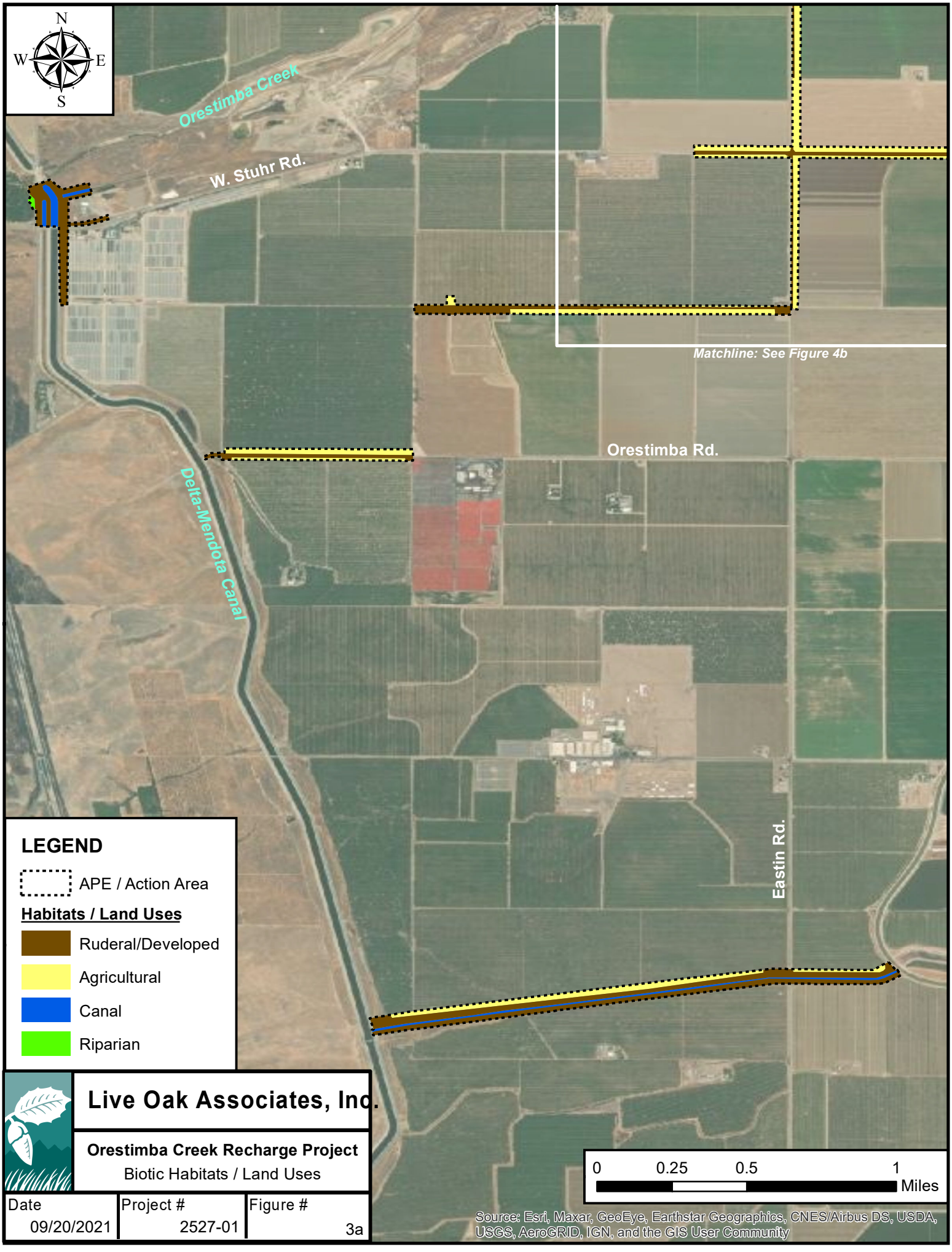
2.3 BIOTIC HABITATS/LAND USES OF THE PROJECT SITE

Four habitat/land use types, agriculture, irrigation canal, ruderal/developed, and riparian, were observed within the project APE during the June 2021 biological field survey (Figures 3a and 3b). These land uses and their constituent plant and animal species are described in more detail below. A list of the vascular plant species observed within the project site and a list of the terrestrial vertebrates using, or potentially using, the site are provided in Appendices B and C, respectively. Representative photos of the project site are presented in Appendix D.

2.3.1 Agricultural

Agricultural areas within the APE consisted of orchards, fields, and agricultural ditches or basins along existing roads or canals. Vegetation within agricultural areas at the time of the field survey was either dominated by the crop species or barren of vegetation due to recent discing. Regular agricultural activities within the APE create unsuitable habitat for most native amphibian, reptile, bird, and mammal species. Nonetheless, a number of animal species are expected to use agricultural lands of the site depending on the specific agricultural use. Sierran treefrogs (*Pseudacris sierra*) and western toads (*Bufo boreas*) may be found in portions of agricultural lands in the APE that are adjacent to irrigation canals potentially suitable for breeding by these species. Reptile species that may forage in this habitat include the side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis melanoleucus*), and common kingsnake (*Lampropeltis getulus*).

Resident bird species expected to use this habitat would include Brewer's blackbirds (*Euphagus cyanocephalus*), brown-headed cowbirds (*Molothrus ater*), and European starlings (*Sturnus*

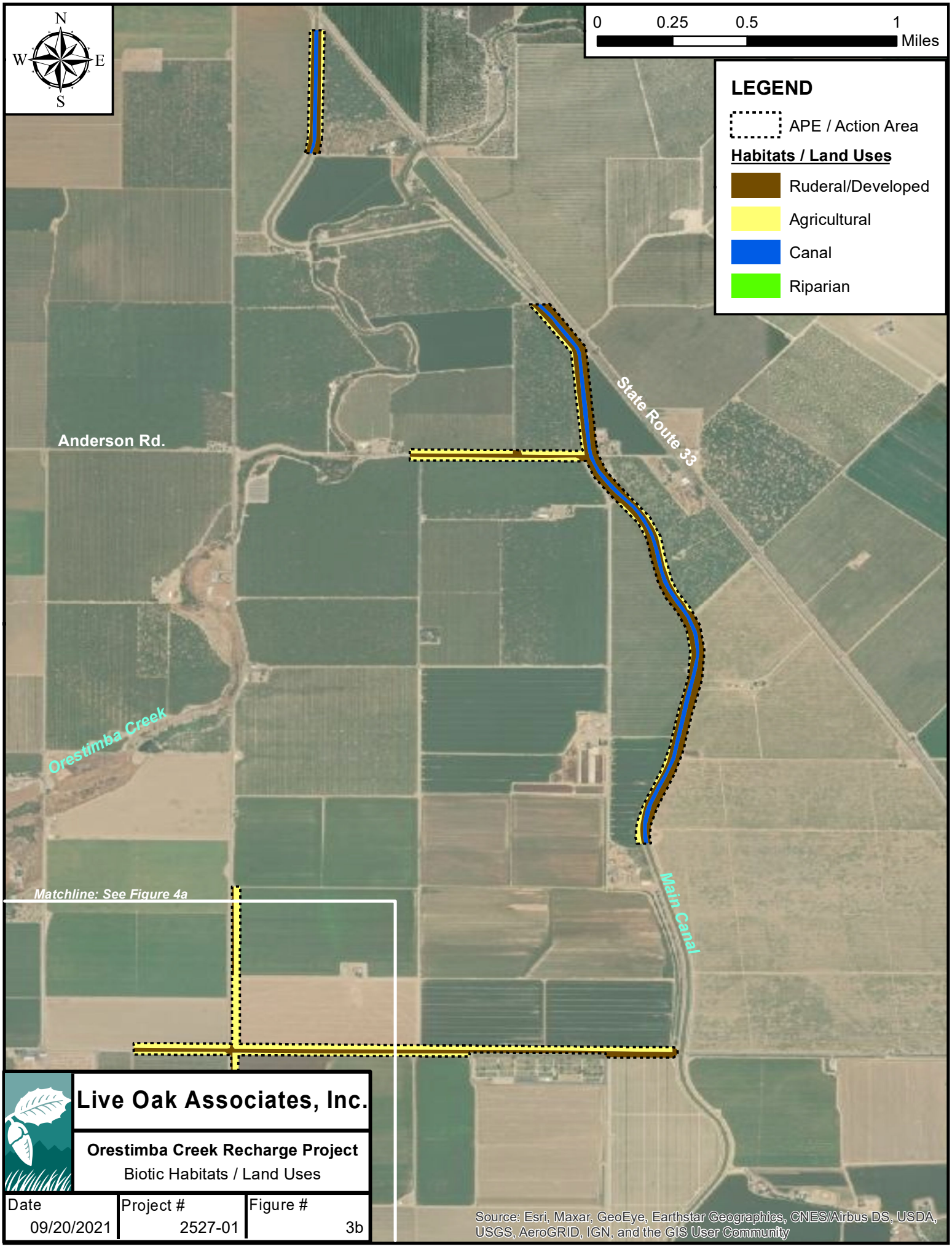


Live Oak Associates, Inc.

Orestimba Creek Recharge Project

Biotic Habitats / Land Uses

Date	Project #	Figure #
09/20/2021	2527-01	3a



Live Oak Associates, Inc.

Orestimba Creek Recharge Project

Biotic Habitats / Land Uses

Date	Project #	Figure #
09/20/2021	2527-01	3b

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

vulgaris), among others. Wintering birds that may utilize these lands include the savannah sparrow (*Passerella sandwichensis*), American pipit (*Anthus rubescens*), and Say's phoebe (*Sayornis saya*), among others. Summer migrants such as the barn swallow (*Hirundo rustica*) may forage on the site's agricultural lands.

Burrowing rodent activity on the site's agricultural lands is expected to be limited due to regular ground-disturbing practices associated with crop production. Open burrows were found to be mostly absent from this habitat during the field survey. However, Botta's pocket gophers (*Thomomys bottae*) may encroach into areas that are less frequently maintained, and California ground squirrels (*Otospermophilus beecheyi*) may burrow along the perimeter of fields and orchards.

The site's fields may be used by foraging raptors such as red-tailed hawks (*Buteo jamaicensis*), Swainson's hawks (*Buteo swainsoni*), American kestrels (*Falco sparverius*), and barn owls (*Tyto alba*). Disturbance-tolerant mammalian predators such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and coyotes (*Canis latrans*) may also occasionally forage on or pass through the site's agricultural lands.

2.3.2 Canal

The APE also contains a number of irrigation canals. These include two concrete-lined canals, the DMC and Newman Wasteway, and two earthen canals, the CCID Main Canal and a toe drain running under and on either side of the DMC. All the canals except the Newman Wasteway, which was dry during the field survey, appear to be perennially inundated. At the time of the field survey, vegetation within most of the canals was absent or confined to the water's edge. The toe drain contained the most vegetation and consisted of broadleaf cattail (*Typha latifolia*), bearded sprangletop (*Leptochloa fusca ssp. fascicularis*), bristly ox-tongue (*Helminthotheca echioides*), rabbit's foot grass (*Polypogon monspeliensis*), tall flatsedge (*Cyperus eragrostis*), and water primrose (*Ludwigia peploides*) among others. The upper and outer banks of the canals supported upland vegetation much the same as ruderal areas of the site.

The onsite canals offered a varying degree of value to native wildlife, dependent on the flow regime, lining substrate, and maintenance activity. Wildlife use of the canals was most apparent in the toe drain. Non-native fish species such as the largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*) were observed here. Crustaceans such as crayfish (*Pacifastacus sp.*) may also be found in this and other onsite canals. The American bullfrog (*Lithobates catesbeianus*) was also observed here, and other amphibians such as the Sierran tree frog and western toad may also occur in this and other canals. These and other prey species such as mosquito fish (*Gambusia affinis*) may attract wading birds such as the great blue heron (*Ardea herodias*) and great egret (*Ardea alba*). Larger mammals such as raccoons and coyotes may utilize the onsite canals for foraging or water.

2.3.3 Ruderal/Developed

A majority of the project APE consisted of ruderal/developed lands, or lands regularly disturbed by human activities and/or associated with the built environment. Ruderal/developed areas of the APE included a commercial greenhouse facility, paved and dirt roads, road shoulders, and lands disturbed by residential or infrastructure activities that were barren to sparsely vegetated or dominated by non-native weeds. Where vegetation was present in these areas, it generally consisted of common weedy grasses such as ripgut brome (*Bromus diandrus*), barnyard barley (*Hordeum murinum*), wild oats (*Avena sp.*), and Bermudagrass (*Cynodon dactylon*). Annual forbs observed included a mix of native and non-native species tolerant of disturbed soils such as yellow star thistle (*Centaurea solstitialis*), red stemmed filaree (*Erodium cicutarium*), gumweed (*Grindellia camporum*), fiddleneck (*Amsinckia sp.*), prickly lettuce (*Lactuca serriola*), short-podded mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), common spikeweed (*Centromadia pungens*), vinegarweed (*Trichostema lanceolatum*), and doveweed (*Croton setiger*), among others.

The wildlife habitat value of ruderal/developed lands within the project site is relatively low; nonetheless, these lands can support some native wildlife species. Amphibians such as the Pacific tree frog and western toad may disperse through ruderal lands of the project site during the winter and spring where suitable breeding habitat occurs nearby. Common reptiles such as

the western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard, and Pacific gopher snake could potentially use ruderal habitats within the APE.

Avian species expected to forage on or pass over ruderal/disturbed areas of the site include the northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), California scrub jay (*Aphelocoma californica*), killdeer (*Charadrius vociferus*), Brewer's blackbird, American crow (*Corvus brachyrhynchos*), and European starling.

Evidence of burrowing mammal activity on the ruderal/developed lands of the project site was minimal with only a few potential California ground squirrel burrows observed within a pile of broken concrete. Other small mammals potentially occurring on ruderal/developed lands of the project site include the brown rat (*Rattus norvegicus*), Botta's pocket gopher, and house mouse (*Mus musculus*). Mammalian predators with the potential to occasionally occur on ruderal/developed lands of the site include disturbance-tolerant species such as the raccoon, Virginia opossum (*Didelphis virginiana*), and coyote. A variety of native bat species have the potential to forage over ruderal/developed areas of the site, as well as other areas of the APE.

2.3.4 Riparian

Riparian habitat is located at the western extent of the project site within the Orestimba Creek corridor. The area of riparian habitat within the APE is minimal and at the edge of the riparian corridor of Orestimba Creek. At the time of the field survey, this area of the APE was dominated by herbaceous vegetation and shrubs, with the edge of the canopy of a few large trees overhanging the outer edge of the APE but rooted outside the APE. Herbaceous vegetation found here was dominated by Bermudagrass. Other herbaceous plants here included pennyroyal (*Mentha pulegium*), rabbit's foot grass, rough cocklebur (*Xanthium strumarium*), stinging nettle (*Urtica dioica*), and Mediterranean barley (*Hordeum marinum*). Shrub species here consisted primarily of mulefat (*Baccharis salicifolia*). Trees rooted or overhanging the APE included Fremont cottonwood (*Populus fremontii*), Goodding's black willow (*Salix gooddingii*), and red willow (*Salix laevigata*).

Well-developed riparian vegetation typically provides high habitat value for a number of wildlife species. However, the area of riparian habitat found in the APE was relatively sparsely vegetated compared to the interior of the riparian habitat found outside the APE and moderately impacted by cattle grazing. As a result, the habitat value of the riparian habitat was moderate.

The riparian area of the APE is expected to support a few amphibian species such as western toads and Pacific treefrogs. Reptiles such as Pacific gopher snakes, common kingsnakes, and racers (*Coluber constrictor*) may all forage in this habitat as well.

Riparian habitat also attracts a large number of avian species that seek cover, forage, and nest in the various canopy layers. Resident species observed in this habitat at the time of the field survey included the California scrub jay, belted kingfisher (*Ceryle alcyon*), California quail (*Callipepla californica*), and ash-throated flycatcher (*Myiarchus cinerascens*). Other birds expected in the riparian of the APE include white-crowned sparrow (*Zonotrichia leucophrys*), yellow-rumped warbler (*Setophaga coronata*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), lesser goldfinch (*Spinus psaltria*), and Bullock's orioles (*Icterus bullocki*), among others.

Various mammals could occur in riparian habitat in the APE. Small mammals would include ornate shrews (*Sorex ornatus*), deer mice (*Peromyscus maniculatus*), and Audubon's cottontails (*Sylvilagus auduboni*). The raccoon, striped skunk, and coyote are predators common to this habitat.

2.4 SPECIAL STATUS PLANTS AND ANIMALS

Many species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.4, state and federal laws have provided CDFW and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been

designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists (i.e., California Rare Plant Ranks, or CRPR) of native plants considered rare, threatened, or endangered (CNPS 2021). Collectively, these plants and animals are referred to as "special status species."

The *California Natural Diversity Data Base* (CDFW 2021) was queried for special status species occurrences in nine USGS 7.5-minute quadrangles on and surrounding the project APE (*Newman*, *Crevison Peak, Ingomar, Howard Ranch, Gustine, Hatch, Crows Landing, Patterson,* and *Orestimba Peak*). An unofficial species list was obtained using the USFWS Information for Planning and Consultation (IPaC) system for federally listed species with the potential to be affected by the project (USFWS 2021) (Appendix E). These species, and their potential to occur on the project site, are listed in Table 2 on the following pages. Sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *California Natural Diversity Data Base* (CDFW 2021), *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al 2012), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2021), Calflora.org, and eBird.org.

Special status species occurrences within 3.1 miles of the project site are depicted in Figure 4 and San Joaquin kit fox occurrences within a 10-mile radius of the site are presented in Figure 5.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2021, USFWS 2021, and CNPS 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence Within the Project APE
Palmate Bracted Salty Bird's Beak (*Chloropyron palmatum*)	FE, CE CRPR 1B	Occurs in chenopod scrub, valley and foothill grassland between 80 and 560 ft. in elevation. Usually on Pescadero silty clay which is alkaline, with *Distichlis*, *Frankenia*, etc. Blooms June-September.	**Absent.** Suitable habitat for this species is absent from the APE.
Delta Button-Celery (*Eryngium racemosum*)	CE, CRPR 1B	Occurs in riparian scrub and vernally mesic clay depressions between 3 – 30 m. in elevation in the northern San Joaquin Valley and Calaveras County. Bloom June – August.	**Unlikely.** The only portion of the project site providing potential habitat for this species is the riparian habitat at the western end of the site. However, Eryngium species were absent from this area at the time of the survey. Furthermore, the project site is outside the range of this species, which only occurs east of State Route 33.

CNPS-Listed Plants

Alkali Milk Vetch (*Astragalus tener var. tener*)	CRPR 1B	Typically occurs in valley grassland, alkali sink, seasonal wetlands, and riparian habitats of the lower Sacramento and upper San Joaquin Valleys, and the San Francisco Bay Area at elevations below 200 feet. Blooms March to June.	**Unlikely.** The only portion of the project site providing potential habitat for this species is the riparian habitat on the site. However, no Astragalus species were observed during the site survey. Furthermore, this area is outside the range of this species, which only historically occurred east of State Route 33 in this portion of the San Joaquin Valley. The only occurrence of this species in Stanislaus County is considered extirpated (CDFW 2021).
Heartscale (*Atriplex cordulata var. cordulata*)	CRPR 1B	Occurs in cismontane woodland and valley and foothill grassland of the San Joaquin Valley at elevations below 1,230 ft. Blooms April–October.	**Unlikely.** Habitat for this species is absent to extremely marginal.
Lesser Saltscale (*Atriplex minuscula*)	CRPR 1B	Occurs in cismontane woodland and valley and foothill grassland between 50 and 660 ft. in elevation. Blooms May-October.	**Unlikely.** Habitat for this species is absent to extremely marginal.
Vernal Pool Smallscale (*Atriplex persistens*)	CRPR 1B	Occurs in alkaline vernal pools below 400 ft. in elevation. Blooms July-October.	**Absent.** Vernal pool habitat is absent from the project APE.
Big Tarplant (*Blepharizonia plumosa*)	CRPR 1B	Occurs in valley grassland, foothill woodland, and chaparral of the inner coast range from the south Delta to Carrizo Plain between 0-1,640 ft in elevation. Blooms July – October.	**Unlikely.** Habitat for this species is absent to extremely marginal. Typically occurs in foothill habitat of the Coast Range.
Lemmon's Jewelflower (*Caulanthus lemmonii*)	CRPR 1B	Occurs in grassland habitat of California's Inner Coast Range from Alameda Co. on the north to Ventura Co. on the south; occurs between 260 and 4,000 ft. in elevation. Blooms March-May.	**Absent.** Suitable habitat is absent from the site. Occurs in foothill habitat of the Coast Range. Is not known to occur east of Interstate 5.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS cont'd.

CNPS-Listed Plants

Species	Status	Habitat	*Occurrence Within the Project APE
Hispid Salty Bird's-Beak (*Chloropyron molle spp. hispidum)*	CRPR 1B	Occurs in damp alkaline soils, especially in alkaline meadows and alkali sinks with *Distichlis spicata*; occurs below 500 ft. in elevation. Populations are concentrated in the San Joaquin Valley in Merced Co., with outlier populations in the Sacramento Valley, Bay Area, and Tulare Basin; blooms June–September; elevations up to 500 ft.	**Absent.** Suitable habitat is absent from the project site.
Hospital Canyon Larkspur (*Delphinium californicum* spp. *interius*)	CRPR 1B	Occurs on open woodland on the eastern side of the coast ranges from Contra Costa to San Benito Counties from 985 – 3,280 ft in elevation. Blooms April - June.	**Absent.** The project site is out of the species elevational range. Suitable habitat is absent.
Spiny-Sepaled Button Celery (*Eryngium spinosepalum*)	CRPR 1B	Occurs in vernal pools and valley and foothill grasslands of the San Joaquin Valley and the Tulare Basin between 330 and 840 ft. in elevation. Blooms April-May.	**Present.** During the June field survey, a small population of this species was identified and delineated within a ruderal area immediately east of the northern extent of the DMC within the APE, at the approximate location of the population mapped in Figure 4.
Diamond-petaled California Poppy (*Eschscholzia rhombipetala*)	CRPR 1B	Occurs in alkaline or clay soils in valley and foothill grassland in Alameda, Contra Costa, Colusa, San Joaquin, San Luis Obispo and Stanislaus Counties between 0-3,200 ft in elevation. Blooms March-April.	**Absent.** Suitable habitat is absent from the site. Occurs in foothill habitat of the Coast Range. Is not known to occur east of Interstate 5.
San Joaquin Spearscale (*Extriplex joaquinana*)	CNPS 1B	Occurs in alkaline soils of chenopod scrub, meadows and seeps, playas and valley and foothill grassland in the inner coast range and western side of the Central Valley between 0-2,740 ft. in elevation. Blooms April – October.	**Absent.** Suitable habitat is absent from the site. Is not known to occur in Stanislaus County.
Alkali-Sink Goldfields (*Lasthenia chrysantha*)	CRPR 1B	Occurs in valley grassland, alkali sink, wetland riparian areas less than 328 ft. in elevation in the southern Sacramento Valley and San Joaquin Valley. Blooms February – June.	**Unlikely.** Habitat for this species is absent to extremely marginal.
Lime Ridge Navarretia (*Navarretia gowenii*)	CRPR 1B	Occurs in clay or serpentine soils of Stanislaus and Contra Costa Counties between 655-985 ft in elevation. Blooms May – June.	**Absent.** The project site is out of the species elevational range. Suitable habitat is absent.
Shining Navarretia (*Navarretia nigelliformis* ssp. *radians*)	CRPR 1B	Occurs in vernal pool, valley grassland, foothill woodland, wetland riparian areas of the inner coast range and central valley between 50 – 3,280 ft in elevation. Blooms April - July	**Unlikely.** Habitat for this species is absent to extremely marginal. No Navarretia species were observed during the site survey. Only a single documented occurrence is known from Stanislaus County, which is located 5.65 miles northwest of the project site in the eastern foothills of the Coast Range.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS cont'd.

CNPS-Listed Plants

Species	Status	Habitat	*Occurrence Within the Project APE
Prostrate Vernal Pool Navarretia (*Navarretia prostrata*)	CRPR 1B	Occurs in wetlands of coastal sage scrub and riparian areas in western San Joaquin valley, San Francisco Bay, South Coast range, and the Santa Rosa Plateau at elevations less than 2296 ft. Blooms April – July.	**Unlikely.** Habitat for this species is absent to extremely marginal. There are no documented occurrences of this species in Stanislaus County (CDFW 2021). No Navarretia species were observed during the site survey.
California Alkali Grass (*Puccinellia simplex*)	CRPR 1B	Occurs in alkali sinks and flats within grassland and chenopod scrub habitats of the Central Valley, San Francisco Bay area, and western Mojave Desert below 3,000 ft. in elevation. Blooms March-May.	**Absent.** Suitable habitat is absent on the site.
Sanford's Arrowhead (*Sagittaria sanfordii*)	CRPR 1B	Occurs in freshwater emergent marsh habitat in drainage ditches and canals of California's Central Valley and low Sierra foothills. Blooms May to October.	**Unlikely.** While potentially suitable habitat is present within the toe drain on site, this conspicuous species was not observed during the field investigation.
Slender-Leaved Pondweed (*Stuckenia filiformis ssp. alpina*)	CRPR 2B	Marshes and swamps at elevations of 16-7627 ft. Blooming period May - July.	**Unlikely.** There are no known occurrences of this species in Stanislaus County. The nearest documented occurrence is 10 miles south of the site from two 1948 collections. This species was not observed during the field survey.
Wright's Trichocoronis (*Trichocoronis wrightii var. wrightii*)	CRPR2B	Occurs in mud flats of vernal lakes, drying riverbeds, alkali meadows. Blooms May-September; elevations up to 1,400 ft.	**Absent.** Habitat is absent from the project site. There are no known occurrences of this species in Stanislaus County.

ANIMALS (adapted from CDFW 2021 and USFWS 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Longhorn Fairy Shrimp (*Branchinecta longiantenna*)	FE	Vernal pools of clear to turbid waters including grass-bottomed pools in Merced County. Can be caught between December and April.	**Absent.** Vernal pools required by this species are absent from the APE and immediately surrounding lands.
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Occurs in vernal pools, clear to tea-colored water in grass or mud-bottomed swales, and basalt depression pools.	**Absent.** Vernal pools required by this species are absent from the APE and immediately surrounding lands.
Conservancy Fairy Shrimp (*Branchinecta conservatio*)	FE	Occurs in large, turbid vernal pools in grasslands of the northern two-thirds of the Central Valley.	**Absent.** Vernal pools required by this species are absent from the APE and immediately surrounding lands.
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)	FE	Vernal pools of clear to turbid waters of the Central Valley measuring 54 sq.ft. to larger pools (largest known to be 89-acre Olcott Lake).	**Absent.** Vernal pools required by this species are absent from the APE and immediately surrounding lands.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (adapted from CDFW 2021 and USFWS 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence Within the Project APE
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	FT	Elderberry shrubs of the Central Valley and foothills north of Fresno County up to 3,000'.	**Absent.** Habitat for this species in the form of elderberry shrubs is absent from the project site.
Delta Smelt (*Hypomesus transpacificus*)	FT	This slender-bodied fish is endemic to the San Francisco Bay and Sacramento-San Joaquin Delta upstream through Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	**Absent.** The project site is situated well outside of the known distribution of this species.
Steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus pop. 11*)	FT	This slender-bodied fish is endemic to the San Francisco Bay and Sacramento-San Joaquin Delta upstream through Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	**Absent.** Seasonal flows in Orestimba Creek and the onsite canals provide unsuitable habitat for this species.
California Tiger Salamander (*Ambystoma californiense*)	FT, CT	Inhabits primarily annual grasslands and open woodlands of foothills and valleys, requires vernal pools, swales or stock ponds that fill for at least 3 months. Aestivate in small mammal burrows.	**Absent.** Seasonal pools and ponds required by this species for reproduction are absent from the project site and surrounding lands. Nearby inundated sand and gravel mining pits and a nearby perennial residential pond surrounded by agricultural lands represent unsuitable breeding habitat for this species.
Foothill Yellow-Legged Frog (*Rana boylii*)	CE	Requires partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats.	**Absent.** The project APE is outside the range of the species. Although this species has been documented in the upper reaches of Orestimba Creek, this species does not occur east of the California Aqueduct in the region (CDFW 2021). Moreover, suitable habitat is absent from the project site.
California Red-legged Frog (*Rana draytonii*)	FT	Perennial rivers, creeks and stock ponds of the Inner Coast Range foothills, preferring deep pools with overhanging vegetation.	**Absent.** Suitable aquatic habitat for this species is absent from the APE.
Giant Garter Snake (*Thamnophis gigas*)	FT, CT, CFP	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. Inhabit small mammal burrows and other upland soil crevices during the winter during hibernation.	**Absent.** Suitable habitat for this species is absent from the APE due to the absence of, or relatively sparce, vegetation cover in and around the canals. Uplands around the canals offer little to no overwintering refugia. This species is not known to occur in Stanislaus County.
Blunt-Nosed Leopard Lizard (*Gambelia sila*)	FE, CE, CFP	Occurs in semiarid grasslands, alkali flats, and washes. Avoids densely vegetated areas. Inhabits the San Joaquin Valley and adjacent valleys and foothills north to southern Merced County.	**Absent.** Suitable habitat for this species is absent from the APE. The APE is well north of the species range.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence Within the Project APE
Bald Eagle (*Haliaeetus leucocephalus*)	CE	Occurs in ocean shores, lake margins, and rivers for both nesting and wintering. Nests are in large trees near water.	**Possible**. This species is occasionally observed foraging over the California Aqueduct (eBird 2021) and may occasionally forage over the DMC and Main Canal within the APE. Nesting habitat is absent from the APE.
Golden Eagle (*Aquila chrysaetos*)	CFP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**Unlikely**. Potential nesting habitat for this species is absent from the project site, and foraging habitat is absent to marginal. This species may occasionally fly over the site but is not expected to utilize it.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE CE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, and mesquite.	**Unlikely**. The only documented occurrence in the CNDDB nine-quad query is from a 1928 collection of two nests and eggs (CDFW 2021). This species is occasionally observed at the San Joaquin River, San Luis, and Merced National Wildlife Reserves (eBird 2021).
Swainson's Hawk (*Buteo swainsoni*)	CT	This breeding-season migrant to California nests in stands with few trees in riparian areas and juniper-sage flats, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Present.** Nesting habitat is marginal within the portion of the APE within the riparian corridor of Orestimba Creek, due to the absence of mature trees rooted in this area. However, an active Swainson's hawk nest was observed elsewhere in the riparian corridor during the field survey, approximately 330 feet from the project APE. Potential foraging habitat occurs in some agricultural areas of the APE.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in many open habitats.	**Possible.** Tricolored blackbirds could forage in open areas of the project site from time to time. Suitable breeding habitat is absent to marginal on the project site. However, a large breeding colony was observed near Orestimba Creek in 1999, less than 0.5 miles from the project APE.
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	FE, CE	Occurs in alkali scrub and herbaceous habitats with scattered shrubs in the southwestern San Joaquin Valley.	**Absent.** The project site is well outside this species current and historic range. The only known extant population is in Kings County.
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	CT, FE	Dens and breeds in arid grasslands, scrub lands, and foothills of the San Joaquin Valley	**Unlikely.** There are 9 documented occurrences of kit fox in the CNDDB within a 10-mile radius of the project site (CDFW 2021). The most recent sighting is from 2004. Denning and foraging habitat is marginal on the project site due to regular canal maintenance and agricultural activity on the site. At most, kit fox may occasionally pass through the site during dispersal movements but are not expected to reside on the site.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence Within the Project APE
San Joaquin Roach (*Lavinia symmetricus ssp. 1*)	CSC	Occurs in tributaries to the San Joaquin River from the Cosumnes River south.	**Absent.** Suitable aquatic habitat is absent from the project APE. Onsite canals provide unsuitable habitat.
Sacramento Splittail (*Pogonichthys macrolepidotus*)	CSC	Occurs in lakes and rivers of the central valley, but now confined to the Delta, Suisun Bay, and associated marshes.	**Absent.** The project site is situated well outside of the known distribution of this species.
Western Spadefoot (*Spea hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary ponds for breeding.	**Absent.** Seasonal pools and ponds required by this species for reproduction are absent from the project site and surrounding lands. Nearby inundated sand and gravel mining pits and a nearby perennial residential pond surrounded by agricultural lands represent unsuitable breeding habitat for this species.
Western Pond Turtle (*Emys marmorata*)	CSC	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites of sandy banks or grassy open fields for egg laying.	**Unlikely.** Aquatic habitat on the site is unsuitable to marginal for this species due to steep banks, concrete linings, and/or lack of vegetation. Nowhere on the canals running through the site have there been documented occurrences of pond turtles.
San Joaquin Coachwhip (*Masticophis flagellum ruddocki*)	CSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	**Unlikely.** Habitats within the APE are unsuitable to marginally suitable for this species. There are no known occurrences of this species in the project vicinity. The nearest documented occurrences are approximately 10 miles to the northwest (CDFW 2021).
Northern Harrier (*Circus cyaneus*)	CSC	Frequents meadows, grasslands, rangelands, emergent wetlands; uncommon in wooded habitats.	**Possible.** This species potentially forages over the site. Nesting habitat is marginal on the site.
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Unlikely.** Burrows suitably sized to accommodate burrowing owls were extremely sparse within the APE at the time of the field survey. None of these burrows exhibited signs of burrowing owl occupation. Recorded observations of burrowing owl are absent from this region of Stanislaus County (CDFW 2021; eBird 2021).
Loggerhead Shrike (*Lanius ludovicianus*)	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	**Possible.** This species may occasionally forage on the site. Suitable nesting habitat is present within riparian habitat of the APE.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence Within the Project APE
Pallid Bat (*Antrozous pallidus*)	CSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and buildings.	**Possible.** Potential foraging habitat occurs on the site; suitable roosting habitat is absent from the site.
Western Red Bat (*Lasiurus blossevillii*)	CSC	This mostly solitary bat roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Possible.** Roosting habitat is extremely marginal on the project site. The riparian portion of the APE supports mostly small trees and shrubs providing marginal roosting habitat, at best. This species may forage across the project site.
American Badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Absent.** Suitable habitat for this species is absent from the project APE.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CFP	California Protected
FC	Federal Candidate	CSC	California Species of Special Concern
CNPS	California Native Plant Society Listing		
1A	Plants Presumed Extinct in California	3	Plants about which we need more information – a review list
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	4	Plants of limited distribution – a watch list
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere		

2.5 JURISDICTIONAL WATERS

Jurisdictional waters are those rivers, creeks, drainages, lakes, ponds, reservoirs, and wetlands that are subject to the authority of the USACE, CDFW, and/or the RWQCB. In general, the USACE regulates navigable waters, tributaries to navigable waters, and wetlands adjacent to these waters, where wetlands are defined by the presence of hydric soils, hydrophytic vegetation, and wetland hydrology. The CDFW asserts jurisdiction over waters in California that have a defined bed and bank, and the RWQCB has jurisdiction over California surface water and groundwater. The regulation of jurisdictional waters is discussed in more detail in Section 3.9.

A number of potentially jurisdictional waters occur within the APE, including the Orestimba Creek riparian corridor, DMC, CCID Main Canal, Newman Wasteway, and toe drain.

2.6 DESIGNATED CRITICAL HABITAT

As will be discussed further in Section 3.3, the USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Designated critical habitat is absent from the project site and immediately surrounding lands.

2.7 SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are of limited distribution, distinguished by significant biological diversity, home to special status species, etc. CDFW is responsible for the classification and mapping of all natural communities in California. Natural communities are assigned state and global ranks according to their degree of imperilment. Natural communities with ranks of S1-S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents.

Designated sensitive natural communities are absent from the project APE. However, riparian habitat within and adjacent to the APE would be considered sensitive.

2.8 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation. Certain features of the project area have the potential to function as movement corridors for resident and migratory fish and wildlife species.

The Orestimba Creek corridor and onsite canal levee roads could serve as a travel route for common terrestrial wildlife. The Delta-Mendota Canal and CCID Main Canal provide a movement corridor for non-native fish that may occur in these canals, but do not support native anadromous fish populations.

3.0 RELEVANT GOALS, POLICIES, AND LAWS

3.1 GENERAL PLAN POLICIES OF STANISLAUS COUNTY

In compliance with CEQA, the lead agency must consider conformance with applicable goals and policies of the General Plan of Stanislaus County. The Stanislaus County General Plan includes goals and policies designed to protect significant biotic resources of the Planning Area. The Open Space and Conservation Element of the Stanislaus County General Plan includes goals concerning the conservation of wetlands and riparian areas, fish and wildlife habitats, and valuable vegetation resources. These goals are supported by numerous policies and implementation programs. Relevant policies are summarized as follows: 1) the County shall support the "no-net-loss" wetlands policies of the USACE, USFWS, and CDFW, and shall require new development to fully mitigate the loss of regulated wetlands, 2) the County shall require new development to be designed in such a manner that pollutants and siltation do not significantly degrade the area, value, or function of wetlands, 3) the County shall require new developments to preserve and enhance native riparian habitat unless public safety concerns require removal of habitat, and shall require riparian protection zones around natural watercourses, 4) the County shall identify and conserve remaining upland habitat areas adjacent to wetland and riparian areas that are critically important to wildlife species associated with those wetland and riparian areas, 5) where practicable, the County shall support efforts to avoid the "net" loss of important wildlife habitat, and should preserve in a natural state those areas defined as habitats for rare and endangered animal and plant species, 6) if loss of important habitat for special status species or other valuable wildlife resources cannot be avoided, the County shall impose adequate mitigation, 7) the County shall require adequate buffer zones between construction activities and significant wildlife resources, 8) the County shall promote methods of pest control on croplands bordering sensitive habitats that do not place special status species at risk, e.g. the San Joaquin kit fox, 9) the County shall support the preservation of significant areas of natural vegetation, e.g. oak woodlands, riparian areas, and vernal pools, and 10) the County shall require that new developments preserve natural woodlands to the maximum extent possible.

3.2 HABITAT CONSERVATION PLANS AND NATURAL COMMUNITY CONSERVATION PLANS

Section 10 of the federal Endangered Species Act establishes a process by which non-federal projects can obtain authorization to incidentally take listed species, provided take is minimized and thoroughly mitigated. A Habitat Conservation Plan (HCP) developed by the project applicant in collaboration with the USFWS and/or National Marine Fisheries Service (NMFS) ensures that such minimization and mitigation will occur, and is a prerequisite to the issuance of a federal incidental take permit. Similarly, a Natural Community Conservation Plan (NCCP) developed by the project applicant in collaboration with CDFW, provides for the conservation of biodiversity within a project area, and permits limited incidental take of state-listed species.

3.3 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is defined by section 3(5)(A) of the federal Endangered Species Act as "(i) The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." The Act goes on to define "conservation" as "the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which listing under the Act is no longer necessary."

The designation of a specific area as critical habitat does not directly affect its ownership. Federal actions that result in destruction or adverse modification of critical habitat are, however, prohibited in the absence of prior consultation with the USFWS according to provisions of the act. Furthermore, recent appellate court cases require that federal actions affecting critical habitat promote the recovery of the listed species protected by the critical habitat designation.

The USFWS designates critical habitat for a species by identifying general areas likely to contain the species' "primary constituent elements," or physical or biological features of the landscape

that the species needs to survive and reproduce. Although a unit of critical habitat for a particular species may be quite large, only those lands within the unit that contain the species' primary constituent elements are actually considered critical habitat by the USFWS.

3.4 THREATENED AND ENDANGERED SPECIES

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as "threatened" or "endangered" under one or both Acts, and/or as "rare" under CESA. Under both Acts, "endangered" means a species is in danger of extinction throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When state and federally listed species have the potential to be impacted by a project, the USFWS and CDFW must be included in the CEQA process. These agencies review the environmental document to determine the adequacy of its treatment of endangered species issues and to make project-specific recommendations for the protection of listed species. Projects that may result in the "take" of listed species must generally enter into consultation with the USFWS and/or CDFW pursuant to FESA and CESA, respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.5 CALIFORNIA FULLY PROTECTED SPECIES

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. Fully protected species are identified, and their protections

stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.6 MIGRATORY BIRDS

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Native birds are also protected under California state law. The California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities. Moreover, the California Migratory Bird Protection Act, enacted in September 2019, clarifies native bird protection and increases protections where California law previously deferred to federal law.

3.7 BIRDS OF PREY

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

3.8 NESTING BIRDS

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or

eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

3.9 WETLANDS AND OTHER JURISDICTIONAL WATERS

The USACE regulates the filling or grading of waters of the U.S. under the authority of Section 404 of the Clean Water Act (CWA). Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE.

Waters of the U.S. are defined by the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020 and took effect on June 22, 2020.

The Navigable Waters Protection Rule (33 CFR Part 328) identifies four categories of Waters of the U.S.: (1) territorial seas and traditional navigable waters, (2) tributaries, (3) lakes, ponds, and impoundments of jurisdictional waters, and (4) adjacent wetlands. These categories are defined as follows:

Territorial Seas and Traditional Navigable Waters (TNWs)

- The territorial seas and traditional navigable waters include large rivers and lakes and tidally-influenced waterbodies used in interstate or foreign commerce.

Tributaries

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.
- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).
- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

- Lakes, ponds, and impoundments of jurisdictional waters are jurisdictional where they contribute surface water flow to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).
- Lakes, ponds, and impoundments of jurisdictional waters are also jurisdictional where they are flooded by a "water of the United States" in a typical year, such as certain oxbow lakes that lie along the Mississippi River.

Adjacent Wetlands

- Wetlands that physically touch other jurisdictional waters are "adjacent wetlands,"
- Wetlands separated from a "water of the United States" by only a natural berm, bank or dune are also "adjacent."
- Wetlands inundated by flooding from a "water of the United States" in a typical year are "adjacent."
- Wetlands that are physically separated from a jurisdictional water by an artificial dike, barrier, or similar artificial structure are "adjacent" so long as that structure allows for a direct hydrologic surface connection between the wetlands and the jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.
- An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The final rule also outlines what are not "waters of the United States." The following waters/features are not jurisdictional under the rule:

- Waterbodies that are not included in the four categories of "waters of the United States" listed above.
- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.
- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.
- Diffuse stormwater run-off and directional sheet flow over upland.
- Many farm and roadside ditches.
- Prior converted cropland retains its longstanding exclusion, but is defined for the first time in the final rule. The agencies are clarifying that this exclusion will cease to apply when cropland is abandoned (i.e., not used for, or in support of, agricultural purposes in the immediately preceding five years) and has reverted to wetlands.

- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.

- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.

- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.

- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.

- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.

- Waste treatment systems have been excluded from the definition of "waters of the United States" since 1979 and will continue to be excluded under the final rule. Waste treatment systems include all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders. Discharges into waters of the State that are also waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits,

such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

4.0 IMPACTS AND MITIGATIONS

This impact assessment is based on the following assumptions about project design: 1) A 35 to 40 cfs diversion of Orestimba Creek will be facilitated by the construction of a turnout, diversion pipes, and pumping station, resulting in temporary impacts to ruderal habitats and an anticipated permanent impact to less than 0.10 acres of potential wetlands; 2) 60 geotechnical borings will be drilled in ruderal and agricultural areas; and 3) An unknown number of recovery wells will be developed, individually incurring small areas of permanent impact, at selected geotechnical boring sites, and associated pipelines will be installed underground in ruderal and agricultural areas, resulting only in temporary impacts.

4.1 SIGNIFICANCE CRITERIA

NEPA

Federal projects are subject to the provisions of NEPA. The purpose of NEPA is to assess the effects of a proposed action on the human environment, assess the significance of those effects, and recommend measures that if implemented would mitigate those effects. As used in NEPA, a determination that certain effects on the human environment are "significant" requires considerations of both context and intensity (see 40 CFR 1508.27).

Context means that significance must be analyzed in terms of the affected environment in which a proposed action would occur ("action area"). For the purposes of assessing effects of an action on biological resources, the relevant context is often local. The analysis requires a comparison of the action area's biological resources to the biological resources of the local area within which the action area is located. The analysis may, however, require a comparison of the action area's biological resources with the biological resources of an entire region.

Intensity refers to the severity of impact. In considering the intensity of impact to biological resources, it is necessary to address the unique qualities of wetlands and ecologically critical areas that may be affected by the action, the degree to which the action will be controversial, the degree to which the effects of the action will be uncertain, the degree to which the action will

establish a precedent for future actions that may result in significant effects, and the potential for the action to result in cumulatively significant effects.

The effects of an action on some biological resources are generally considered to be "significant." Actions that adversely affect federally listed threatened and endangered species and Waters of the U.S. are two examples. Other examples include actions that impede the migratory movements of fish and wildlife, and actions that substantially reduce the areal extent of fish and wildlife habitat, especially if habitat loss occurs in areas identified by state and federal governments as ecologically sensitive or of great scenic value.

NEPA requires mitigation for the effects of an action on the environment. Suitable measures include the following:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

This report identifies likely project impacts, identifies those that may be considered "significant" per the provisions of NEPA, and recommends mitigation measures, if any, that would avoid significant impact to biological resources.

CEQA

Approval of general plans, area plans, and specific projects is subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced.

Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

- 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 sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make "mandatory findings of significance" if the project has the potential to:

> "Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory."

4.2 POTENTIALLY SIGNIFICANT PROJECT IMPACTS

4.2.1 Potential Project Impacts to Spiny-sepaled Button Celery

Potential Impacts. The project APE contains a small population of spiny-sepaled button celery (*Eryngium spinosepalum*) immediately east of the DMC and south of Orestimba Creek (see Figure 4). This population was observed by LOA botanist Jeff Gurule during the field survey of the APE at the approximate location mapped in the CNDDB. The population was delineated at that time using a GPS receiver paired with the ESRI Collector app. The spiny-sepaled button celery is designated rare, threatened, or endangered in California (CRPR 1B) by the California Native Plant Society. Project-related damage or extirpation of this population would be considered a potentially significant impact.

Mitigation. The following measures will be implemented for the protection of the spiny-sepaled button celery.

> ***Mitigation Measure 4.2.1a (Avoidance).*** The project should be designed to avoid impacts to the onsite population of spiny-sepaled button celery. Avoidance would entail establishing a 20-foot disturbance-free buffer around the population. This buffer will be delineated on the ground with temporary construction fencing.
>
> ***Mitigation Measure 4.2.1b (Minimization).*** If complete avoidance is not possible, but some of the plants can be avoided, then a qualified botanist shall identify all avoidance areas and establish buffer zones of sufficient size around these areas to eliminate any unnecessary disturbance to the avoided plants during construction. Furthermore, construction fencing will be placed around the buffer zones, as directed by the botanist.
>
> ***Mitigation Measure 4.2.1c (Salvage)***. Areas occupied by this plant species that cannot be avoided will require a salvage effort directed by a qualified botanist. The salvage effort will include the collection of seed and topsoil. Seed will be collected at a time of year

when the species is most prolific, and stored in a ventilated container in a cool dry location. Soil will be collected and stockpiled at a nearby location. The stockpiled soil, and then the seed, will be returned to the disturbed area in which it was collected once construction in the area is complete.

Implementation of these measures will reduce any project-related impacts to the spiny-sepaled button celery to a less than significant level under CEQA and NEPA.

4.2.2 Project-Related Disturbance of Nesting Swainson's Hawks

Potential Impacts. Swainson's hawks were sighted flying over the project APE and observed nesting in the project vicinity. Although nesting habitat is absent from the project site itself and most of the surrounding agricultural areas, an active Swainson's hawk nest was observed approximately 330 feet northwest of the project APE in a large cottonwood within the riparian zone of Orestimba Creek. Potential foraging habitat for this species is present in open fields associated with agricultural and ruderal areas of the site. Construction activities do not have the potential to injure or kill foraging Swainson's hawks because the Swainson's hawk is highly mobile while foraging and would be expected to simply fly away from construction disturbance. Most construction activities will occur along roadways adjacent to agricultural areas that experience a high level of background disturbance and would be sufficiently distant from potential Swainson's hawk habitat such that impacts to nesting Swainson's hawks would be less than significant. However, project impacts associated with the proposed turnout and pumping station in the vicinity of Bell Road would entail a prolonged and more intensive construction effort and would be in close proximity to riparian habitat along Orestimba Creek known to support nesting Swainson's hawks. If Swainson's hawks are nesting in this riparian area at the time of construction of the turnout and pump station, these activities could compromise Swainson's hawk nesting success. As a result, construction-related disturbance of nesting Swainson's hawks within 0.5 miles of known nesting habitat near the intersection of Bell Road and Orestimba Creek is considered a potentially significant impact of the project under CEQA.

Mitigation. The applicant will implement the following measures within 0.5 miles of riparian habitat at the intersection of Bell Road and Orestimba Creek in order to avoid and minimize the potential for construction-related disturbance of nesting Swainson's hawks.

***Mitigation Measure 4.2.2a* (*Construction Timing*).** If feasible, project elements within 0.5 miles of riparian habitat at the intersection of Bell Road and Orestimba Creek will be constructed outside the Swainson's hawk nesting season, typically defined as March 1-September 15.

***Mitigation Measure 4.2.2b* (*Surveys*).** If project elements within 0.5 miles of riparian habitat at the intersection of Bell Road and Orestimba Creek must be initiated between March 1 and September 15, a qualified biologist will conduct surveys for Swainson's hawk nests on and within ½ mile of the project APE following the survey methods and timing prescribed by the Swainson's hawk Technical Advisory Committee (SHTAC) 2000 *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*.

***Mitigation Measure 4.2.2c* (*Avoidance*).** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged.

Implementation of these measures will reduce project-related impacts to the Swainson's hawk to a less than significant level under CEQA and NEPA and ensure compliance with state laws protecting this species.

4.2.3 Potential Project Impacts to Nesting Birds Including the Tricolored Blackbird and Loggerhead Shrike

Potential Impacts. The project site has the potential to be used for nesting by a variety of birds protected by state law, including the tricolored blackbird protected by the California Endangered Species Act and the loggerhead shrike, a Species of Special Concern. Avian nesting could occur in trees, shrubs, or ground vegetation. If project construction takes place during the nesting season, birds nesting on the site could be injured or killed by construction activities or disturbed such that they would abandon their nests. Significant construction-related disturbance is also a possibility for birds nesting adjacent to the project site, especially the colonial nesting tricolored blackbird. Construction-related mortality of nesting birds and disturbance leading to nest abandonment would violate state laws and constitute significant impacts of the project under CEQA and NEPA.

Mitigation. To avoid and minimize the potential for construction-related mortality/disturbance of nesting birds, including the tricolored blackbird and the loggerhead shrike, the following measures will be implemented:

> ***Measure 4.2.3a (Construction Timing).*** If feasible, the project will be implemented outside of the avian nesting season, typically defined as February 1 to August 31.
>
> ***Measure 4.2.3b (Preconstruction Surveys*)**. If construction is to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for active bird nests within 10 days prior to the start of construction. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e. birds of prey).
>
> ***Measure 4.2.3c (Avoidance of Active Nests*)**. Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

Implementation of the above measures will ensure that the project does not significantly impact nesting birds, including the tricolored blackbird and the loggerhead shrike, and that the project is in compliance with state laws.

4.3 LESS THAN SIGNIFICANT PROJECT IMPACTS

4.3.1 Project Impacts to Special Status Plant Species

Potential Impacts. Twenty-one (21) special status plant species have been documented in the project vicinity (see Table 2). All but the spiny-sepaled button celery are considered absent or unlikely to occur on the project site due to the absence of suitable habitat, the fact that they were not found on site when they should have been readily detectable, and/or the site's location outside the species range. Therefore, the proposed project would have no effect on individuals or regional populations of 20 out of the 21 special status plant species analyzed.

Mitigation. Mitigation measures are not warranted.

4.3.2 Project Impacts to Special Status Animal Species Absent from, or Unlikely to Occur within, the Project site

Potential Impacts. Of the 30 special status animal species that potentially occur in the general vicinity of the site, 23 are considered absent or unlikely to occur within the project site due to the absence of suitable habitat, and/or the project site's being situated outside of the species' known distribution (see Table 2). These include the vernal pool fairy shrimp, longhorn fairy shrimp, Conservancy fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, Delta smelt, steelhead - Central Valley DPS, California tiger salamander, foothill yellow-legged frog, California red-legged frog, blunt-nosed leopard lizard, giant garter snake, golden eagle, least Bell's vireo, Fresno kangaroo rat, San Joaquin kit fox, San Joaquin roach, Sacramento splittail, western spadefoot, western pond turtle, San Joaquin coachwhip, burrowing owl, and American badger. The project is expected to have no effect on these species through construction mortality/disturbance or loss of habitat because there is little or no likelihood that they are present.

Mitigation. Mitigation is not warranted.

4.3.3 Project Impacts to Special Status Species Potentially Occurring on the Site as Foragers Only

Potential Impacts. Five (5) species may utilize the site for foraging but would nest and roost elsewhere. These species are the Swainson's hawk, bald eagle, northern harrier, western red bat, and pallid bat. Since these species are highly mobile while foraging, the project is not expected to result in construction related mortality of individuals that may occur on the site prior to or during construction. The project site does not represent unique or important foraging habitat for these species, with many square miles of similar habitat present in the region. Furthermore, upon project completion, foraging habitat conditions will remain essentially unchanged from pre-project conditions. Therefore, project impacts to the Swainson's hawk, bald eagle, northern harrier, western red bat, and pallid bat are considered less than significant under CEQA and NEPA.

Mitigation. Mitigation is not warranted.

4.3.4 Project Impacts to Riparian Habitat and Sensitive Natural Communities

Potential Impacts. Approximately 0.28 acres of riparian habitat occurs within the project APE associated with Orestimba Creek. Designated sensitive natural communities are absent from the APE. Despite the relatively small area of riparian habitat within the APE, the project has the potential to impact riparian habitat outside the APE by altering of the hydrologic regime that supports riparian habitat up-gradient of the project. This subject area of riparian habitat currently encompasses approximately 35 acres northwest of the intersection of Stuhr Road and Bell Road. An analysis of potential project impacts to riparian habitat follows.

Prior to road improvements to Bell Road that included a cement low-water crossing of Orestimba Creek, and the construction of an extension of Stuhr Road west of Bell Road, riparian vegetation was entirely absent from Orestimba Creek in the immediate vicinity of the proposed project APE. Historic aerial photography shows no riparian vegetation here in 1953 and 1958. A 1971 aerial photo shows the Stuhr Road extension in place and Orestimba Creek now overflowing into what appears to be depressions created northwest of the intersection of Stuhr Road and Bell Road. The development of riparian vegetation is apparent in this creek overflow area, as well. It is surmised that these human-created depressions may have been the result of soil extraction for use in the construction of Stuhr Road. In a 1982 aerial photo, the Bell Road low-water crossing of Orestimba Creek is apparent and riparian vegetation has become well established and occupies an area similar to the current extent of riparian habitat. The construction of the Bell Road crossing effectively created a low dam across the creek causing water to back up to an elevation of 167.6 feet during high-water events caused by winter and spring rains. This damming effect combined with the altering of the creek hydrology that apparently resulted from the construction of Stuhr Road, has created the hydrologic conditions that currently support riparian vegetation in this area. More modern historic aerial photos taken during or shortly after a high-water event show surface water present in many areas of the subject riparian habitat, especially in the area of the proposed turnout along Bell Road. This water reaches the proposed turnout area via a series of distributary channels through the riparian zone.

Riparian vegetation along Orestimba Creek is sparse immediately downstream of the Bell Road crossing, consisting of a sparse cover of riparian shrubs that diminishes further downstream. The creek channel is then disrupted, entirely, by a sand and gravel mining operation approximately 0.5 miles downstream of the Bell Road crossing, where numerous inundated pits occur within the creek corridor.

According to stream gage data generated at the USGS 11274500 ORESTIMBA C NR NEWMAN CA gage, flows in the creek in the vicinity of the Bell Road crossing occur sporadically during the rainy season. From 1990 to 2021 daily mean flows recorded at this stream gage varied from carrying no flows throughout the year to maximum flows of up to approximately 4,600 cfs in some years, with peak flows occasionally reaching a maximum of 8,000 to 9,500 cfs. Flows are typically short-lived and only last for a few weeks; however, during wet years low flows can persist for months. For a majority of the year, flows are absent in Orestimba Creek in the project vicinity. A graph of yearly creek flows recorded at the Orestimba Creek Newman Gage is presented in Appendix A.

The spill elevation of the proposed turnout is designed at 166.6 feet in elevation (see Appendix A). The turnout will connect to a 48-inch reinforced concrete pipe with a flow capacity of up to 40 cfs. However, the pipe will have a gate installed that, when lowered, can reduce or stop flows through the pipe. The turnout would lower the surface water elevation during flood events by at least 1.0 foot in the immediate area of the turnout. The exact area influenced by this spill elevation is unknown since a detailed contour map of the nearby riparian area is not known to exist. However, since the spill elevation of the proposed turnout, as designed, will only be approximately 6.0 inches above grade of the surrounding ground, local ponding in the area of the turnout is expected to be significantly reduced in depth, area, and duration.

Comparison of a March 31, 2018 aerial photo of the site and stream gage data for that month reveal that flow in the riparian distributary channels and ponding at the proposed turnout location can occur after a single rain event generating peak flows as low as approximately 700 cfs. At this flow rate the proposed turnout would divert approximately 5.0 percent of the total creek flow. At lower flows, the percent of creek water diverted at the proposed turnout could be 50

percent or higher, depending on the hydrology of the creek where the main channel divides into the overflow channel(s). The hydrology of the creek, here, has not been analyzed by project engineers. Comparison of a March 20, 2013 aerial photo of the site that showed ponding at the proposed turnout location and stream gage data that rainy season suggest that a strong rain event(s) creating flows peaking at 6,250 cfs on December 24, 2013 can induce ponding at the proposed turnout location for at least three months.

In light of the available hydrologic information, project design plans, and correspondence with project engineers, the following conclusions have been made. The project will not alter the course of riparian distributary channel flows before reaching the proposed turnout at the downgradient area of the riparian zone. During extreme flood events the project will divert approximately 0.9 percent of total creek flows. At low flows the turnout could divert up to, or over, 50 percent of creek water. Moderate flows would divert some percentage between 0.9 and 50 percent, depending on actual flow rates. The spill elevation of the proposed turnout will allow approximately 6.0 inches of water to continue to pond in the near vicinity of the turnout. The proposed turnout will lower the surface water elevation around the turnout and likely reduce the amount of time that water would pond in this area. Based on these conclusions, it is anticipated that the altered hydrologic regime from project implementation, while diminishing surface water accumulations in the area around the proposed turnout, will continue to support riparian habitat in the project vicinity and that the project will not result in a significant loss of riparian habitat.

Mitigation. Mitigation measures are not warranted.

4.3.5 Potential Project Impacts to Waters of the State and U.S.

Potential Impacts. Likely jurisdictional waters on the site comprise the DMC and riparian areas within the APE, and possibly sections of the toe drain on the east and west side of the DMC within the APE. Proposed facilities will only impact small areas of these potentially jurisdictional waters. The exact area of impact is unknown at the time of this analysis but will almost certainly be less than 0.10 acres. Such a small area of impact is considered less than significant under CEQA and NEPA. However, it should be noted that appropriate agency

permits will likely be needed for activities within the jurisdictional boundaries of onsite aquatic resources.

Mitigation. Mitigation is not warranted.

4.3.6 Project Impacts to Wildlife Movement Corridors

Potential Impacts. While the DMC and CCID Main Canal may provide some movement opportunity for common terrestrial wildlife and non-native fish species, they would not be considered a regionally important movement corridor due to abundant movement opportunity within surrounding agricultural lands and the lack of native fish species anticipated in the canals. After construction, locally occurring, common fish and wildlife species would utilize these canals in the same manner as before project build-out. As a result, the project will not have a significant effect on wildlife movement corridors.

Mitigation. Mitigation is not warranted.

4.3.7 Project Impacts to Critical Habitat

Potential Impacts. The project will have no effect on designated critical habitat because critical habitat is absent from the project site and adjacent lands.

Mitigation. Mitigation is not warranted.

4.3.8 Local Policies or Habitat Conservation Plans

Potential Impacts. The proposed project design appears to be consistent with the goals and policies of the Stanislaus County General Plan. No habitat conservation plans are known to pertain to the area containing the project site.

Mitigation. No mitigation is required.

4.4 SECTION 7 DETERMINATIONS FOR FEDERALLY LISTED SPECIES

The following table summarizes project effect determinations for Federally Listed Species found on the USFWS IPaC list and CNDDB list generated for the project Action Area.

Table 3: Section 7 Determinations for Federally Listed Species

Species	Determination	Rationale for the Determination
Palmate Bracted Salty Bird's Beak (*Chloropyron palmatum*)	***No effect***	• Habitat absent
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	***No effect***	• Habitat absent
Longhorn Fairy Shrimp (*Branchinecta longiantenna*)	***No effect***	• Habitat absent
Conservancy Fairy Shrimp (*Branchinecta conservatio*)	***No effect***	• Habitat absent
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)	***No effect***	• Habitat absent
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)	***No effect***	• Habitat absent
Delta Smelt (*Hypomesus transpacificus*)	***No effect***	• Habitat absent • Project site out of species' range
Steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus pop. 11*)	***No effect***	• Habitat absent
California Tiger Salamander (*Ambystoma californiense*)	***No effect***	• Habitat absent
California Red-legged Frog (*Rana draytonii*)	***No effect***	• Habitat absent
Giant Garter Snake (GGS) (*Thamnophis gigas*)	***No effect***	• Habitat absent • Project site out of species' current range
Blunt-Nosed Leopard Lizard (*Gambelia sila*)	***No effect***	• Habitat absent • Project site out of species' range
Least Bell's Vireo (*Vireo bellii pusillus*)	***No effect***	• Modern regional occurrences are absent • Project site out of species' typical range
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	***No effect***	• Project site out of species' range
San Joaquin Kit Fox (SJKF) (*Vulpes macrotis mutica*)	***No effect***	• Onsite habitat is absent to marginal. • Modern regional occurrences are absent

5.0 LITERATURE REFERENCED

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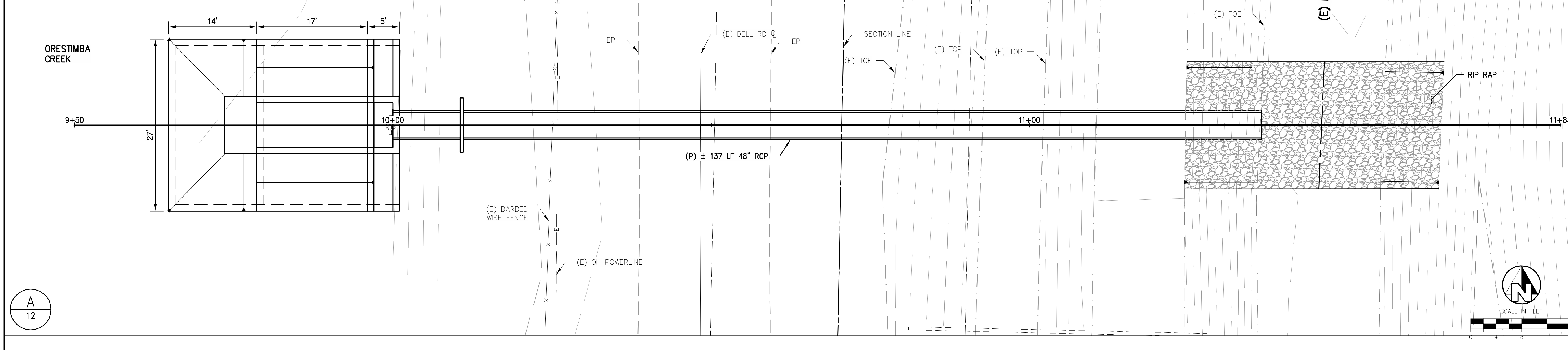
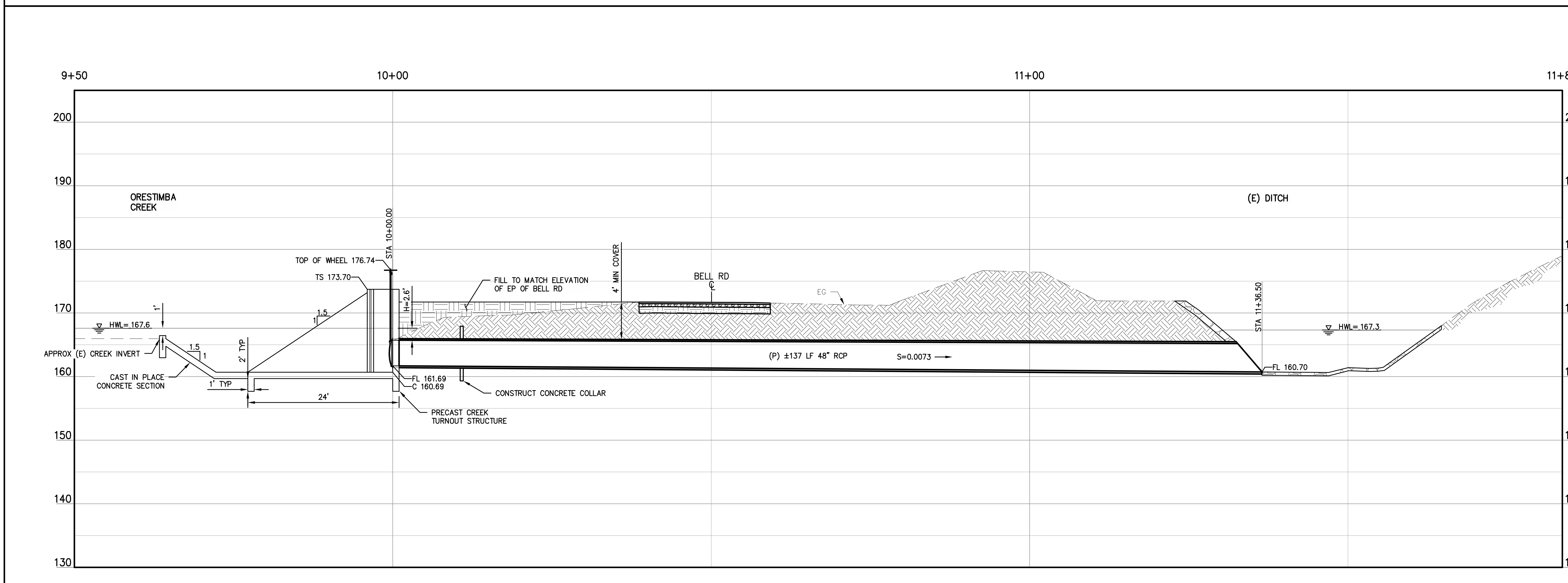
APPENDIX A: TECHNICAL FIGURES AND GRAPHS

NOTES

1. STARTING WATER LEVEL IS ASSUMED TO BE THE ELEVATION OF EDGE OF CONCRETE, 167.63'.
2. LENGTH OF 48" RCP IS 135'.
3. PRELIMINARY HYDRAULIC CALCULATIONS SHOW THE PROPOSED PIPELINE WILL CONVEY 35 CFS.
4. CREEK TURNOUT STRUCTURE IS PRELIMINARY AND SUBJECT TO CHANGES AFTER STRUCTURAL ANALYSIS.





No.	REVISION	BY	DATE

50% PLANS
NOT FOR CONSTRUCTION
8/XX/2021

FOR REVIEW ONLY

ORESTIMBA CREEK RECHARGE AND RECOVER EXPANSION PROJECT
CENTRAL CALIFORNIA IRRIGATION DISTRICT
STANISLAUS COUNTY

CREEK TO BASINS

CREEK TURNOUT DETAIL

EST. 1968
PROVOST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company
4701 SISK ROAD, SUITE 102
MODESTO, CALIFORNIA 95356
209/809-2300 FAX 209/809-2290
www.ppeng.com

DESIGN ENGINEER: CALVIN MONREAL
LICENSE NO: 65453

DRAFTED BY:	CHECKED BY:
LAJ	CM

DATE: ----
JOB NO: 351020002
PROJECT NO: 351020002
PHASE: DES2

0 1"
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

SHEET 12
OF

8/6/2021 7:48 AM G:\Central California ID-3510\351020002-Orestimba Creek Recharge Recovery Expansion\300 CAD\340 Sheet Sets\03_Sections_Profiles\12 CREEK TURNOUT DETAIL.dwg -Luke Jackson

ORESTIMBA CREEK

BELL RD.

FRAZIER
026-019-079

STATE OF CALIFORNIA
026-019-038

FRAZIER
026-019-071

CALIFORNIA
TRANSPLANTS LLC
026-019-088

DELTA-MENDOTA CANAL

STUHR RD.

14' EP TO R/W

TOE OF CHANNEL

TOP OF CHANNEL

33' FROM BARB WIRE FENCE
TO PROPERTY LINE

TOE OF SLOPE

TOP OF CHANNEL
TOE OF SLOPE

TOP OF SLOPE

13' FROM EP TO
OVERHEAD POWER

TOE OF CHANNEL

TOP OF SLOPE

BARB WIRE FENCE

TOP OF SLOPE
TOE OF SLOPE

BELL RD R/W 40'

BELL RD 22'

EP

7' EP TO R/W

EP

21'

BARB WIRE FENCE

OVERHEAD POWER (TYP)

10' IRRIGATION EASEMENT PER
DEED 8492 MARCH 12, 1969

(E) CULVERT

1' FROM FENCE TO
PROPERTY LINE

53' FROM CHAIN LINK FENCE
TO GREENHOUSE CORNER

TOP OF SLOPE

TOE OF SLOPE

CHAIN LINK FENCE

EP

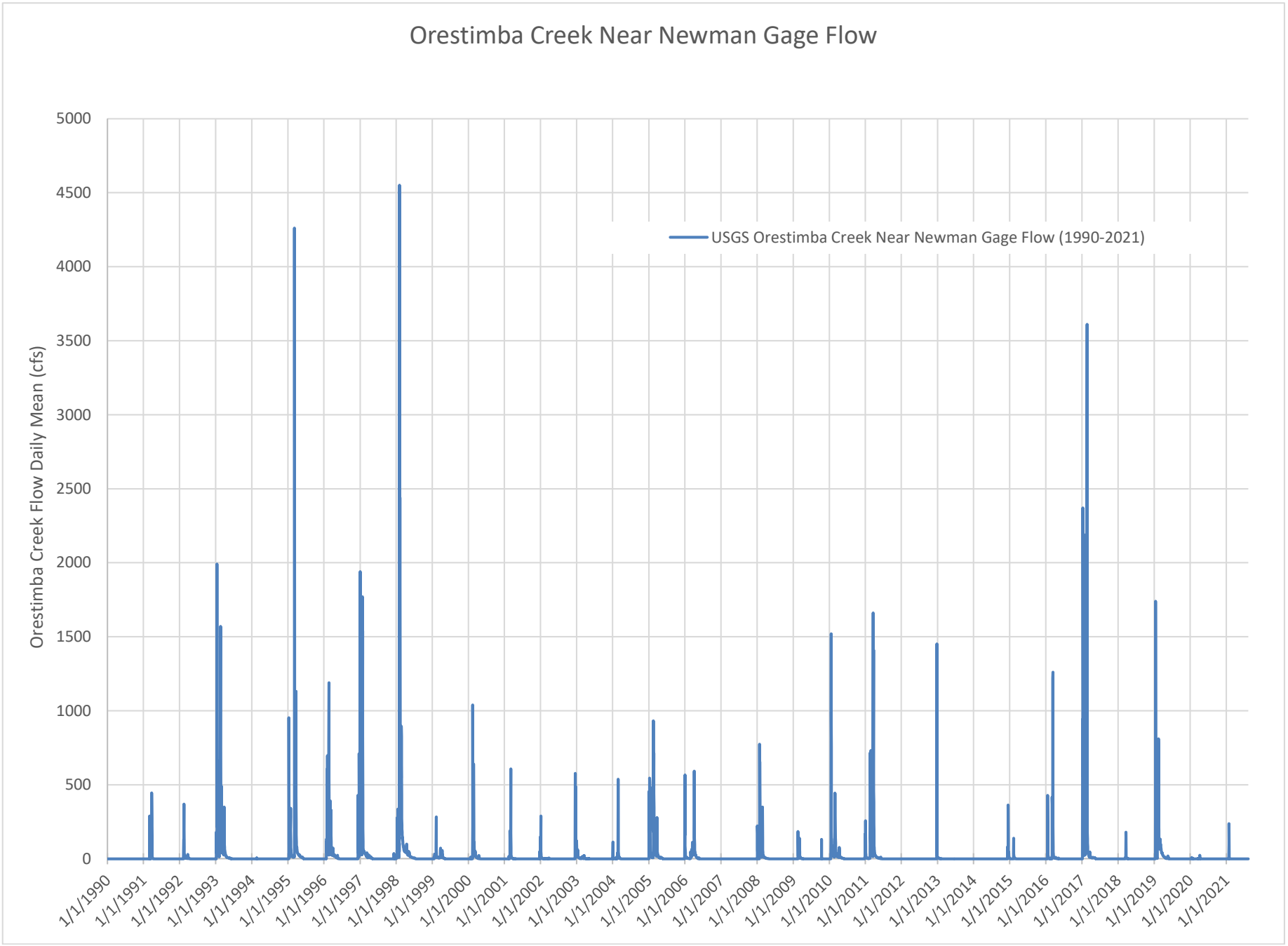
BARB WIRE FENCE

GREENHOUSES

NOTES

1. FENCE STAYS ON CALIFORNIA TRANSPLANTS PROPERTY.
2. 43.5' FROM GREENHOUSE TO PROPERTY LINE AT THE SOUTHERN END OF THE ALIGNMENT. FENCE LIES 2.2' EAST PROPERTY LINE.

SCALE IN FEET
0 30 60 120


Orestimba Creek Near Newman Gage Flow
USGS Orestimba Creek Near Newman Gage Flow (1990-2021)
Orestimba Creek Flow Daily Mean (cfs)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
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1/1/2013
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1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021

APPENDIX B: VASCULAR PLANTS OF THE PROJECT SITE

APPENDIX B: VASCULAR PLANTS OF THE PROJECT SITE

The plant species listed below were observed on the project site during surveys conducted by Live Oak Associates, Inc. on June 3 and 4, 2021. The U.S. Fish and Wildlife Service Arid West wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
NR - No review
NA - No agreement
NI - No investigation

AMARANTHACEAE – Amaranth Family		
Amaranthus albus	Pigweed Amaranth	FACU
Amaranthus retroflexus	Red-root Pigweed	FACU
APIACEAE – CARROT FAMILY		
Eryngium spinosepalum	Spiny-sepaled Button Celery	FACW
Conium maculatum	Poison Hemlock	FACW
APOCYNACEAE – Dogbane Family		
Asclepias fascicularis	Narrow-leaf Milkweed	FAC
ASTERACEAE - Sunflower Family		
Artemisia douglasiana	Mugwort	FAC
Baccharis salicifolia	Mule Fat	FAC
Carduus pycnocephalus	Italian Thistle	UPL
Centaurea melitensis	Tocalote	UPL
Centauria solstitialis	Yellow Star Thistle	UPL
Cirsium vulgare	Bull Thistle	FACU
Centromadia pungens	Common Spikeweed	FAC
Helianthus annuus	Annual Sunflower	FACU
Helminthotheca echioides	Bristly Oxtongue	FAC
Holocarpha heermanii	Heerman's Tarweed	UPL
Grindelia camporum	Great Valley Gumweed	FACW
Lactuca serriola	Prickly Lettuce	FACU
Silybum marianum	Milk Thistle	UPL
Sonchus asper	Spiny Sow Thistle	FAC
Xanthium strumarium	Rough Cocklebur	FAC
BORAGINACEAE - Borage Family		
Amsinckia sp.	Fiddleneck	UPL
Heliotropium curassavicum	Seaside Heliotrope	FACU
Plagiobothrys nothofulvus	Rusty Popcornflower	FAC
BRASSICACEAE - Mustard Family		
Brassica nigra	Black Mustard	UPL
Hirschfeldia incana	Short-podded Mustard	UPL
Lepidium latifolium	Broadleaved peppergrass	FACW
Raphanus sativus	Wild Radish	UPL

Sisymbrium irio	London Rocket	UPL
CHENOPODIACEAE – Goosefoot Family		
Chenopodium album	Lamb's Quarters	FACU
Salsola tragus	Russian Thistle	FACU
CONVOLVULACEAE – Morning Glory Family		
Convolvulus arvensis	Field Bindweed	UPL
CYPERACEAE - Sedge Family		
Cyperus eragrostis	Tall Flatsedge	FACW
EUPHORBIACEAE – Spurge Family		
Euphorbia maculata	Spotted Spurge	UPL
Croton setigerus	Doveweed	UPL
GERANIACEAE - Geranium Family		
Erodium cicutarium	Red-stemmed Filaree	UPL
JUNCACEAE - Rush Family		
Juncus xiphioides	Iris-leaved Rush	OBL
LAMIACEAE – Mint Family		
Marrubium vulgare	Horehound	FACU
Mentha pulegium	Pennyroyal	OBL
Trichostema lanceolatum	Vinegar Weed	FACU
MALVACEAE – Mallow Family		
Abutilon theophrasti	Velvet Leaf	UPL
Malva parviflora	Cheeseweed	UPL
MORACEAE – Mulberry Family		
Ficus carica	Edible Fig	FACU
MYRSINACEAE – Myrsine Family		
Lysimachia arvensis	Scarlet Pimpernel	FAC
ONAGRACEAE - Evening Primrose Family		
Lugwigia peploides	Floating Primrose-Willow	OBL
PLANTAGINACEAE – Plantain Family		
Plantago lanceolata	English Plantain	FAC
POACEAE - Grass Family		
Avena fatua	Wild Oat	UPL
Bromus diandrus	Ripgut	UPL
Bromus hordeaceus	Soft Chess	FACU
Bromus madritensis	Red Brome	UPL
Cynodon dactylon	Bermuda Grass	FACU
Echinochloa crus-galli	Barnyard Grass	FACW
Hordeum murinum ssp. *leporinum*	Barley	FACU
Leptochloa fusca ssp. *fascicularis*	Bearded Sprangletop	FACW
Polypogon monspeliensis	Rabbit's Foot Grass	FACW
Sorghum halepense	Johnsongrass	FACU
POLYGONACEAE - Buckwheat Family		
Persicaria lapathifolia	Common Knotweed	OBL
Rumex crispus	Curly Dock	FAC
PONTEDERIACEAE – PICKEREL-WEED FAMILY		
Eichhornia crassipes	Water Hyacinth	OBL
SALICACEAE – Willow Family		
Populus fremontii	Fremont's Cottonwood	UPL
Salix gooddingii	Goodding's Black Willow	FACW

Salix laevigata	Red Willow	FACW
SOLANACEAE – Nightshade Family		
Datura wrightii	Jimsonweed	UPL
Nicotiana glauca	Tree Tobacco	FAC
TYPHACEAE – Cattail Family		
Typha latifolia	Broad-leaved Cattail	OBL
URTICACEAE – Nettle Family		
Urtica dioica	Stinging Nettle	FAC

APPENDIX C: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITE

APPENDIX C: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed on or adjacent to the project site during surveys conducted by Live Oak Associates, Inc. on June 3 and 4, 2021 have been noted with an asterisk.

CLASS: AMPHIBIA (Amphibians)
ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and relatives)
Sierran Treefrog (*Pseudacris sierra*)
FAMILY: RANIDAE (True Frogs)
*Bullfrog (*Lithobates catesbeianus*)

CLASS: REPTILIA (Reptiles)
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE
*Western Fence Lizard (*Sceloporus occidentalis*)
*Side-blotched Lizard (*Uta stansburiana*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Racer (*Coluber constrictor*)
Pacific Gopher Snake (*Pituophis catenifer catenifer*)
Common Kingsnake (*Lampropeltis getulus*)
Common Garter Snake (*Thamnophis sirtalis*)
FAMILY: VIPERIDAE (Vipers)
Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES (Birds)
ORDER: PELECANIFORMES (Tropicbirds, Pelecans and Relatives)
FAMILY: PHALACROCORACIDAE (Cormorants)
Double-Crested Cormorant (*Phalacrocorax auritus*)
ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
*Great Blue Heron (*Ardea herodias*)
Snowy Egret (*Egretta thula*)
Great Egret (*Ardea alba*)
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: CATHARTIDAE (American Vultures)
*Turkey Vulture (*Cathartes aura*)
ORDER: ANSERIFORMES (Screamers, Ducks and Relatives)

FAMILY: ANATIDAE (Swans, Geese and Ducks)
Canada Goose (*Branta canadensis*)
Cinnamon Teal (*Anas cyanoptera*)
Mallard (*Anas platyrhynchos*)
Ring-necked Duck (*Aythya collaris*)
Common Goldeneye (*Bucephala clangula*)
Common Merganser (*Mergus merganser*)
Ruddy Duck (*Oxyura jamaicensis*)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)
Northern Harrier (*Circus cyaneus*)
Sharp-shinned Hawk (*Accipiter striatus*)
Cooper's Hawk (*Accipiter cooperi*)
Red-shouldered Hawk (*Buteo lineatus*)
*Swainson's Hawk (*Buteo swainsoni*)
*Red-tailed Hawk (*Buteo jamaicensis*)
FAMILY: FALCONIDAE (Caracaras and Falcons)
American Kestrel (*Falco sparverius*)
FAMILY: ODONTOPHORIDAE (New World Quail)
*California Quail (*Callipepla californica*)
ORDER: PODICIPEDIFORMES (Grebes and Relatives)
FAMILY: PODICIPEDIDAE (Grebes)
Pied-billed Grebe (*Podilymbus podiceps*)
ORDER: GRUIFORMES (Cranes, Rails and Relatives
FAMILY: RALLIDAE (Rails, Gallinules, and Coots)
American Coot (*Fulica Americana*)
ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)
FAMILY: CHARADRIIDAE (Plovers and relatives)
*Killdeer (*Charadrius vociferus*)
FAMILY: LARIDAE (Skuas, Gulls, Terns and Skimmers)
Ring-billed Gull (*Larus delawarensis*)
California Gull (*Larus californicus*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
*Mourning Dove (*Zenaida macroura*)
*Eurasian Collared-Dove (*Streptopelia decaocto*)
Rock Pigeon (*Columba livia*)
ORDER: STRIGIFORMES (Owls)
FAMILY: TYTONIDAE (Barn Owls)
Barn Owl (*Tyto alba*)
FAMILY: STRIGIDAE (Typical Owls)
Western Screech Owl (*Otus kennicottii*)
Great Horned Owl (*Bubo virginianus*)
ORDER: APODIFORMES (Swifts and Hummingbirds)
FAMILY: APODIFORMES (Swifts)
White-throated Swift (*Aeronautes saxatalis*)

FAMILY: TROCHILIDAE (Hummingbirds)
Black-chinned Hummingbird (*Archilochus alexandri*)
Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)
ORDER: CORACIIFORMES (Kingfishers and Relatives)
FAMILY: ALCEDINIDAE (Kingfishers)
*Belted Kingfisher (*Megaceryle alcyon*)
ORDER: PICIFORMES (Woodpeckers and Relatives)
FAMILY: PICIDAE (Woodpeckers and Wrynecks)
Red-breasted Sapsucker (*Sphyrapicus ruber*)
Nuttall's Woodpecker (*Picoides nuttallii*)
Downy Woodpecker (*Picoides pubescens*)
*Northern Flicker (*Colaptes auratus*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
*Ash-throated Flycatcher (*Myiarchus cinerascens*)
*Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
*Western Kingbird (*Tyrannus verticalis*)
FAMILY: LANIIDAE (Shrikes)
Loggerhead Shrike (*Lanius ludovicianus*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
*California Scrub Jay (*Aphelocoma calfornica*)
American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)
FAMILY: ALAUDIDAE (Larks)
*Horned Lark (*Eremophila alpestris*)
FAMILY: HIRUNDINIDAE (Swallows)
Tree Swallow (*Tachycineta bicolor*)
Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
*Cliff Swallow (*Hirundo pyrrhonota*)
*Barn Swallow (*Hirundo rustica*)
FAMILY: AEGITHALIDAE
Bushtit (*Psaltriparus minimus*)
FAMILY: TROGLODYTIDAE (Wrens)
Bewick's Wren (*Thryomanes bewickii*)
House Wren (*Troglodytes aedon*)
FAMILY: REGULIDAE (Kinglets)
Ruby-crowned Kinglet (*Regulus calendula*)
FAMILY: TURDIDAE
*American Robin (*Turdus migratorius*)
Western Bluebird (*Sialia mexicana*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
*Northern Mockingbird (*Mimus polyglottos*)
FAMILY: STURNIDAE (Starlings)

*European Starling (*Sturnus vulgaris*)
FAMILY: MOTACILLIDAE (Wagtails and Pipits)
American Pipit (*Anthus rubrescens*)
FAMILY: PARULIDAE (Wood Warblers and Relatives)
Yellow-rumped Warbler (*Dendroica coronata*)
FAMILY: EMBERIZIDAE (Sparrows and Relatives)
Song Sparrow (*Melospiza melodia*)
Savannah Sparrow (*Passerculus sandwichensis*)
White-crowned Sparrow (*Zonotrichia leucophrys*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
*Red-winged Blackbird (*Agelaius phoeniceus*)
Tricolored Blackbird (*Agelaius tricolor*)
Western Meadowlark (*Sturnella neglecta*)
*Brewer's Blackbird (*Euphagus cyanocephalus*)
Great-Tailed Grackle (*Quiscalus mexicanus*)
Brown-headed Cowbird (*Molothrus ater*)
*Bullock's Oriole (*Icterus bullockii*)
FAMILY: PASSERIDAE (Old World Sparrows)
*House Sparrow (*Passer domesticus*)
FAMILY: FRINGILLIDAE (Finches)
House Finch (*Carpodacus mexicanus*)
Lesser Goldfinch (*Carduelis psaltria*)

CLASS: MAMMALIA (Mammals)
ORDER: DIDELPHIMORPHIA (Marsupials)
FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)
ORDER: INSECTIVORA (Shrews and Moles)
FAMILY: TALPIDAE (Moles)
Broad-footed Mole (*Scapanus latimanus*)
ORDER: CHIROPTERA (Bats)
FAMILY: PHYLLOSTOMIDAE (Leaf-nosed Bats)
Southern Long-nosed Bat (*Leptonycteris curasoae*)
FAMILY: VESPERTILIONIDAE (Evening Bats)
Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Pale Big-eared Bat (*Corynorhinus townsendii pallescens*)
Western Red Bat (*Lasiurus blossevillii*)
FAMILY: MOLOSSIDAE (Free-tailed Bat)
Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)
FAMILY: LEPORIDAE (Rabbits and Hares)
Audubon's Cottontail (*Sylvilagus audubonii*)

ORDER: RODENTIA (Rodents)

FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)

*California Ground Squirrel (*Spermophilus beecheyi*)

FAMILY: GEOMYIDAE (Pocket Gophers)

Botta's Pocket Gopher (*Thomomys bottae*)

FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)

Heermann's Kangaroo Rat *(Dipodomys heermanni)*

FAMILY: MURIDAE (Old World Rats and Mice)

Western Harvest Mouse (*Reithrodontomys megalotis*)
Deer Mouse (*Peromyscus maniculatus*)
Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)
California Vole (*Microtus californicus*)

ORDER: CARNIVORA (Carnivores)

FAMILY: CANIDAE (Foxes, Wolves, and relatives)

Coyote (*Canis latrans*)

FAMILY: PROCYONIDAE (Raccoons and relatives)

Raccoon (*Procyon lotor*)

FAMILY: MEPHITIDAE (Skunks)

Striped Skunk (*Mephitis mephitis*)

APPENDIX D: SELECTED SITE PHOTOGRAPHS

Photo 1: Riparian habitat within the project APE at the approximate location of the proposed Orestimba Creek turnout.

Photo 2: Riparian habitat within the project APE looking toward the Orestimba Creek low-flow channel.

Photo 3: The Delta-Mendota Canal within the project APE.

Photo 4: Toe drain within project APE looking east. Proposed pumping station to be located on south side of the canal.

Photo 5: Ruderal area containing the small population of spiny-sepaled button celery.

Photo 6: Spiny-sepaled button celery plants visible in foreground.

Photo 7: Another example of a ruderal area within the project APE.

Photo 8: The concrete lined Newman Wasteway within the project APE.

Photo 9: The Main Canal within the project APE, flanked by agricultural fields and orchards.

Photo 10: Ruderal and agricultural lands within the project APE.

APPENDIX E: USFWS INFORMATION FOR PLANNING AND CONSULTATION UNOFFICIAL SPECIES LIST

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Stanislaus County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600

(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. 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.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake Thamnophis gigas Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened

California Tiger Salamander Ambystoma californiense — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Nuttall's Woodpecker *Picoides nuttallii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Song Sparrow *Melospiza melodia* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 20 to Sep 5

Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of

presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

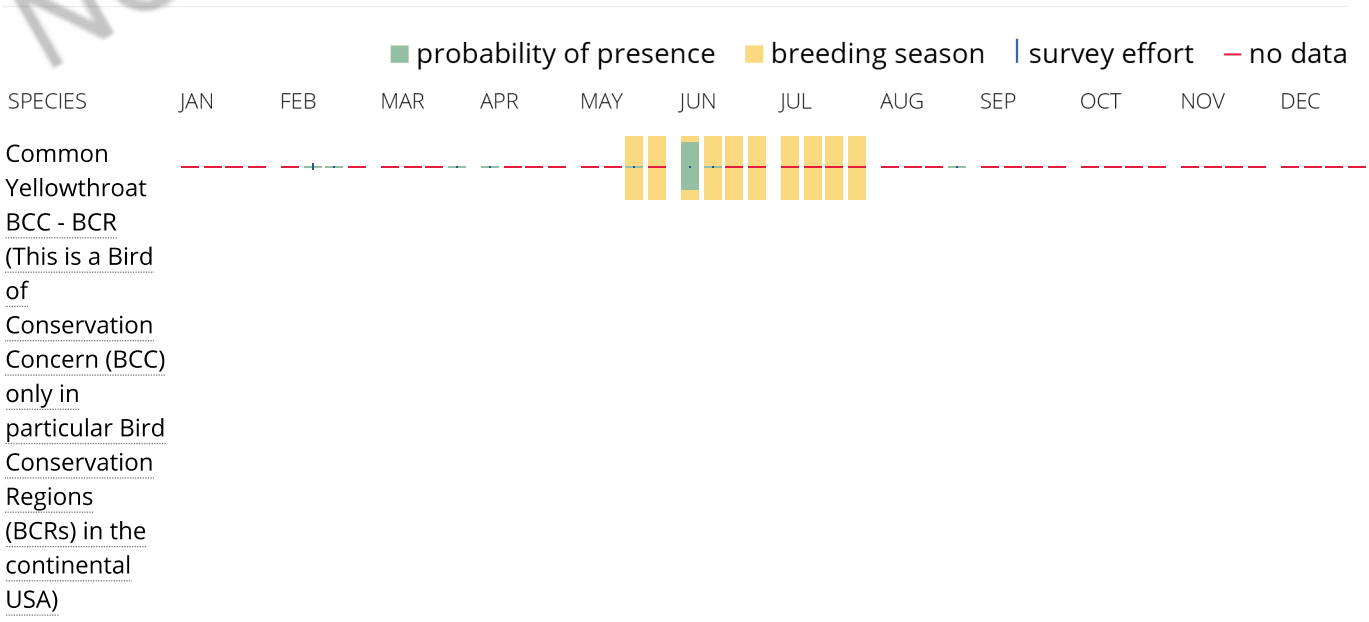
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

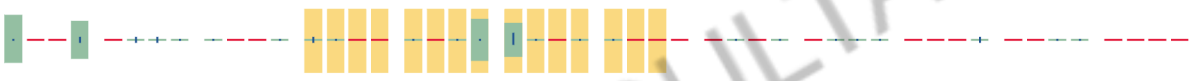
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

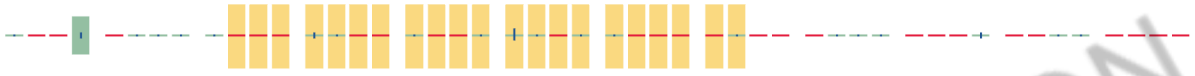
Nuttall's Woodpecker BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Song Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

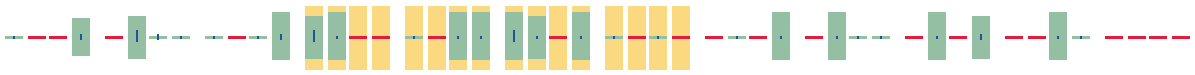
Spotted Towhee BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Tricolored Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Yellow-billed Magpie BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of

data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Fx
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND

- PSSCh

RIVERINE

- R2UBHx
- R5UBFx
- R4SBC
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe

wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C: Cultural Report – Redacted to protect sensitive information.

Appendix D: Soils Report

United States Department of Agriculture

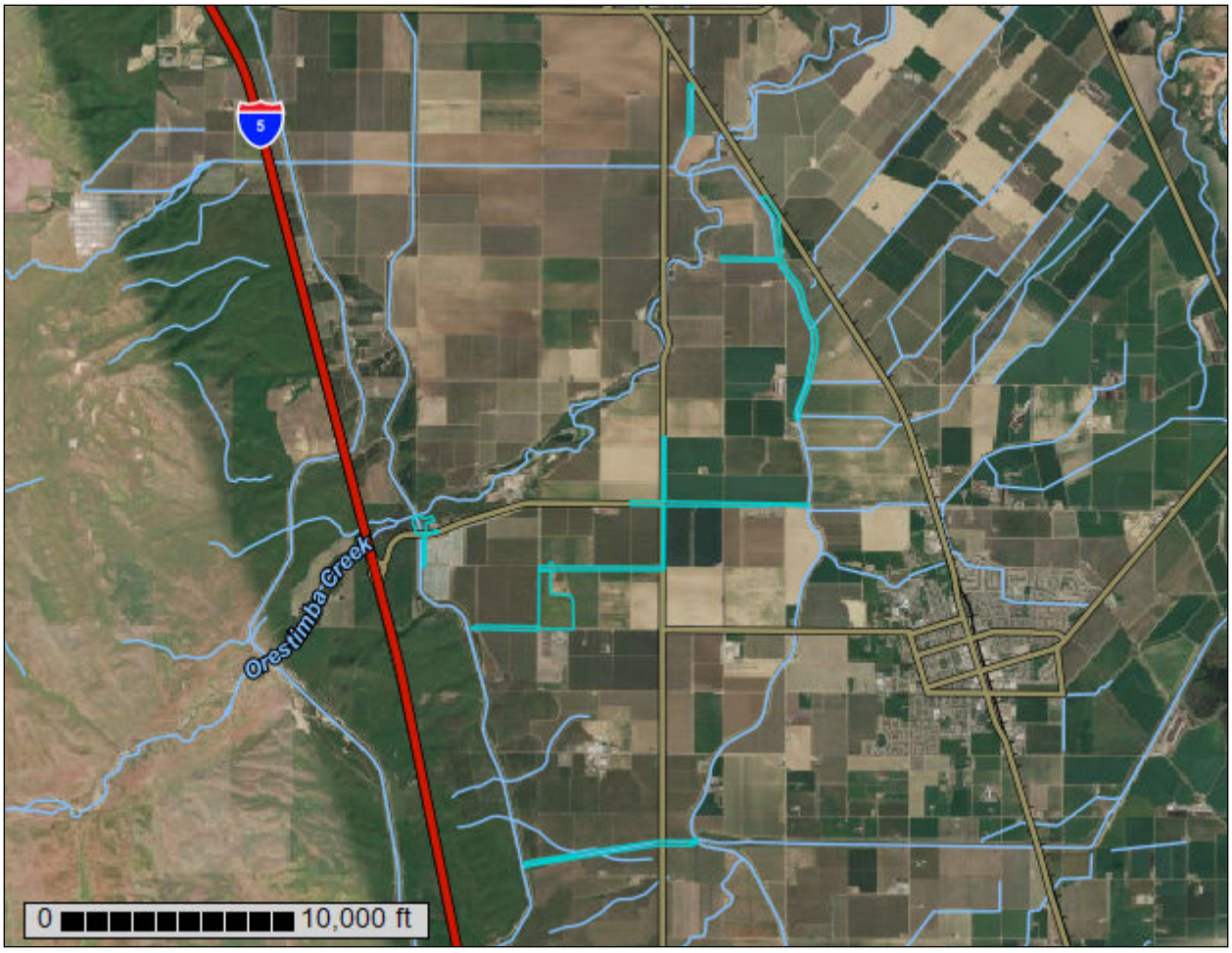
NRCS

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 Stanislaus County, California, Western Part

Orestimba Creek Recharge Recovery Expansion



November 9, 2021

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.

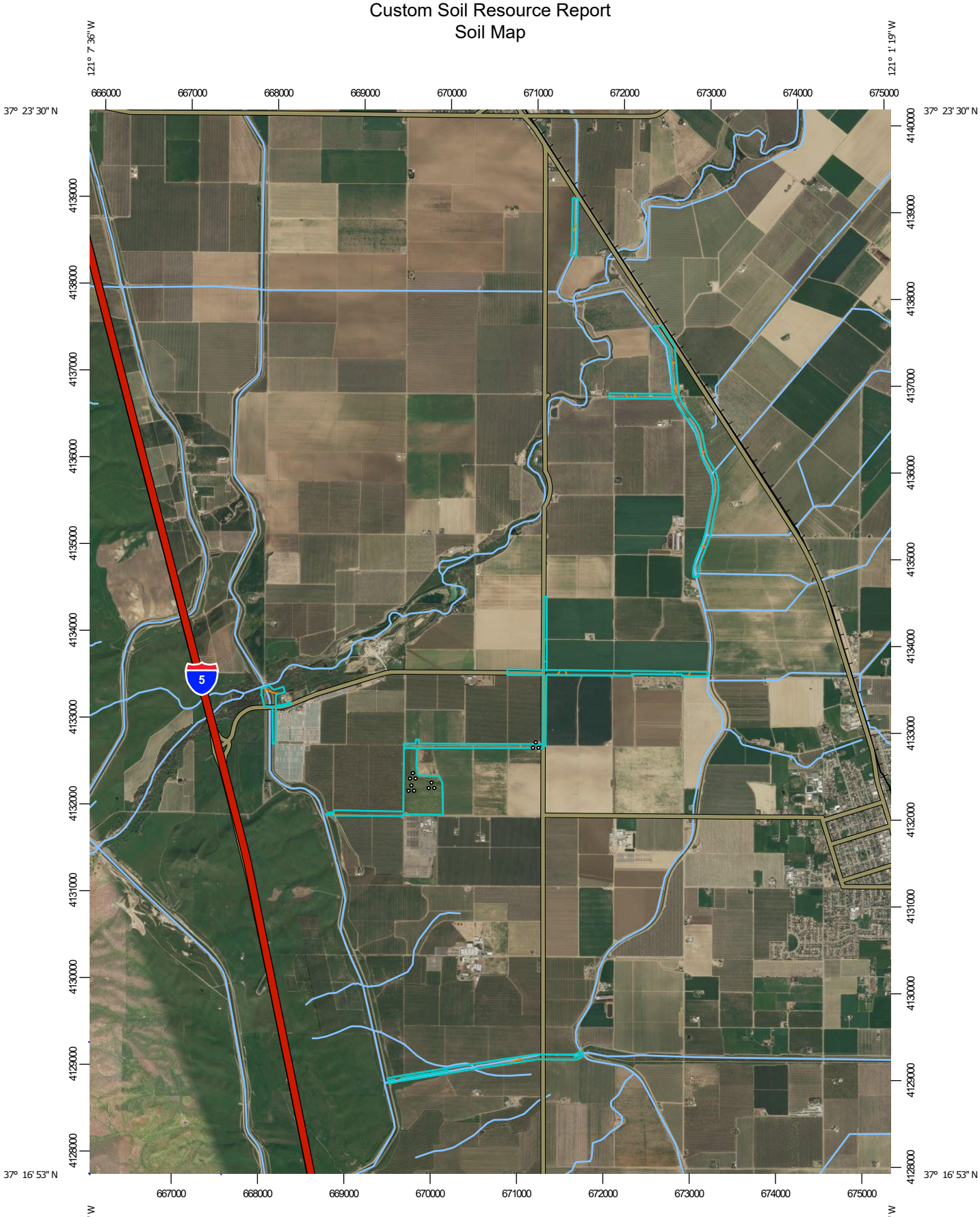
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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 Scale: 1:59,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 2500 5000 10000 15000

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

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: Stanislaus County, California, Western Part
Survey Area Data: Version 16, Sep 9, 2021

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

Date(s) aerial images were photographed: Feb 22, 2019—Mar 14, 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
122	Vernalis loam, 0 to 2 percent slopes	19.3	7.5%
125	Vernalis clay loam, 0 to 2 percent slopes	17.8	7.0%
126	Vernalis-Zacharias complex, 0 to 2 percent slopes, rarely flooded	17.9	7.0%
127	Vernalis loam, 0 to 2 percent slopes, rarely flooded	24.9	9.7%
130	Stomar clay loam, 0 to 2 percent slopes	0.1	0.0%
140	Zacharias clay loam, 0 to 2 percent slopes	11.2	4.4%
142	Zacharias gravelly clay loam, 0 to 2 percent slopes	95.6	37.3%
144	Zacharias gravelly clay loam, 2 to 5 percent slopes	2.9	1.1%
146	Zacharias clay loam, 0 to 2 percent slopes, rarely flooded	5.3	2.1%
210	Cortina gravelly sandy loam, 0 to 5 percent slopes, rarely flooded	11.7	4.6%
270	Elsalado fine sandy loam, 0 to 2 percent slopes, rarely flooded	3.0	1.2%
271	Elsalado loam, 0 to 2 percent slopes, rarely flooded	22.7	8.9%
301	Damluis clay loam, 2 to 8 percent slopes	23.4	9.2%
Totals for Area of Interest		**255.9**	**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.

Stanislaus County, California, Western Part

122—Vernalis loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnvl
Elevation: 20 to 300 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Vernalis

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 20 inches: loam
H2 - 20 to 62 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Stomar
Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Zacharias
Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Capay
Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

125—Vernalis clay loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hnvp
Elevation: 70 to 280 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

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

Description of Vernalis

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile
H1 - 0 to 20 inches: clay loam
H2 - 20 to 62 inches: clay loam

Properties and qualities
Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

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

Minor Components

Stomar

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

126—Vernalis-Zacharias complex, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: hnvq
Elevation: 30 to 400 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Vernalis and similar soils: 45 percent
Zacharias and similar soils: 40 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vernalis

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 20 inches: clay loam
H2 - 20 to 62 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

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

Description of Zacharias

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 14 inches: clay loam
H2 - 14 to 66 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

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

Minor Components

Capay

Percent of map unit: 8 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Stomar

Percent of map unit: 7 percent
Landform: Alluvial fans
Hydric soil rating: No

127—Vernalis loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: hnvr
Elevation: 100 to 150 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Vernalis

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 20 inches: loam
H2 - 20 to 62 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Stomar

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

130—Stomar clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnvs
Elevation: 40 to 360 feet

Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Stomar

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from sedimentary rock

Typical profile

H1 - 0 to 11 inches: clay loam
H2 - 11 to 38 inches: clay
H3 - 38 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Vernalis

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

140—Zacharias clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnvv
Elevation: 50 to 400 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Zacharias and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zacharias

Setting

Landform: Alluvial fans, stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 14 inches: clay loam
H2 - 14 to 66 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Capay
Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Stomar
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Vernalis
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

142—Zacharias gravelly clay loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hnvx
Elevation: 50 to 400 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Zacharias and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zacharias

Setting
Landform: Alluvial fans, stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile
H1 - 0 to 14 inches: gravelly clay loam
H2 - 14 to 66 inches: gravelly clay loam

Properties and qualities
Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XE061CA - Loamy Fan Remnant 8-10" P.Z.
Hydric soil rating: No

Minor Components

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Stomar

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Vernalis

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

144—Zacharias gravelly clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hnvy
Elevation: 50 to 400 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Zacharias and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zacharias

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 14 inches: gravelly clay loam
H2 - 14 to 66 inches: gravelly clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XE061CA - Loamy Fan Remnant 8-10" P.Z.
Hydric soil rating: No

Minor Components

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Stomar

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Vernalis

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

146—Zacharias clay loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: hnw0
Elevation: 50 to 400 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Zacharias and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zacharias

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 14 inches: clay loam
H2 - 14 to 66 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

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

Minor Components

Capay
Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Stomar
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Vernalis
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

210—Cortina gravelly sandy loam, 0 to 5 percent slopes, rarely flooded

Map Unit Setting
National map unit symbol: hnwl
Elevation: 30 to 280 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Farmland of statewide importance

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

Description of Cortina

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock

Typical profile
H1 - 0 to 6 inches: gravelly sandy loam
H2 - 6 to 38 inches: stratified very gravelly loamy sand to very gravelly loam
H3 - 38 to 60 inches: stratified very gravelly sand to very gravelly loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Xerofluvents

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

Xerorthents

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Stomar

Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Zacharias

Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

270—Elsalado fine sandy loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: hnwv
Elevation: 40 to 270 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Elsalado

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone-shale

Typical profile

H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 26 inches: loam
H3 - 26 to 60 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 to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Vernalis

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

271—Elsalado loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: hnww
Elevation: 40 to 270 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Elsalado

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone-shale

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 26 inches: loam
H3 - 26 to 60 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 to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Capay

Percent of map unit: 5 percent
Landform: Basin floors
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Vernalis

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

301—Damluis clay loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hnx4
Elevation: 120 to 350 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Damluis

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear

Parent material: Alluvium from mixed rock

Typical profile

H1 - 0 to 22 inches: clay loam
H2 - 22 to 30 inches: clay
H3 - 30 to 40 inches: clay loam
H4 - 40 to 60 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
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: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XE041CA - Fine Loamy 8-10" P.Z.
Hydric soil rating: No

Minor Components

Zacharias

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Stomar

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Unnamed, fine textured gravelly throughout

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

Unnamed, cut and fill areas

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

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Appendix E: Figures

Proposed Pump Station
Existing DMC Check 10
Proposed Check Structure
Existing DMC Turnout
Proposed Turnout
Existing CBC Under DMC
Proposed Pipeline
Existing Concrete Pipeline
Existing Ditch
Proposed Ditch
Proposed Recharge Pond
Existing Recharge Pond
Area Covered by 2017 EA/IS
Parcel
Section
Soil Sample Location
Proposed Bore location
Monitor Well
Project Well
Proposed Connection Point
Distribution Box
Proposed Junction Box

100' width along both sides of the CCID Main Canal
100' width along both sides of the CCID Main Canal
100' width along both sides of Anderson Rd
Central California I.D.
Del Puerto W.D.
Eastin W.D.
Delta-Mendota Canal
BELL RD
WANGENHEIM RD
JORGENSEN RD
ANDERSON RD
PUMP RD
Orestimba Creek
Main Canal
F&I Pump Station into 36" Diameter Pipeline into DMC and/or to Pipeline east of MP 51.65L
See Detail Map of Proposed Project at DMC
100' width from east edge of Eastin Rd to Half mile south of Sturh Rd
STUHR RD
Cemetery
EASTIN RD
100' width 1/4 mile west of Eastin Rd to Main Canal (exclude south side along cemetery)
Remove & Replace Existing 18" Concrete Pipeline with new 48" Diameter Pipeline
Mile Post 51.65 L
Existing Ditch
Remove & Replace Existing Distribution Box
Proposed Junction Box
Proposed DitchTie-in to Existing Ditch
100' width along south side of Existing Ditch from Eastin Rd to west edge of Proposed Ponds (TYP)
F&I 36" Diameter Pipeline
Mile Post 52.02 R
Mile Post 52.40 L
ORESTIMBA RD
Remove & Replace Existing Distribution Box
100' width on both sides of Orestimba Rd from DMC to west edge of Proposed Ponds
SHIELLS RD
California Aqueduct
Delta-Mendota Canal
EASTIN RD
Proposed Connection to Main Canal
HALLOWELL RD
100' width north of Newman Wasteway Property
Proposed Connection to Wasteway Turnout
Newman Wasteway
Mile Post 54.38 L
Check 10 Mile Post 54.41
Newman Wasteway
Proposed 48" Diameter Pipeline along Newman Wasteway from DMC to Main Canal
DRAPER RD

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N
0 0.25 0.5
Miles

Area of Potential Effect
Eastin Water District
Central California Irrigation District
Del Puerto Water District

Note: Avoid Wetted Canal and Ditch Prisms.

Aerial Imagery - NAIP 2018

Orestimba Creek Recharge & Recovery Expansion Project

Figure 1. Overview of Project Components

Central California Irrigation District and Del Puerto Water District

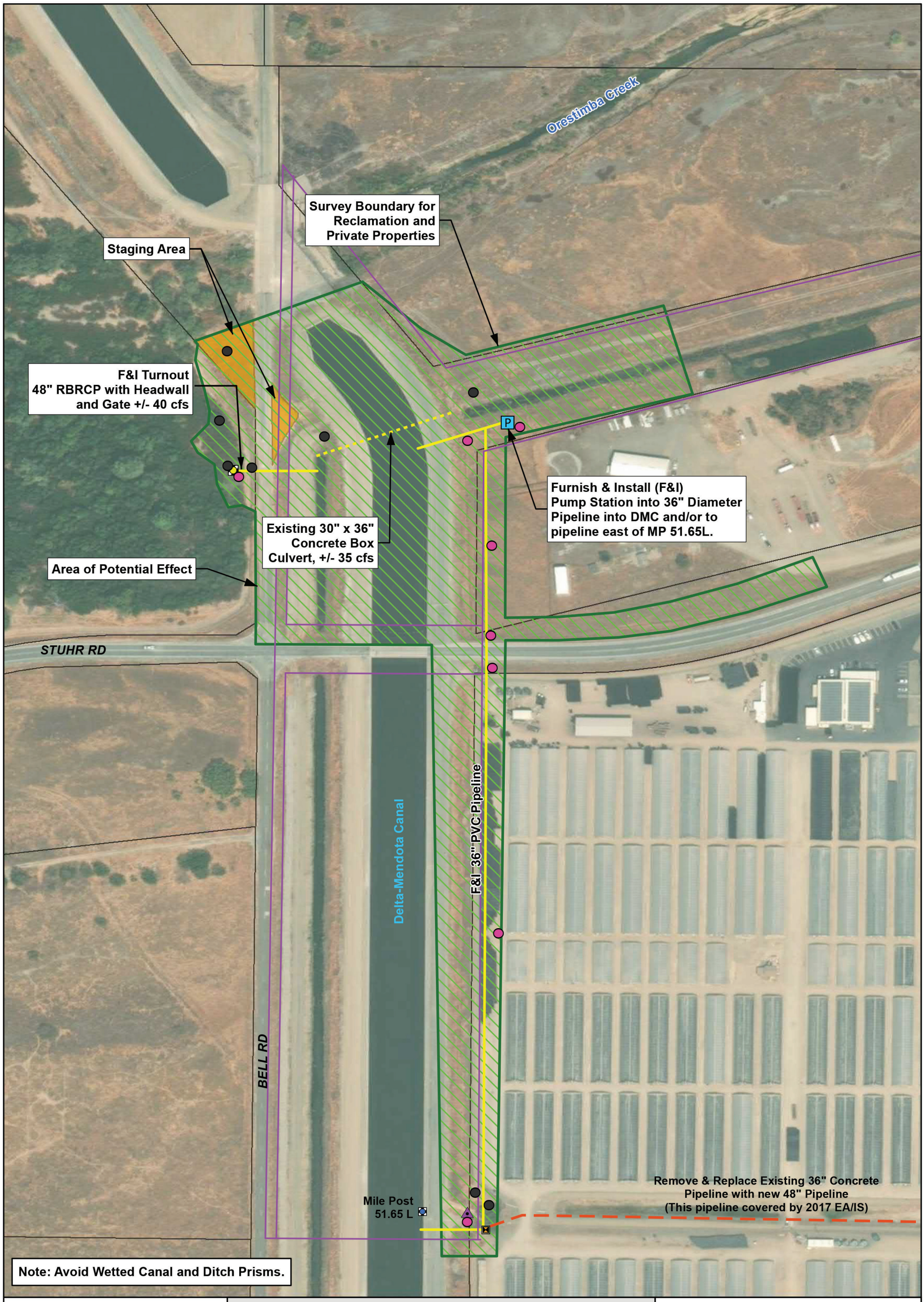
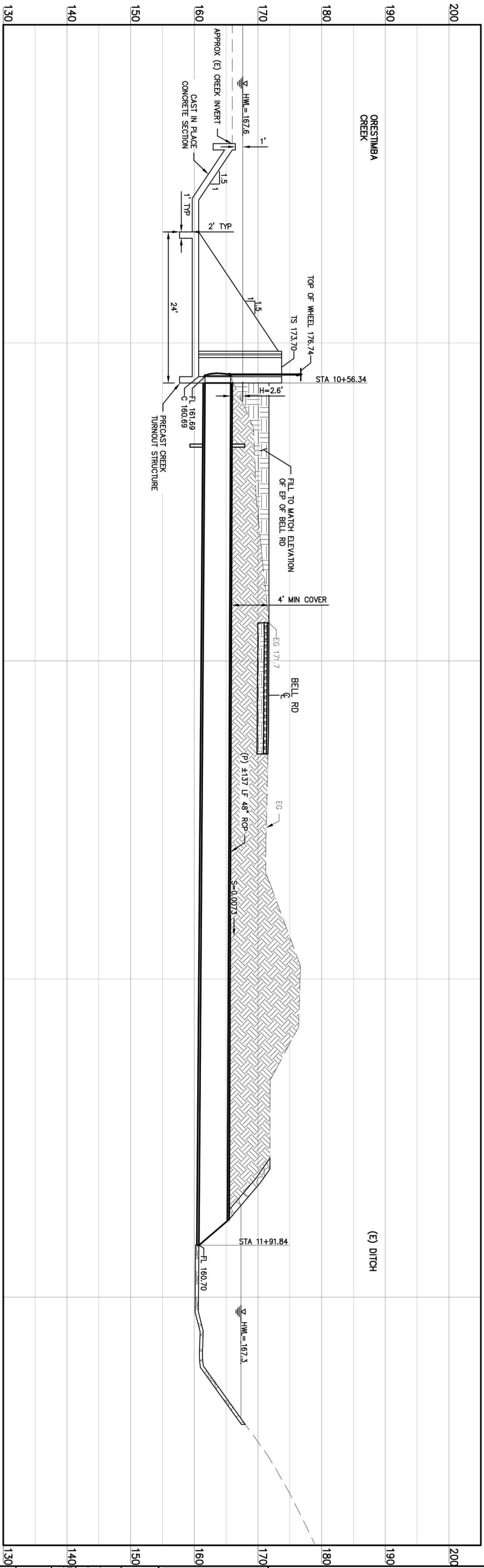


Figure 2. Detail of the Orestimba Creek Turnout, Pump Station, and Pipeline to DMC MP51.65L

Central California Irrigation District and
Del Puerto Water District

NOTES

1. STARTING WATER LEVEL IS ASSUMED TO BE THE ELEVATION OF EDGE OF CONCRETE, 167.63'.
2. LENGTH OF 48" RCP IS 135'.
3. PRELIMINARY HYDRAULIC CALCULATIONS SHOW THE PROPOSED PIPELINE WILL CONVEY 35 CFS.
4. CREEK TURNOUT STRUCTURE IS PRELIMINARY AND SUBJECT TO CHANGES AFTER STRUCTURAL ANALYSIS.



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DATE: ----	559/449-2700 FAX 559/449-2715	CREEK TO BASINS	[ENTER DATE HERE]
JOB NO: 351020002	www.ppeng.com	CREEK TURNOUT DETAIL	**Figure 3. Orestimba Creek Turnout Detail**
PROJECT NO: 351020002			
PHASE: DES2			
SHEET 8 OF			

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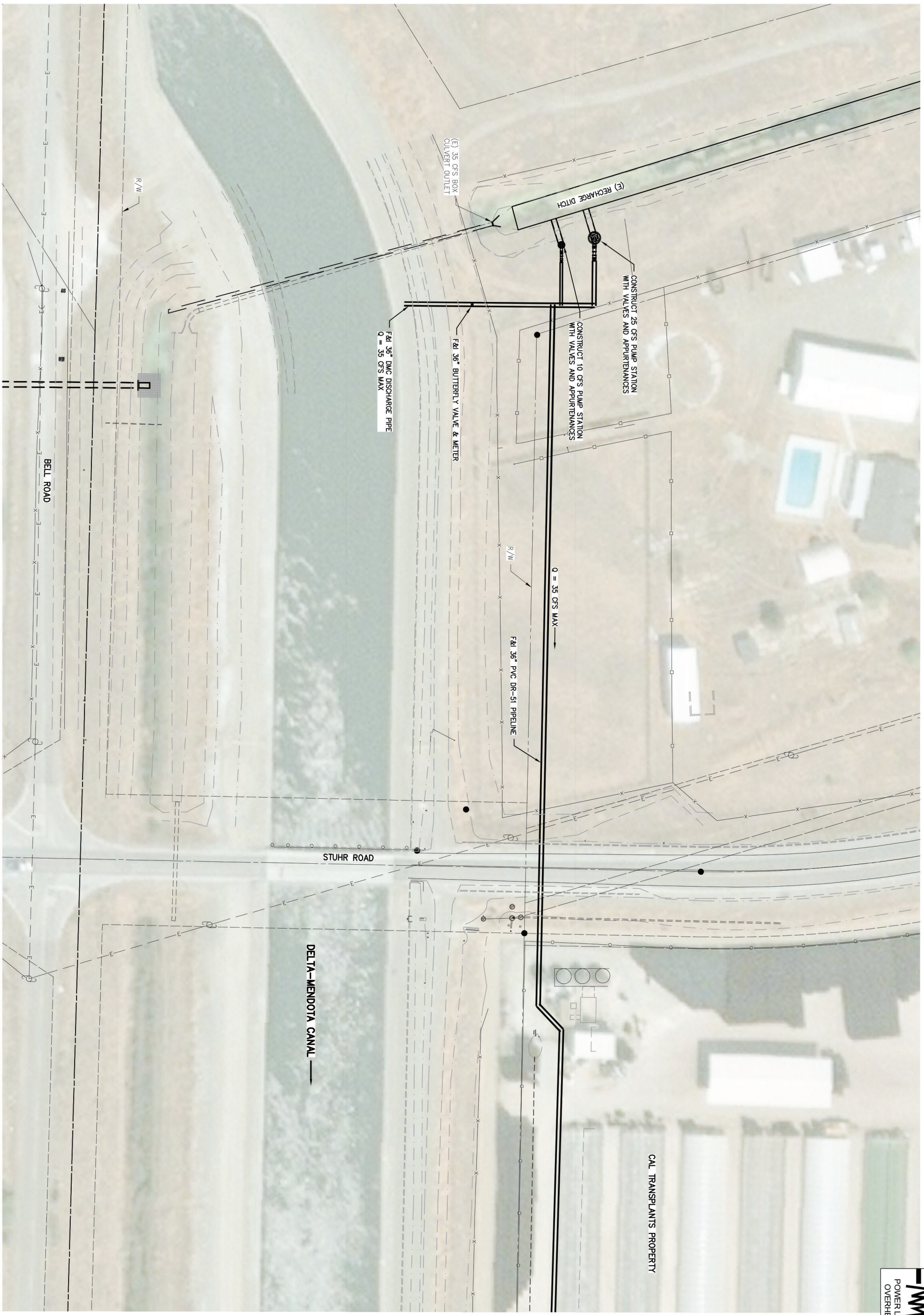

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DATE: 07/16/2021			
JOB NO: 351020002			
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Figure 4. Detail of the Lift Pumps to DMC and Turnout MP51.65L

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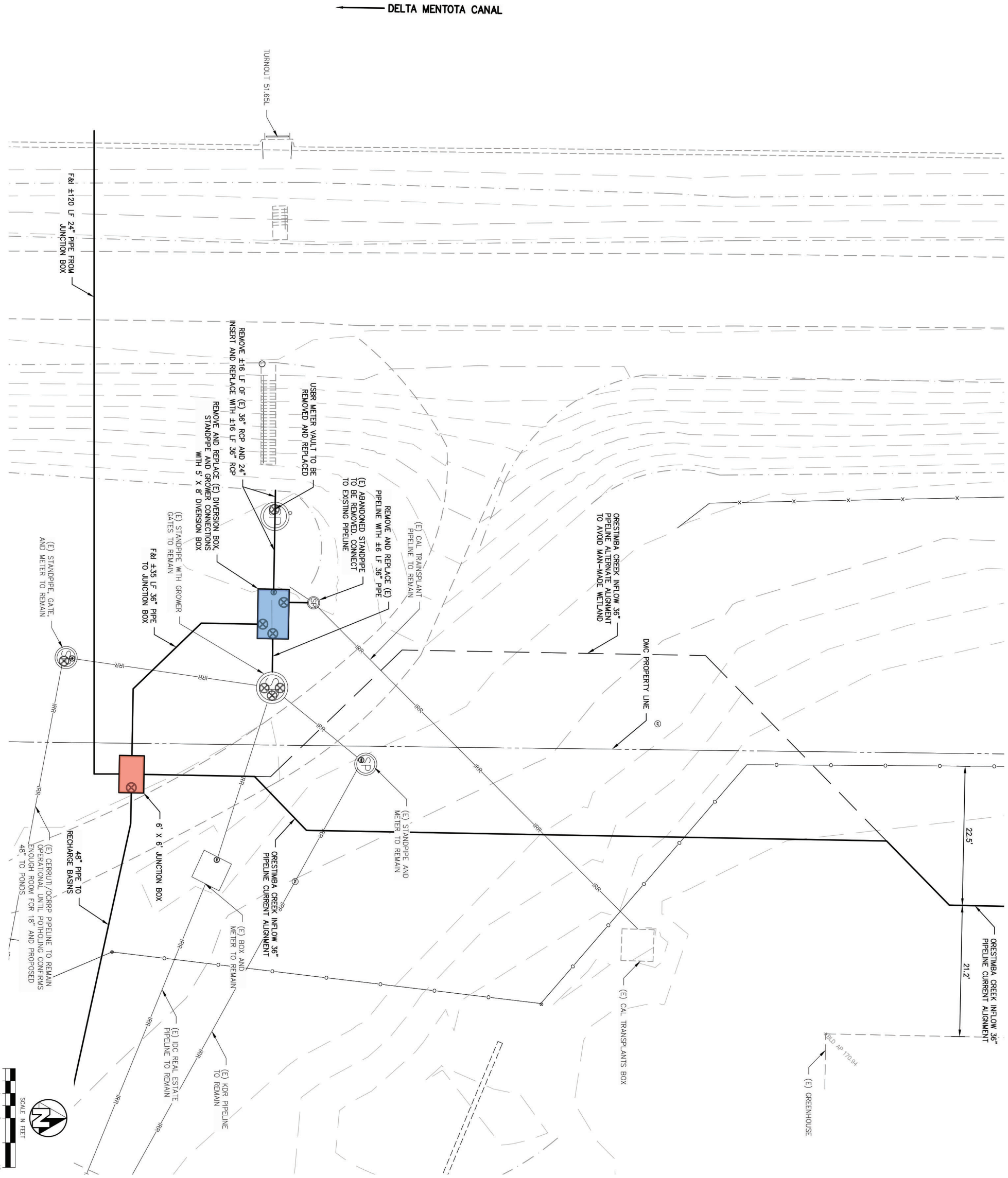

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ORESTIMBA CREEK RECHARGE AND RECOVER EXPANSION PROJECT
CENTRAL CALIFORNIA IRRIGATION DISTRICT
STANISLAUS COUNTY

60 PERCENT CONSTRUCTION

TURNOUT 51.65

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Figure 5. Proposed Modifications at DMC Turnout at MP51.65L

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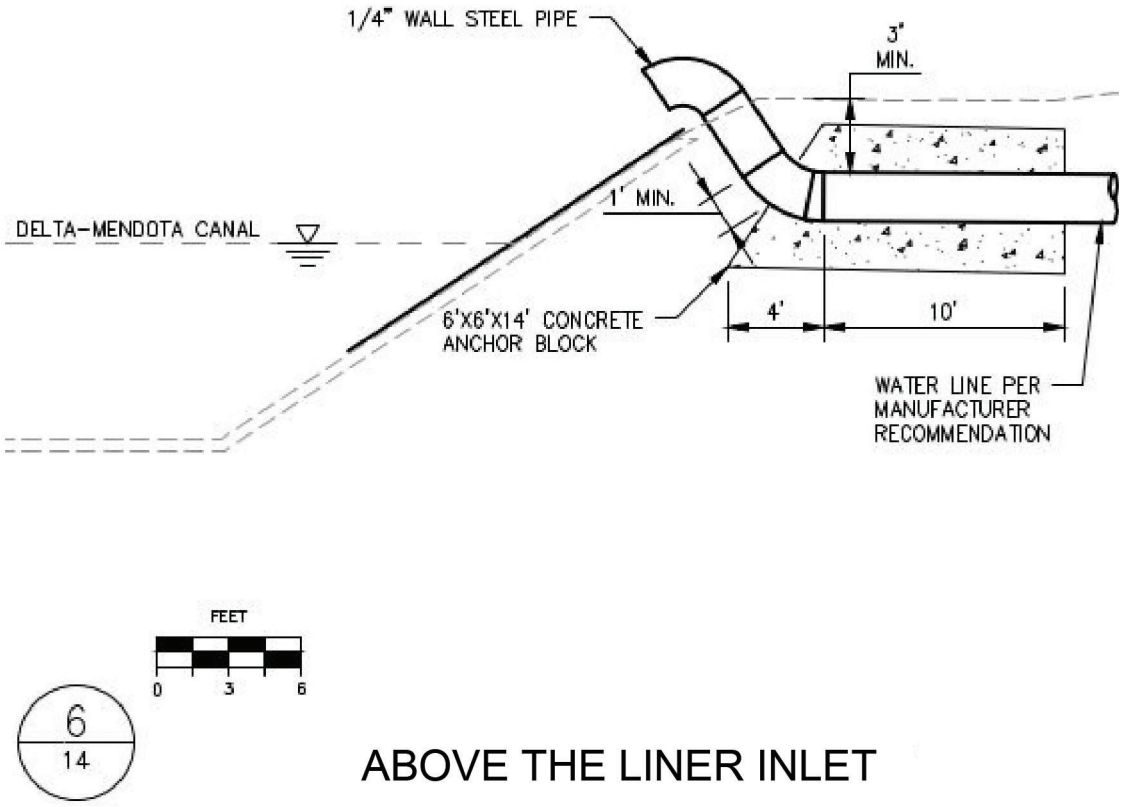
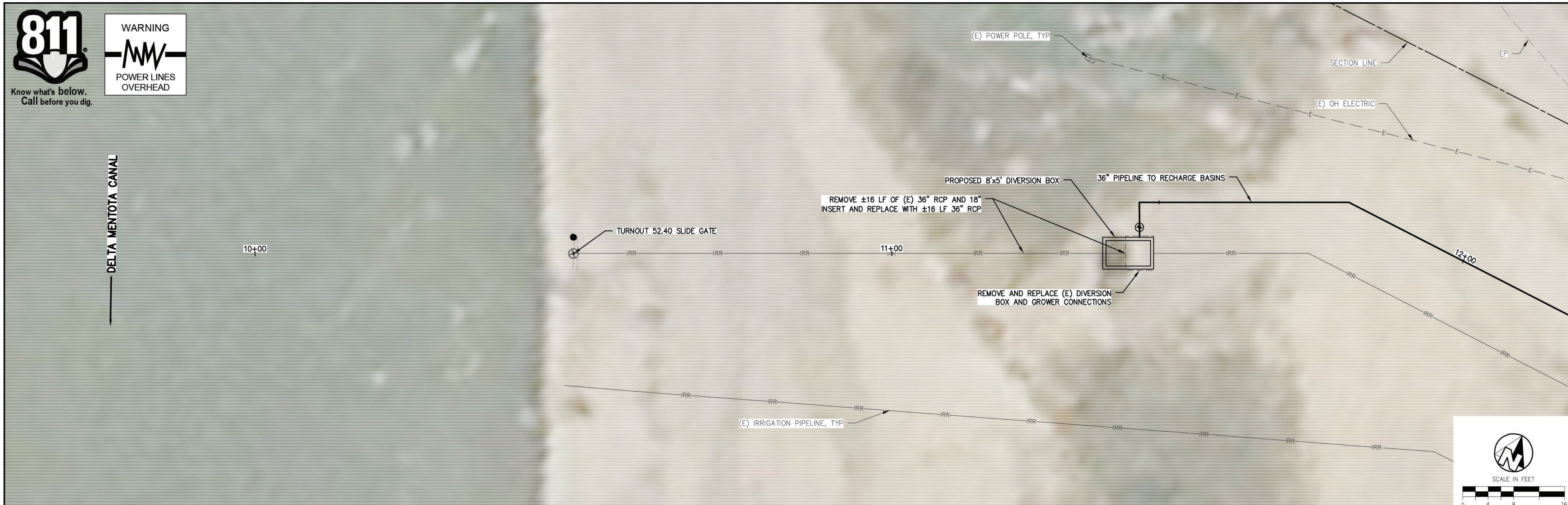
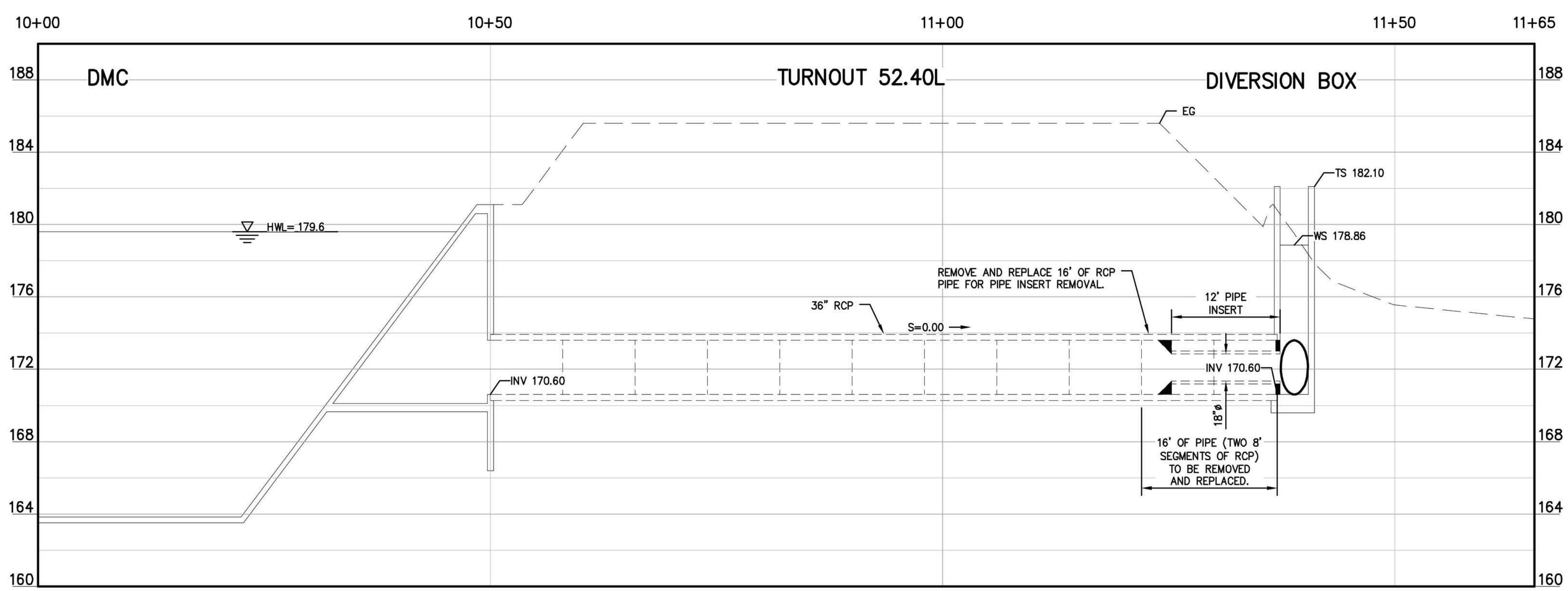


Figure 6. Diagram for an Above the Liner Inlet





50% PLANS
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Figure 7. Proposed Modifications at DMC Turnout at MP52.40L

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ORESTIMBA CREEK RECHARGE AND RECOVER EXPANSION PROJECT
CENTRAL CALIFORNIA IRRIGATION DISTRICT
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STRUCTURES AND TURNOUTS

IMPROVEMENTS AT TURNOUT 52.40L

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PROJECT NO: 351020002
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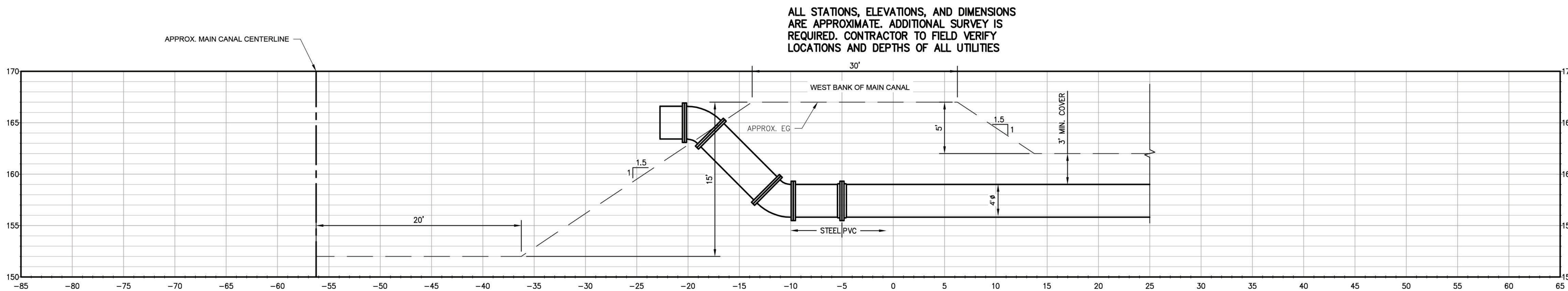
OF



MAIN CANAL OUTLET

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Figure 8. Diagram of Main Canal Outlet

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ORESTIMBA CREEK GROUNDWATER RECHARGE AND RECOVERY PROJECT
CENTRAL CALIFORNIA IRRIGATION DISTRICT
DEL PUERTO WATER DISTRICT

TYPICAL SECTIONS

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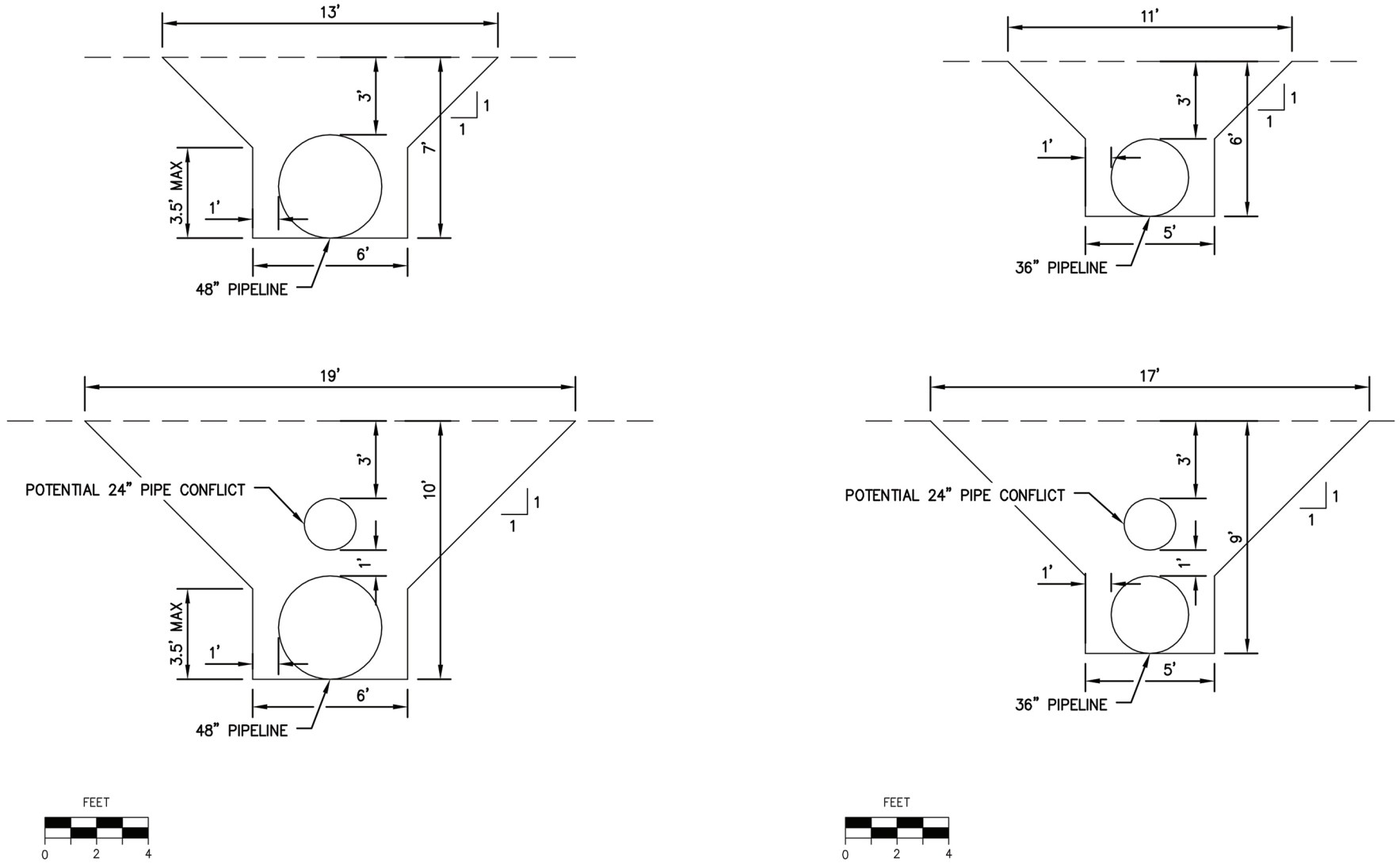
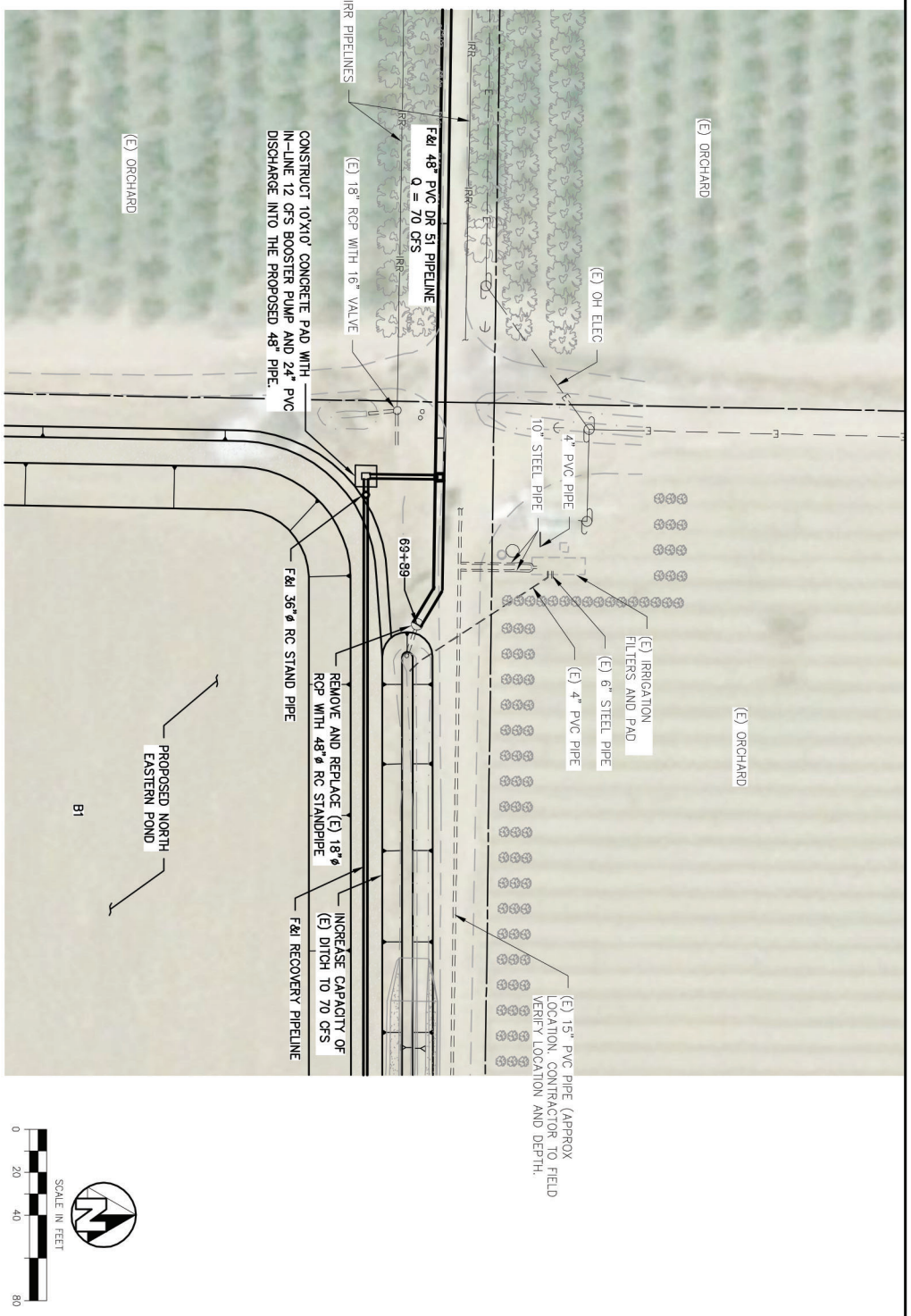


Figure 9. Detail of the Pipeline Trenches

WARNING POWER LINES OVERHEAD

811 Know what's below. Call before you dig.

DESIGN ENGINEER: CM LICENSE NO: 63,453 DRAFTED BY: JMG CHECKED BY: RBI DATE: 07/21/2021 JOB NO: 351020002 PROJECT NO: PHASE: 0 1" ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS. SHEET 1 OF 1	EST. 1968 PROVOST& PRITCHARD CONSULTING GROUP *An Employee Owned Company* 4701 SISK ROAD, SUITE 102 MODESTO, CALIFORNIA 95356 209/809-2300 FAX 209/809-2290 www.ppeng.com	ORESTIMBA CREEK GROUNDWATER RECHARGE AND RECOVERY EXPANSION CCID AND DPWD STANISLUAS COUNTY BASIN SITE PLAN	FOR REVIEW ONLY PRELIMINARY NOT FOR CONSTRUCTION **Figure 10. Site Plan for Proposed Ponds** No. REVISION BY DATE



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POWER LINES
OVERHEAD

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CENTRAL CALIFORNIA IRRIGATION DISTRICT
DEL PUERTO WATER DISTRICT

PUMP STATION AT PROPOSED PONDS

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Figure 11. Pump Station at Proposed Ponds

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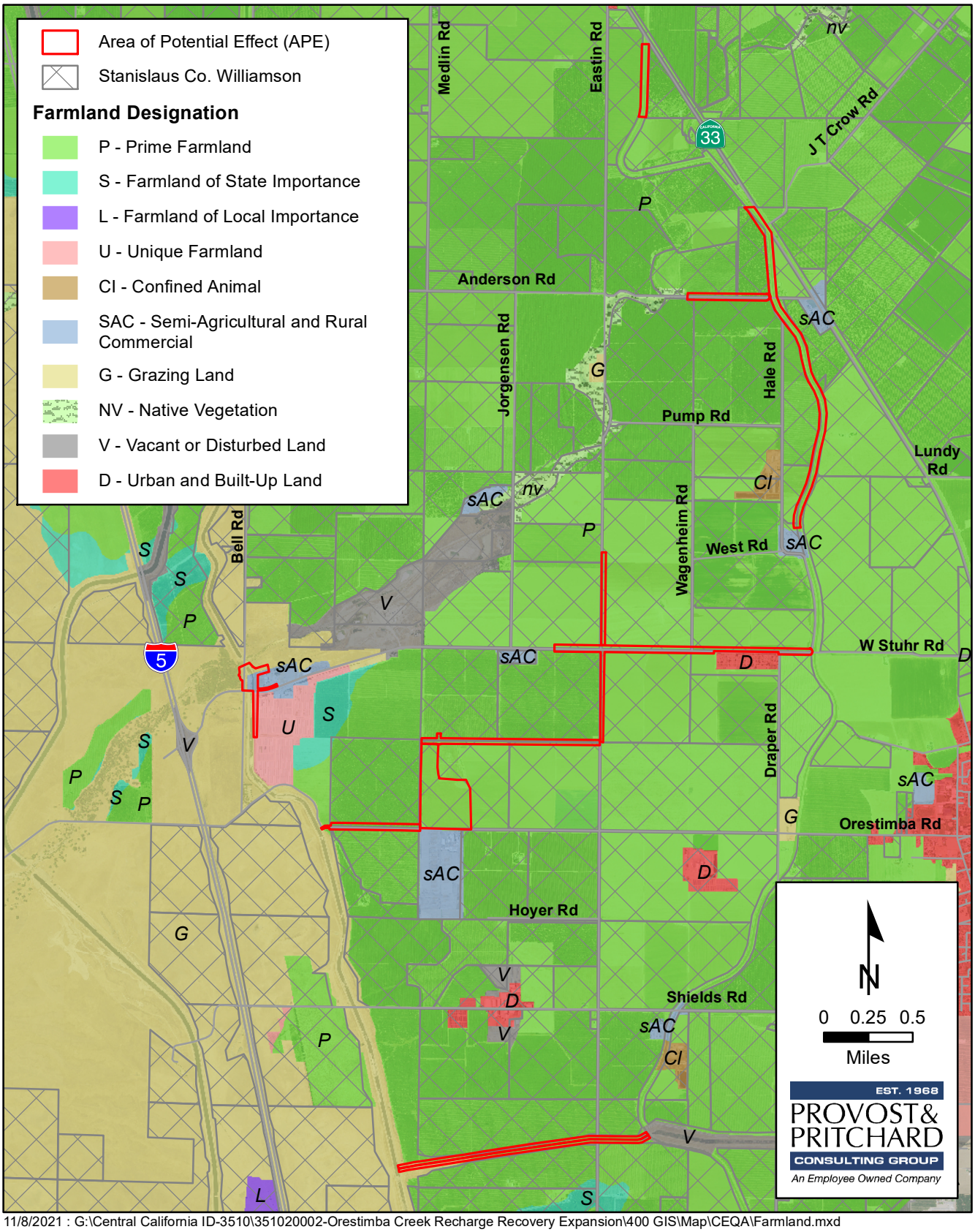

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Figure 12. Farmland Map

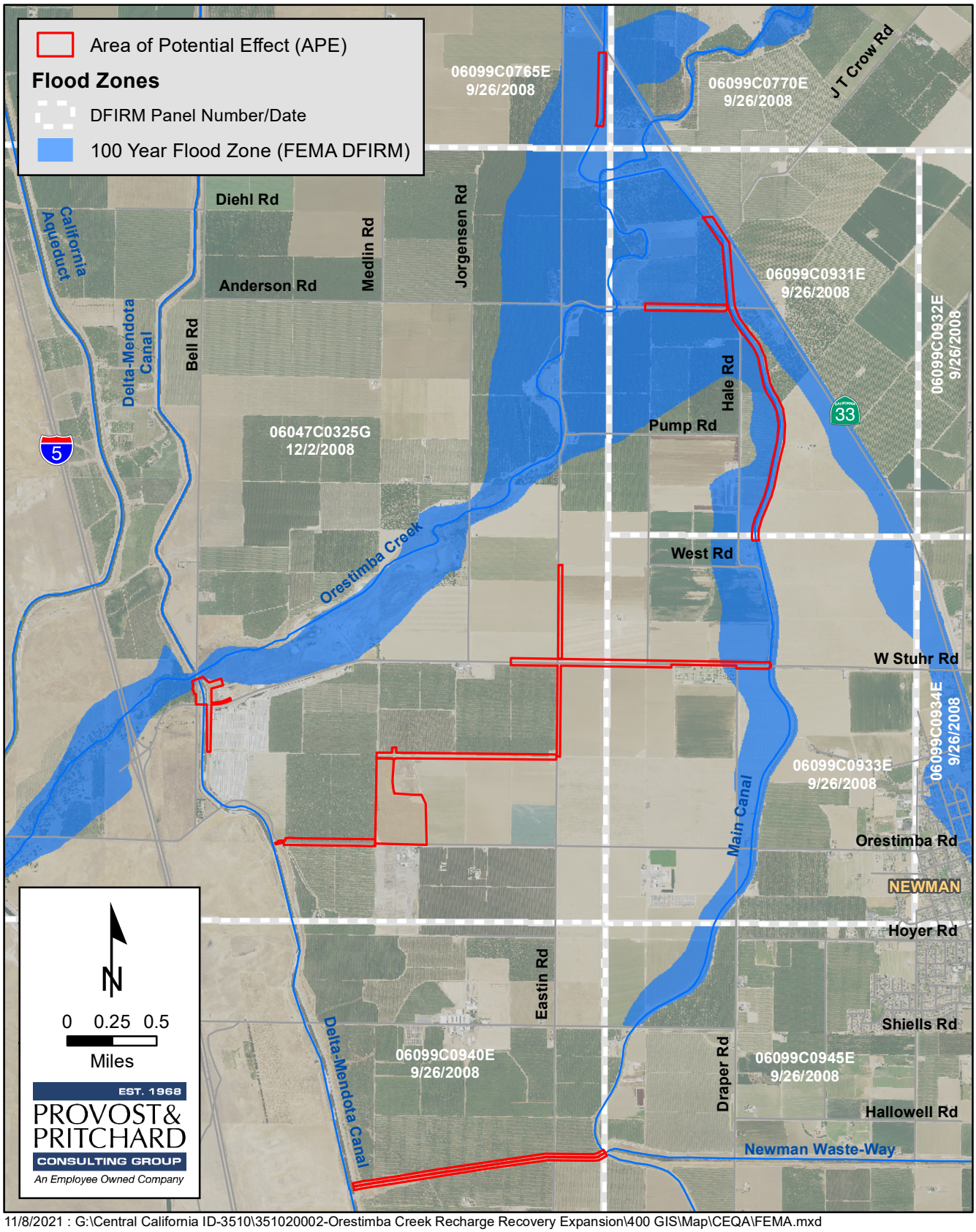

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Figure 13. FEMA Map