Initial Study and Proposed Mitigated Negative Declaration
Administrative Draft
For
Sacramento River Floodplain Enhancement Project

at Rancho Caleta

September 24, 2024



CEQA Lead Agency:

Colusa County
Development Services Department
1213 Market St.
Colusa, CA 95932

Project Sponsor:

RIVER PARTNERS

580 Vallombrosa Avenue
Chico, CA 95926

Project Information

1. Project Title: Sacramento River Floodplain Enhancement Project at Rancho Caleta

2. Lead Agency Name and Address Colusa County
Development Services
Department 1213 Market St.
Colusa, CA 95932
(530) 458-0480

3. Contact Person and Phone Number Greg Plucker, Community Development Director
(530) 458-0480

4. Project Location
The project area encompasses 30 acres on an outside meander bend of the river approximately two miles downriver from downtown Colusa. Restoration work shall be on 27 acres of the 30 due to existing vegetation and maintenance roads. It is on the east side of the Sacramento River at River Mile (RM) 141L; and is located south of the Colusa Wier and Colusa Bridge, *California* 7.5-minute U.S. Geological Survey (USGS) quadrangle in Township 16N, Range 1W, Section 33 Meridian.

5. Project Sponsor's Name River Partners

6. General Plan Designation Agriculture General (AG)

7. Zoning River Frontage (RF)

8. Description of Project
River Partners is proposing to implement the Sacramento River Floodplain Enhancement Project at the Rancho Caleta site. The project will restore floodplain and fish habitat adjacent to the Sacramento River by manipulating the existing topography, re-contouring a swale, and planting native vegetation,

9. Surrounding Land Uses and Setting
Agriculture/Public Land (Sacramento River)/ Rural Residential

10. Other Public Agencies Whose Approval May Be Required (e.g., permits, financing approval, or participation agreement.)

- California Department of Fish and Wildlife (Region 2)
- Regional Water Quality Control Board (Central Valley Region)
- Central Valley Flood Protection Board
- U.S. Army Corps of Engineers (Sacramento District)

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3?

- The AB-52 consultation was completed by Colusa County and no request for formal consultation was made.

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Acronyms and Abbreviations

AB 52	Assembly Bill 52
APCD	Air Pollution Control District
ASC	Anthropological Studies Center Sonoma State University
BA/EFHA	Biological Assessment/Essential Fish Habitat Assessment
BMPs	Best Management Practices
BRA	Biological Resources Assessment
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
Corps	U.S. Army Corps of Engineers
CRHR	California Register of Historical Resources
DPS	Distinct population segment
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
ESA	Federal Endangered Species Act
ESU	Evolutionarily significant unit
°F	Degrees Fahrenheit
FEMA	Federal Emergency Management Agency
GHG	Greenhouse gas
GHGs	Greenhouse gases
IS	Initial Study
MLD	Most Likely Descendent
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA-Fisheries	National Oceanic Atmospheric Administration – Fisheries
NRCS	Natural Resources Conservation Service
OHWM	Ordinary high-water mark
$PM_{2.5}$	Particulate matter 2.5 microns or less
PM_{10}	Particulate matter 10 microns or less
project	The Sacramento River Floodplain Habitat Enhancement at Rancho Caleta

RM	River Mile
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
TCR	Tribal Cultural Resource
TCRs	Tribal Cultural Resources
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1. Introduction

1.1 Introduction and Regulatory Guidance

This document is an Initial Study (IS) that summarizes the technical studies prepared for the proposed Sacramento River Floodplain Enhancement Project at the Rancho Caleta site. It includes an evaluation of potential environmental impacts that could result from project implementation and provides justification for a Mitigated Negative Declaration (MND) for the project. This document was prepared in accordance with the current California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines.

1.2 Lead Agency

The CEQA Lead Agency is the public agency with the primary responsibility for implementing a project. The CEQA Lead Agency for the Rancho Caleta Project is Colusa County.

1.3 Supporting Technical Studies

Completed technical studies are available for review at the following locations:

River Partners
580 Vallombrosa Ave.
Chico, CA 95926
(530) 894-5401

Technical studies completed for this project include:

- Biological Assessment (BA)
- Wetland Delineation

1.4 Document Organization

The Initial Study consists of the following chapters:

- **Chapter 1.0 – Introduction:** describes the purpose and content of this document.
- **Chapter 2.0 – Project Description:** provides a comprehensive description of the project, tentative schedule, required permit approvals, and project alternatives.
- **Chapter 3.0 – Environmental Setting, Impacts, and Mitigation Measures:** describes the environmental impacts of the project using the CEQA Environmental Checklist. Where appropriate, mitigation measures are provided that will reduce potentially significant impacts to a less-than-significant level.
- **Chapter 4.0 – Determination:** provides the environmental determination for the project.
- **Chapter 5.0 – Mitigation Monitoring and Reporting Program:** identifies the mitigation responsibilities in implementing the project.
- **Chapter 6.0 – Report Preparation:** identifies the individuals responsible for preparation of this document.
- **Chapter 7.0 –References:** provides a list of references used to prepare this document.

2. Project Description

2.1 Location

The Rancho Caleta Project is located along the right (eastern) bank of the Sacramento River (RM 141L) approximately 2 miles South of the city of Colusa (Figure 1). The project area is approximately 30 acres. The project is located south of the Colusa Wier and Colusa Bridge*, California* 7.5-minute U.S. Geological Survey (USGS) quadrangle in Township 16N, Range 1W, Section 33 Meridian. The approximate center of the project area is located at latitude 39.1935881º, longitude -121.9845097º.

2.2 Project Purpose and Need

The Rancho Caleta project site is located inside the levee system along the Sacramento River. The site historically supported dense native riparian vegetation, but by 1958, the native riparian vegetation was removed for agricultural production. An earthen berm, built by a previous landowner, provides additional protection from frequent flooding for agricultural crops. Even with the berm, the project site area regularly floods during normal water years. It is often inundated, performing like a historic floodplain. It retains shallow, turbid waters for weeks at a time in deep depressions and varying topography. Currently, juvenile salmonids reconnect with the floodplain during flood events, but when the floodwaters recede many juveniles are stranded and eventually die on the floodplain.

The purpose of the Rancho Caleta Project is to provide juvenile salmonids access to high-quality rearing habitat on the floodplain and remove any barriers that prevent them from returning to the main channel when the floodwaters recede. Engineering designs plan to remove the earthen berm, allowing the site to flood more frequently at approximately 22,000 cfs. In this reach of the Sacramento River, flows are most directly affected by Colusa Weir upstream of the site and the channelization of the river into a narrow corridor between levees south of the City of Colusa. Engineering designs plan for grading 5 acres of the site to encourage river flows to inundate and retain water in historical channels and deep depressions. The alterations are intended to work synergistically with adjacent wildlife management actions (upstream and downstream) and flood management actions within the State of California Flood Control Plan. After the construction of floodplain enhancements, River Partners will restore the riparian habitat on 30 acres of Rancho Caleta. This includes actively planting native riparian species and supporting the restoration with ongoing monitoring and maintenance for three years. The proposed plans to enhance the floodplain will benefit resident and migratory birds, fish, mammals, and invertebrates.



Figure 1. Project Boundary

2.3 Project Background

2.3.1. Land Use History

The project region was inhabited by a tribelet of Native American people called the Patwin at the time of Euro-American contact (Johnson 1978). Euro-Americans began settling in the area that is now known as Colusa County in the 1840s and established the town of Colusa in 1850 (Kelley 1989). Historically, the Sacramento River floodplain contained fertile soil on higher ground that was ideal for farming field crops. The surrounding lower ground, referred to as "swampland" with thick stands of tule-rushes, also contained fertile soils but was not farmed because of frequent seasonal flooding.

The Green Act of 1868 allowed the state to sell the "swamplands" for private ownership, which provided a financial incentive to begin farming these wetter areas. In the 1870s, landowners joined forces to fund the construction of levees along the Sacramento River to restrict river waters to the main channel and ultimately drain the adjacent swamplands for agriculture. These levees did not fully protect the agriculture from flooding. Farmers and residents turned to the government for flood protection after the devastating floods of 1907 and 1909; in response, the Flood Control Act of 1917 created the Sacramento River Flood Control Project.

Figure 2 is an aerial photograph from 1971 and Figure 3 is an aerial photograph from 2021.

2.3.1. Land Ownership

In 2020, River Partners acquired 30 acres of the Rancho Caleta Property for open space and wildlife habitat management with funds from the California Wildlife Conservation Board's Habitat Conservation Fund.

2.3.2. Current Land Use Designations and Management

The Colusa County zoning designation for the project area is RF – River Frontage. The project area is within the Central Valley Flood Protection Board's designated floodway and the Federal Emergency Management Agency (FEMA) 100-year flood zone map. The project area is located just downstream of the Colusa Weir and Colusa Bridge. The project area is also located in proximity to numerous wildlife preserves managed by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) (Figure 4).

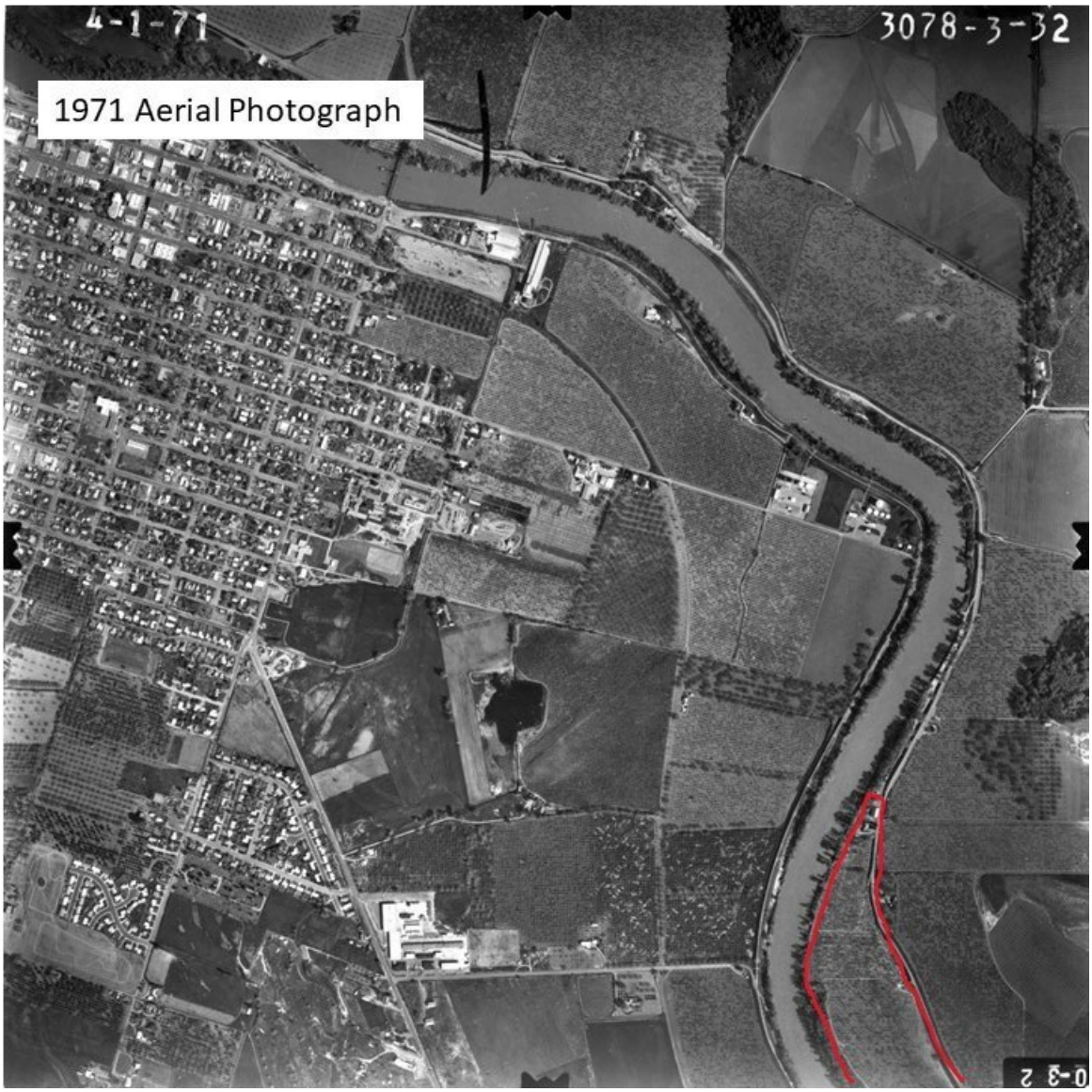


Figure 2. 1971 Aerial Photograph (NRCS)



Figure 3. 2021 Aerial Photo (Google Earth)

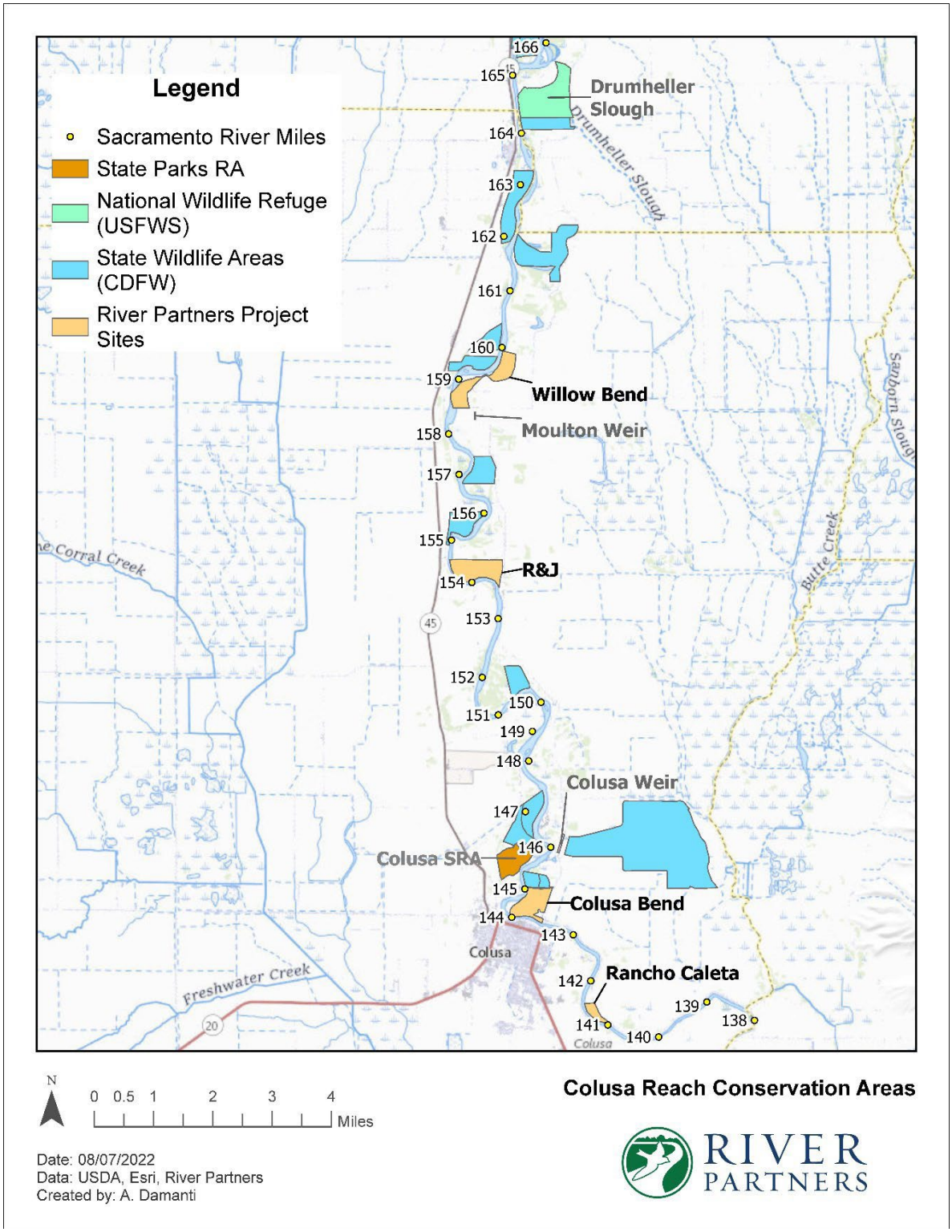


Figure 4. Proximity to State and Federal Managed Lands

2.4 Project Description

River Partners will implement comprehensive habitat enhancements on 30 acres of the Rancho Caleta unit that includes salmonid habitat enhancements, riparian restoration, and ongoing monitoring and maintenance. More detailed descriptions of project activities (i.e. site preparation, grading, planting, seeding, irrigating, controlling weeds, and monitoring performance, and possibly installing a fish-friendly drainage) are provided in this section.

- **Salmonid Habitat Enhancements:** Engineering designs for the alterations and grading were completed by MBK Engineers. Site evaluation and restoration plans were completed by River Partners. Proposed alterations to the existing berm and grading of the outflow swale were designed to eliminate fish stranding as flood waters receded.

- **Riparian Restoration:** After the site is graded for salmonid habitat enhancements, riparian habitat will be restored to the site. This includes native plant installation and three years of maintenance to support plant establishment.

- **Monitoring and Maintenance**: Monitoring of native wildlife and vegetation will occur before, during, and after construction. A biological monitor will be on site to monitor biological resources and water quality during any work on the banks of the Sacramento River. Maintenance includes irrigation and weed control for 3 years following implementation.

2.4.1. Site Grading and Ground Preparation

Site preparations for salmonid habitat enhancements are estimated to begin in 2025 after all permits are secured. Site grading will be completed using belly scrapers and materials will remain on site (not hauled off site). The anticipated duration of grading activities is less than one week. All grading activities will be described and monitored through an approved Storm Water Pollution Prevention Plan (SWPPP). Proposed site grading is shown in Appendix 1, Grading Plan. Grading is designed to create positive drainage away from the levee and toward the river following MBK Engineering designs.

Ground preparation for planting are estimated to begin in the fall 2025 after salmon habitat enhancements are complete (Figure 5). The graded areas will be disked and floated as needed to reduce soil compaction. A drip irrigation system will be installed in the project area with drip emitters located at regular spacing (≈10 feet) to deliver 1.8 gallons per hour to planted trees and shrubs. An established well in the field will be used to irrigate the site. A main irrigation supply line will extend south from the well. Sub-main lines will extend from the main line into the field, delivering well water to drip irrigation hoses. Trenching associated with the main line and sub-main lines will not exceed 24 inches in depth. If necessary, native grass seeds will be broadcast over construction areas to stabilize soil.

Monitoring will occur before and during site grading and ground preparations activities.

2.4.2. Planting

After site grading and ground preparations, the project area will be planted with different riparian plant communities. These plant communities are designed based on the varying hydrological and

biological conditions (Table 1; Figure 5); configured to maximize their habitat value; and consistent with design considerations and limitations. Rancho Caleta has deep rich soil categorized as Moonbend Silt that can support high density riparian vegetation. The entire site experiences relatively frequent and lengthy inundation, narrowing the appropriate plant species palette for this area. The seasonally inundated outflow swale will be planted with a mix of native grasses. The western edge of Rancho Caleta has existing remnant riparian forest that won't be removed in the restoration process.

A total of 27 acres of Rancho Caleta will be planted with three plant communities. Most of the site will contain a patchy mosaic of the Great Valley Mixed Riparian Forest community. Riparian Willow Scrub community will buffer the edges of the Great Valley Mixed Riparian Forest community. The Great Valley Grassland will be planted along the seasonally inundated outflow swale and the centers of the Mixed Riparian Forest and Riparian Willow Scrub communities.

In total, the Rancho Caleta planting design incorporates approximately 5,641 plants. The diverse planting design represents six tree, fifteen shrub, and twelve herbaceous species.

Table 1. Planting Densities and Design Features of the Four Proposed Plant Communities

Habitat Type	Acres	Row Spacing (feet)	Plant Spacing (feet)	Plant Density (plants/acre)	Tree Density (trees/acre)	Design Features
Riparian Willow Scrub	3	20	10	219	17	Mostly smaller statured, flood-tolerant species.
Great Valley Grassland	1	N/A	N/A	N/A	0	Native grasses with no woody species.
Great Valley Mixed Riparian Forest	23	20	10	216	65	A mix of slow and fast- growing riparian plant species.
Remnant Riparian Forest	10	N/A	N/A	N/A	N/A	A mix of riparian tree and shrub species on the western edge of the project

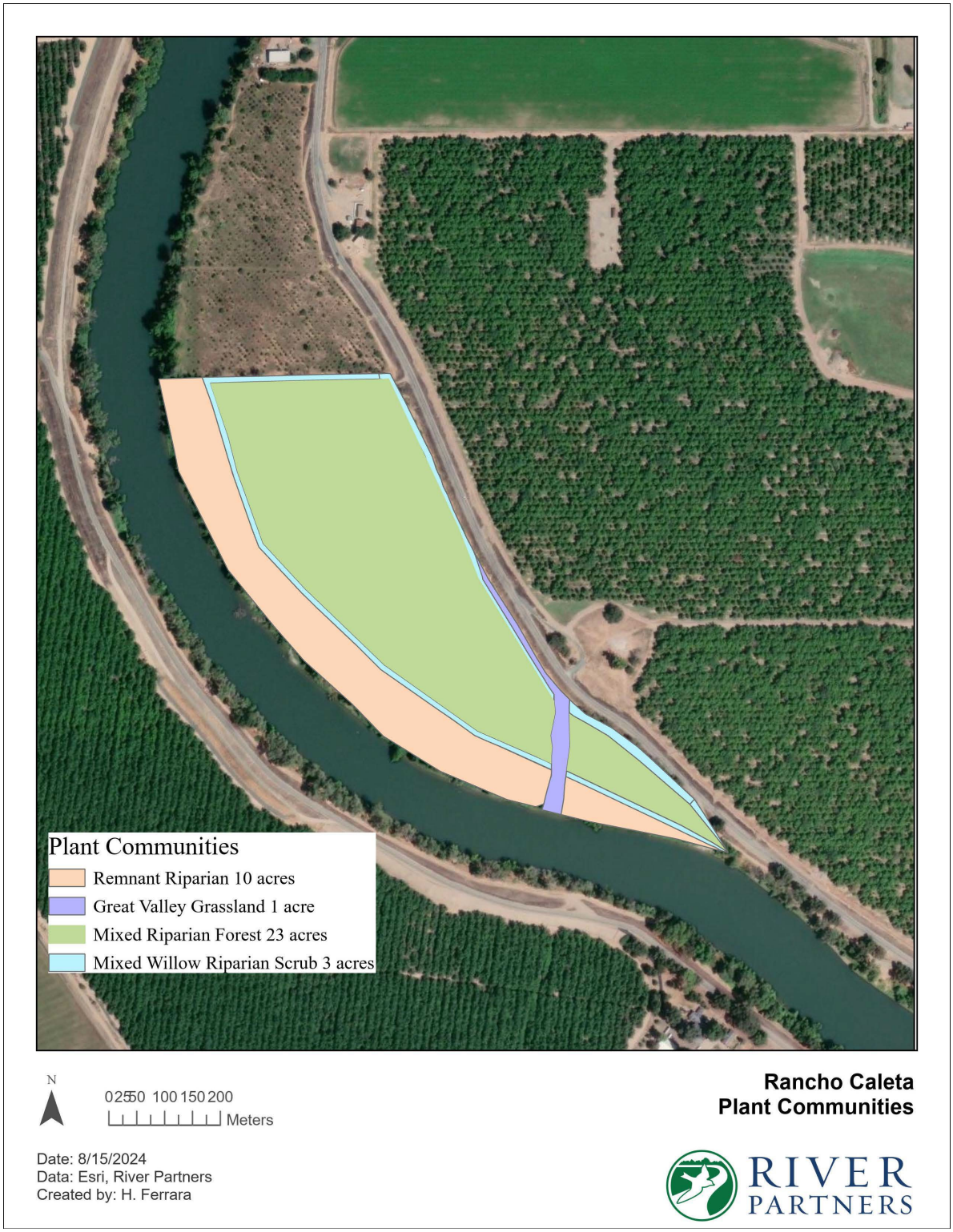


Figure 5. Rancho Caleta Plant Communities

Plant propagation material, seeds, and cuttings will be collected from vegetation as near as possible to the project area whenever practical. Special care will be taken to collect a diversity of genotypes: late blooming, early blooming, and different growth forms. Cuttings of cottonwood and willows will be collected in January or February when the trees are dormant. Seeds for the herbaceous understory will be collected or purchased from sources near the project area. Cuttings for Western Sycamore will come from trees identified along the Sacramento River to be pure, native stock.

Planting will begin as soon as field preparations have been completed and the irrigation system has been installed. Woody species (potted stock and cuttings) and herbaceous plugs will be planted on the planting berms in the spring (estimated 2026). Hand tools will be used to excavate planting holes. The remaining herbaceous understory (drilled native grasses and broadcasted forb species) will be planted during fall/winter (estimated 2026) after seasonal rains have begun. Herbicide will be applied to the restoration fields prior to planting the understory to kill sprouting winter weeds. Project implementation will require the use of standard farm equipment, such as pick-up trucks, all-terrain vehicles, tractors, disks, rollers, seed drills, sprayers, chain saws, and hand tools.

2.4.3. Maintenance and Monitoring

Monitoring will occur before and during construction activities (e.g. site grading and site preparation). Existing riparian vegetation along the edges of the installation area will be trimmed under the guidance of a biological monitor. The project site will be surveyed for wildlife prior to plant installation. A biological monitor will be on site to monitor biological resources and water quality during work on the banks of the Sacramento River. Monitoring of the riparian restoration areas will occur for three years following planting and help inform the adaptive management and maintenance of the project site.

Maintenance on the site includes irrigation and invasive weed control. Plants will be drip irrigated on a variable schedule to cultivate desirable root growth. Planted vegetation is expected to become self-sufficient after three growing seasons. All drip lines will be removed from the project area at that time. At the end of the project, main lines and sub-main lines will remain buried.

Various methods will be used to control invasive weed species during the proposed three-year establishment period. Following the planting of woody species, planting berms will be sprayed with a non-selective herbicide targeting all weeds. Glyphosate is the primary herbicide that will be used to control weeds in the restoration fields. The berms will be subject to weed control during the growing season throughout the three-year plant establishment period. A combination of mowing and herbicide application will be used between the rows during the first season following planting to control fast-growing annual grasses and forbs and favor the establishment of the perennial understory.

2.5 Project Design Criteria and Best Management Practices

The project was designed to minimize potential impacts on sensitive biological resources. The following best management practices (BMPs) were incorporated into the project plan:

2.5.1 Contractor Staging Areas/Construction Access Routes

Contractor staging will take place in existing disturbed areas on River Partners' property. Construction access will make use of existing public roads (e.g., Butte Slough Rd), agricultural access roads, and levee access roads.

2.5.2 Conservation Measures

Conservation Measure #1—Ground Disturbance

Ground disturbance caused by grading shall occur according to engineering designs to direct floodwater to flow back into the main river channel. Grading activities shall be managed to control air pollution, dust, and sediment according to the Conservation Measures (#2 & #3) described in the initial study. Grading equipment shall be fitted to operate in the fields and operated without disturbing large native trees. A cultural resource monitor shall be on site during grading.

Conservation Measure #2—Air Pollution and Dust Control

Air pollution controls shall conform to all applicable rules, regulations, ordinances, and statutes. Dust shall be controlled during construction activities and subsequent operation of the project. Dust controls may include, but will not be limited to the following elements, as appropriate:

- River Partners or its contractor shall designate a person to monitor dust control and to order increased watering as necessary to prevent the transport of dust offsite. This person shall also respond to any citizen complaints.

- Pursuant to California Vehicle Code (Section 23114) (California Legislative Information 2016), all trucks potentially hauling soil and other loose material to and from the construction site shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).

- Any soil removed during construction shall be stored onsite in piles not to exceed 4 feet tall. These spoil piles shall be clearly marked and flagged. Spoil piles that will not be immediately returned to use shall be revegetated with a non-persistent erosion control mixture.

- Watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.

- Idling time shall be minimized by shutting off all equipment after five minutes when not in use.

Conservation Measure #3—Increased Turbidity and Suspended Sediment

The project has been designed to avoid impacts on U.S Army Corps of Engineers-jurisdictional features (i.e., waters of the United States) and waters of the State, to the extent practicable. The construction contractor shall be required to prepare and implement a Storm Water Pollution Protection Plan (SWPPP), including measures to be implemented during construction that will

minimize disturbance to fine-grained sediments in the Sacramento River and prevent the discharge of sediment into the river from upland activities. River Partners shall be responsible for ensuring the implementation of these measures and compliance with Basin Plan objectives. The SWPPP shall include at a minimum, but is not limited to, the following measures:

- Fill material (quarry stone, riprap, and backfill) will be composed of washed materials from a local source. Stone materials shall be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Gravel and stone materials shall pass California cleanliness test #227 (or equivalent test) with a value of 85 or greater. Soil-filled quarry stone shall only be placed above the average water surface elevation during construction.

- Suitable erosion and sediment control structures (e.g., silt fences, straw wattles, or catch basins) shall be used to capture impeded erosion or sediment from upland and near-channel activities before it enters the Sacramento River. Sediment control structures shall be placed near the edge of surface water features (i.e., along the bank of the river or along wetland features) to ensure sediment is sequestered before entering the water column. These structures shall be installed prior to the start of any construction activities and shall be cleaned or maintained on a regular basis to retain their effectiveness.

- Bare soil shall be kept to the minimum required by designs. Erosion control devices or measures, such as those listed previously, shall also be used in areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season and before new vegetation becomes established.

- All imported fill material stockpiles shall be stored in upland areas with erosion controls properly installed and maintained. All applicable erosion control standards shall be followed during stockpiling of materials.

- To the maximum extent practicable, activities that increase the potential for erosion in the project area shall be restricted to the relatively dry summer and early fall periods to minimize the potential for rainfall events to transport sediment to the river. If these activities must take place during the late fall, winter, or spring, temporary erosion and sediment control structures shall be in place and operational at the end of each construction day and maintained until permanent erosion control is in place.

- If on-site erosion control devices are found to be nonfunctional, they shall be repaired or replaced immediately or by the end of the workday. In cases where repairs cannot be made immediately for safety reasons, the repairs shall be completed as soon as the work can safely be performed.

Conservation Measure #4—Potential Spill of Hazardous Materials

The construction contractor shall be responsible for implementing the construction measures listed below to prevent hazardous materials from entering the water column during all construction activities.

- To the extent practicable, equipment and materials shall be stored a minimum of 200 feet away from wetland and surface water features.

- Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of hazardous materials.

- All construction equipment shall be inspected daily for leaks prior to the start of any activities. Steam cleaning shall be used to remove any oil, grease, or hydraulic fluid prior to contacting the waters of the Sacramento River. Any wash and rinse water must be adequately treated prior to discharge into the river if that is the desired disposal option.

- Hazardous materials, including fuels, oils, and solvents, shall not be stored or transferred within 150 feet of the active Sacramento River channel. Areas for fuel storage, refueling, and servicing will also be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor and fueling trucks shall be responsible for always maintaining spill containment booms on-site during construction operations and staging of equipment or fueling supplies.

- The contractor shall develop and implement site-specific best management practices, a water pollution control plan, and an emergency spill control plan and shall be responsible for immediate containment and removal of any toxins released into the Sacramento River or project area.

Conservation Measure #5—Herbicide Application

The following BMPs have been incorporated into the project to avoid and minimize the potential for adverse direct and indirect effects from use of herbicide for project maintenance activities.

- A spill contingency plan shall be prepared in advance of treatment.

- All herbicide applications shall be directly supervised by a certified pesticide applicator. Mixing of herbicides and filling of tanks shall occur in staging areas at least 100 feet away from sensitive biological resources. All applications will conform to label directions.

- To control drift during spray applications, spray applications shall follow a site-specific prescription that accounts for terrain and identifies spray exclusion areas, buffer areas, formulation, equipment, droplet size, spray height, application pattern, flow rate, limiting factors of wind speed and direction, temperature, and relative humidity.

- An herbicide spill contingency plan shall be developed and implemented for the use of any herbicides.

- The cleaning and disposal of herbicide containers shall be completed in accordance with federal, state, and local laws, regulations, and guidance.

- All herbicides shall be mixed and used according to their labeled specifications, and the mixing or storage of herbicides shall take place more than 100 feet from the Sacramento River. Basal and foliar application of herbicides will also be prohibited within 100 feet of the Sacramento River. Removal of weeds within 100 feet of the Sacramento River will be restricted to mechanical methods, including disking, floating, mowing, and chopping prior to seed set.

- Prior to herbicide applications, all elderberry plants shall be flagged within 100 feet of areas to be treated.

- No herbicide application shall take place within 20 feet of existing elderberry shrubs.

Conservation Measure #6—Wildfire Potential

River Partners shall include the following measure in the construction bid documents to minimize project-related potential for wildfire ignition. Per the requirements of Public Resources Code Section 4442, River Partners or their contractor shall include a note on all construction plans that internal combustion engines shall be equipped with an operational spark arrester or the engine must be equipped for the prevention of fire.

2.6 Project Approvals

2.6.1 Funding Sources

In 2020, River Partners received funding from the California Wildlife Conservation Board's Habitat Conservation Fund to purchase the 30 acres of Rancho Caleta. Planning and Design activities were partially funded by Proposition 68 in the amount of $125,000.00. The Bureau of Reclamation's Central Valley Project Improvement Act (CVPIA) is funding the project implementation. CVPIA awarded $5,015,594 for salmonid habitat enhancement across three project sites, including Rancho Caleta. The funding will be allocated on an annual basis and has been distributed for year 1 tasks; completion of tasks planned for years 2-5 are subject to receipt of the additional annual allocations.

2.6.2 Anticipated Permits and Regulatory Approvals

Applicable federal and state authorizations that are anticipated to be needed prior to project implementation are identified in Table 2.

Table 2. Anticipated Permits or Approvals

Approving Agency	Required Permit/Approval	Required For
Federal Agencies		
U.S. Army Corps of Engineers	Nationwide permit, Section 404 of the Clean Water Act	Discharge of material into waters of the United States
	Section 408 authorization	Construction within a Corps regulated flood management system
State Agencies		
California Department of Fish and Wildlife	Streambed alteration agreement, Section 1602 of Fish and Game Code	Alteration of the bank of the Sacramento River and adjacent riparian habitat
	California Endangered Species Act compliance	Potential impacts on state-listed species
Central Valley Flood Protection Board	Encroachment Permit	Construction within a Designated Floodway
Regional Water Quality Control Board	Water quality certification, Section 401 of the Clean Water Act	Discharge of material into waters of the United States
	Coverage under the General Construction Activity Storm Water Permit, Section 402 of the Clean Water Act	Storm water discharges associated with construction activity for greater than 1 acre of land disturbance

2.7 Tentative Project Construction Schedule

Project construction will begin upon receipt of preconstruction authorizations, including completion of CEQA documentation and required regulatory permits. The project is anticipated to begin site grading and ground preparations in Fall 2025 with completion of salmonid habitat enhancements in Spring 2026. Following completion of enhancements, the site will be prepared for restoration, planted with riparian plants, and then monitored and maintained for three years. The project is scheduled to end on June 30, 2028, but could be extended for up to a year if needed to fulfill contractual obligations.

2.7.1 Environmental Setting, Impacts, and Mitigation Measures

This chapter incorporates the Environmental Checklist contained in Appendix G of the CEQA Guidelines, including the CEQA Mandatory Findings of Significance. Each resource section provides a brief description of the setting, a determination of impact potential, and a discussion of the impacts. Where appropriate, mitigation measures are provided that will be implemented to reduce potential impacts to a less-than-significant level. A discussion of cumulative impacts is included at the end of this chapter.

The following 20 environmental categories and mandatory findings of significance are addressed in this section:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- 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
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

Each of these issue areas was fully evaluated and one of the following four impact determinations was made:

- **No Impact:** No impact to the environment will occur as a result of implementing the project.
- **Less-than-Significant Impact:** Implementation of the project will not result in a substantial and adverse change to the environment and no mitigation is required.
- **Less-than-Significant with Mitigation Incorporated:** A "significant" impact that can be reduced to a less-than-significant level with the incorporation of project-specific mitigation measures.
- **Potentially Significant Impact:** Implementation of the project could result in an impact that has a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (CEQA Guidelines Section 15382).

2.8 Environmental Setting

2.8.1 Regional Setting

The project area is in Colusa County in the central Sacramento Valley. The topography of Colusa County is varied and includes low elevation areas of the Sacramento Valley and rugged, steep terrain in the inner North Coast Ranges. Colusa County contains two incorporated cities and a total population of approximately 21,419.

Much of the region occupies the historic floodplain of the Sacramento River and contains extensive infrastructure (e.g., canals, flood bypasses, levees) important to the regional flood management and water conveyance systems. The region contains a diverse assemblage of vegetation communities due to the large elevational gradient. Developed agricultural lands are dominant in the Sacramento Valley and transition to grassland, woodland, and forest habitats as elevations increase in the mountainous regions. The Sacramento Valley in this region also contains extensive areas of land managed by public and private land managers for habitat conservation, recreation, and hunting.

2.8.2 Local Setting

The project is approximately 2 miles south of the city of Colusa in eastern Colusa County, California. The project will occur on 30 acres of land owned by River Partners.

Climate

The climate is typical of the Sacramento Valley in northern California with moderate winters and hot, dry summers. Overall temperatures are projected to rise in California during the 21st century. While the entire state will experience temperature increases, the local impacts will vary greatly with many communities and ecosystems already experiencing the effects of rising temperatures. The 30-year

baseline (1961-1990) observed historical annual average maximum temperature (the average of all the hottest daily temperatures in a year) is 75.0˚F. This baseline temperature is expected to rise approximately 3.7˚F during the mid-century (2035-2064), and another 1.2˚F through the end-century (2070-2099) using the medium emissions model. The number of extreme heat days when daily maximum temperature is above a threshold temperature of 104.2˚F is expected to average 28 days over observed baseline (4 days) by end-century, again using the medium emissions model.

California does not expect the average annual precipitation to change significantly in the next 50-75 years; however, the duration of the wet season is expected to be shorter, and the precipitation is expected to be delivered in more intense storms. We are already seeing some of the impacts from a shift towards larger year-to-year fluctuations. Using the medium emissions model to predict annual precipitation for Rancho Caleta, indicates that the annual average for end-century will remain near 16.5 inches compared to the model baseline of the 30-year historical annual average (15.6 inches, observed).

For a full report on information generated by the Climate Change Snapshot Tool see Appendix 2, Climate Report.

Existing Land Uses

The existing land use in the project area was previously used to farm walnuts. Surrounding land uses consist of agriculture, flood control infrastructure (e.g., levees, Colusa Weir), public waterways (Sacramento River), and rural residential.

Topography

The topography and elevation of the project area will determine the frequency of flooding, the direction of incoming flood-flows, and how the water will drain as flows recede. Elevations range from 44 to 64 feet above mean sea level. The field was graded and leveled to be typically flat according to historical agricultural practices.

Hydrological Setting

The Sacramento River is the largest river in California, measured by volume and length. With a basin of over 27,000 square miles and an outflow of more than 7 trillion gallons per year (Domagalski and Brown 1994), it provides 80% of the annual fresh water of the Sacramento-San Joaquin Delta. It is the longest river in the state, measuring approximately 458 miles in length. The alteration of the river's natural processes to fulfill the demands of modern water use policy have been dramatic and include multiple dams and diversions, an extensive levee system, and an altered hydrograph. Winter and spring water from the upper drainage area of the Sacramento River has been stored behind Shasta Dam since September 1943 and released during the summer and fall. As a result, winter flows have lessened and summer flows have increased, resulting in a flattened hydrograph. Since the high waters of winter and spring are a driving factor behind riparian forest succession, this altered system has influenced the pattern and distribution of riparian habitat along the river.

The Rancho Caleta project area is located along a meandering stretch of the Sacramento River known as the Colusa-Verona Reach. The Colusa-Verona Reach is 64 river miles in length and is bracketed by the Colusa Bridge at the north and the town of Verona at the south. Downstream of Colusa the gradient of the river decreases, the channel becomes narrower and deeper, its capacity smaller, and its

bed material finer. The natural levees, discontinuous further north, are now continuous along both sides of the channel to its confluence with the Feather River. These levees are not pronounced but are broad surfaces that slope gradually away from the river. Two overflow weirs, Moulton and Colusa, were constructed in the early 1930s to redirect floodwaters to the Butte Sink. Both weirs are unregulated; the crest stage for Moulton Weir is 73.95 feet, while the crest stage for the Colusa Weir is 58.91 feet (Sacramento River Conservation Area Forum Handbook, 2003).

The floodplain at this site is currently disconnected from typical Sacramento River flows due to earthen berms intended to protect the farm from frequent inundation. However, the site includes deep depressions and natural topography, which could provide complex rearing habitat if reconnected with more frequent flows. The project will remove the farmer berm currently preventing inundation, thus allowing 7 additional acres of the site to flood at approximately 22,000 cfs. In this reach of the Sacramento River, flows are most directly affected by Colusa Weir upstream of the site and the channelization of the river into a narrow corridor between levees south of the City of Colusa.

Historical aerial photos demonstrate that, over the last 100 years, the adjacent river has experienced little channel migration due to man-made levees.

The Wetland Delineation is in progress to determine the hydrologic features within the project areas. We expect it will identify riparian wetlands, seasonal wetlands, and a wetland swale. All wetland features are tributary to the Sacramento River. Hydrology for these features is generally provided by sheet flow rain and inundation during high flows in the Sacramento River. Drainage in the project area is primarily from northeast to southwest.

Geology and Soils

The geology of the project area is characterized as Quaternary alluvium and sedimentary stream channel deposits (Jennings et al. 1977). These deposits are unconsolidated and semi-consolidated non-marine sediments that comprise most of the Sacramento River floodplain and date from the Pliocene to the Holocene (Jennings et al. 1977). Soils within the project area are part of the Sycamore-Shanghai-Nueva-Columbia complex, characterized as a frequently flooded, silty loam soil
that extends more than 80 inches below the surface before reaching bedrock. It is described in the *Soil Survey of Colusa County, California* (Natural Resources Conservation Service 2006) with map unit reference code 126 and is summarized below in Table 3.

Table 3. Soil Map Units in the Project Area

Map Unit Name Taxonomy	Map Unit Reference Code	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Moonbend silt loam, 0 to 2 percent slopes, frequently flooded	126	Moderately well drained	More than 80 inches	Yes

Vegetation Community Types

A Manual of California Vegetation (MCV) (Sawyer, Keeler-Wolf, and Evens 2009) has been adopted as the standard for vegetation classification and description by state and federal agencies. The MCV book and website contain detailed descriptions of vegetation alliances, which are vegetation types

identified by dominant and/or characteristic species. The alliance descriptions include membership rules, ecology notes about dominant species, fire characteristics, regional status and variation, and management considerations. The alliance concept provides a useful descriptive label of the dominant plant species but does not specify arrangements that must be addressed to translate the conceptual design to field implementation. Four habitat types occur in the project area: annual grassland, orchard agriculture, riverine, and valley foothill riparian (Figure 6)

Annual Grassland. The annual grassland (CWHR Class) habitats are open grasslands composed primarily of annual plant species. Many of these species also occur as understory plants in Valley Oak Woodland (VOW) and other habitats. The annual grassland is known to provide foraging habitat for many wildlife species, including the turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and prairie falcon (*Falco mexicanus*). It also provides breeding habitat for the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), western rattlesnake (*Crotalus oreganus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus califomicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), American badger (*Taxidea taxus*), and coyote (*Canis latrans*) (CDFW, 2023b).

Orchard Agriculture. In California, an orchard is an intentional plantation of trees or shrubs that is maintained for food production. Orchards are comprised of fruit- or nut-producing trees which are generally grown for commercial production. Depending on the crop type and pruning methods, these trees are small and short with an open understory. The understory in orchards often has herbaceous annuals and perennials during the winter months. In some orchards cover crops or row crops are present year-round and offer nutrient rich biproducts for the orchard. In some cases, the understory is left alone and herbaceous plants such as Bermuda grass, johnsongrass; or annual grasses such as soft chess, annual ryegrass, wildoats and others; or forbs such as wild mustard or fiddleneck, can be found in the area (CDFW 2023b). Within the project area, the orchard agriculture classification also encompasses the urban, non-native, ornamental hardwood classification which was differentiated into one distinct habitat type based on the associated vegetation communities: Hind’s walnut and related stands.

Riverine. Riverine (CWHR Class) provides resting and escape cover for many species of waterfowl, and foraging habitat for insectivorous and piscivorous bird species. Waterfowl and shorebirds also forage near the shore. Common mammals associated with riverine habitats include northern river otter (*Lontra canadensis*), American mink (*Mustela vison*), common muskrat (*Ondatra zibethicus*), and American beaver (*Castor canadensis*). The project area includes approximately 0.51 acres of riverine habitat. The Sacramento River is designated as essential fish habitat (EFH) for Chinook salmon.

Valley Foothill Riparian. Valley foothill riparian habitat occurs adjacent to the ordinary high-water mark (OHWM) of the Sacramento River and in the riparian wetlands in the project area. Valley Foothill Riparian (CWHR Class) is known to provide food, water, migration and dispersal corridors, cover, nesting, and thermal cover for many wildlife species (CDFW, 2023b). Within the project area,

the valley foothill riparian classification was differentiated into one distinct habitat type based on the associated vegetation communities: Fremont cottonwood forest and woodland.

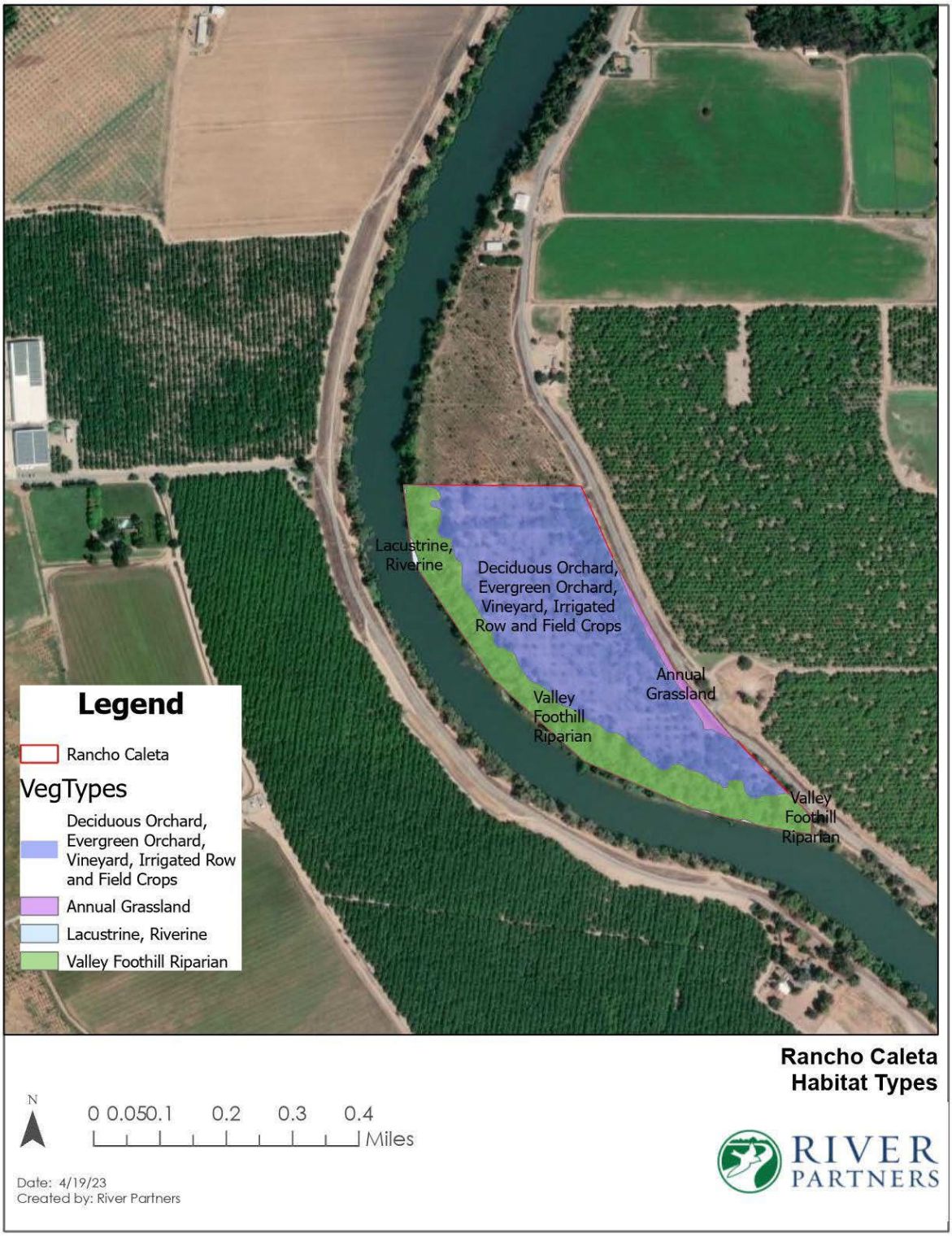


Figure 6. Habitat Types at Rancho Caleta

2.9 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklist on the following pages.

☐Aesthetics	☐Agriculture/Forestry Resources	☒Air Quality
☒Biological Resources	☒Cultural Resources	☐Energy
☐Geology/Soils	☒Greenhouse Gas Emissions	☒Hazards and Hazardous Materials
☒Hydrology/Water Quality	☐Land Use/Planning	☐Mineral Resources
☐Noise	☐Population	☐Public Services
☐Recreation	☐Transportation	☒Tribal Cultural Resources
☐Utilities/Service Systems	☒Wildfire	☐Mandatory Findings of Significance

2.9.1 Determination

This section to be completed by Lead Agency:

☐ I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "Potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Steve Geiger for — 9/26/2024

Greg Plucker, Community Development Director — Date
Colusa County, Development Services Department

2.10 Environmental Impacts and Mitigation Measures

I. ASTHETICS- Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion of Impacts

a) ***No Impact.*** The project will restore floodplain and fish habitat adjacent to the Sacramento River by planting native vegetation, manipulating the existing topography, and re-contouring a swale. This will not adversely affect a scenic vista.

b) ***No Impact.*** The project is not located within a state scenic highway.

c) ***Less-than-Significant Impact.*** Potential impacts on the visual character of the project area will primarily be associated with project implementation and will be temporary. Site preparation and planting activities will be visible from the area levees. Planting of the project area with plant communities native to the region is anticipated to result in a permanent, beneficial impact on the visual character of the project area and vicinity. The project will have a less-than- significant impact that degrades the visual character of the site and its surroundings.

d) ***No Impact.*** The project will not create any new source of lighting or glare.

Mitigation Measures

No project-specific mitigation is required.

II. AGRICULTURAL AND FOREST RESOURCES- 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. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	*Potentially Significant Impact*	*Less than Significant Mitigation Incorporated*	*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 by 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 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 non-agricultural use, or conversion of forest land to non-forest use?	☐	☐	☒	☐

Discussion of Impacts

a) ***Less-than-Significant Impact.*** The project area includes land mapped as Farmland of Local Importance, Grazing Land, and Unique Farmland (California Department of Conservation 2018), but none of the project area is currently used for agriculture. Although the project area will be planted with riparian vegetation and not used for agriculture, the existing soil integrity and surface permeability will not be impacted. The project area will retain its current character. The project will have less-than-significant impact on Prime Farmland, Unique Farmland, or

Farmland of Statewide Importance.

b) ***Less-than-Significant Impact.*** The project area is zoned as River Frontage (Colusa County 2019) This zoning designation allows for agricultural uses but is considered less than ideal for agricultural production due to the consistent inundation from the Sacramento River during seasonal high-water events. The project includes natural resources management activities consistent with the current zoning classification and requires approval of a Use Permit by the County. The subject property is not under a Williamson Act contract. The project will have a less-than-significant impact on agriculture.

c, d,) ***No Impact.*** The project area does not contain any forest land (as defined by 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)). The project will have no impact on forest land or timberland.

e) ***Less-than-Significant Impact.*** The project will have a less-than-significant impact on changes to the existing environment. The project will restore land previously used for agriculture to high quality wildlife habitat. The land was sold to River Partners for use as wildlife habitat. Monitoring prior to project activities captured existing wildlife use of the site. The project is expected to have a less than significant, measurable impact on wildlife that could potentially pose a negative impact to neighboring agriculture. River Partners has implemented similar projects in the Colusa Reach of the Sacramento River.

Mitigation Measures

No project-specific mitigation is required.

III. AIR QUALITY- Where available, the significant 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 Incorporated*	*Less than Significant Impact*	*No Impact*
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☒	☐	☐
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion of Impacts

a) ***Less-than-Significant Impact.*** The project will result in minimal and temporary air emissions for the criteria pollutants regulated by the Colusa County Air Pollution Control District (APCD), as discussed under item b) below. It will be consistent with and will not obstruct implementation of any Colusa County APCD management plans, or other applicable air quality plans and regulations for the region such as the Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Attainment Plan.

b) ***Less than Significant with Mitigation Incorporated.*** Colusa County is a non-attainment area for the state particulate matter 10 microns or less (PM_{10}) standards (California Air Resources Board 2018). Colusa County is in attainment for the state and federal standards for 8-hour ozone, particulate matter 2.5 microns or less ($PM_{2.5}$), and the federal PM_{10} standard (California Air Resources Board 2018). Colusa County is an unclassified area for the state and federal carbon monoxide standards.

Project activities (e.g., grading, planting) will result in short-term increases in emissions from the use of heavy equipment that generates dust, exhaust, and tire-wear emissions; soil disturbance; materials used in construction; and construction traffic. These activities will create short-term increases in fugitive dust (PM_{10} and $PM_{2.5}$) and will generate both reactive organic compounds and nitrogen oxides emissions from vehicle and equipment operation.

Project emissions for the implementation phase of the project (i.e., grading, planting) were estimated using the CalEEMod model which calculates emissions based on factors such as

project duration, construction equipment to be used, acres of grading, and average weather patterns for the area (California Air Pollution Control Officers Association 2016). Emissions from the maintenance and operational phases of the project will be less-than-significant due to the minor and infrequent nature of these emissions. Therefore, maintenance and operational activities were not included in the CalEEMod model.

Some air quality districts in the Northern Sacramento Valley Planning Area have developed thresholds of significance for key air pollutants to assess if a proposed project will have a significant impact on air quality. The Colusa County APCD has not yet established thresholds of significance for air pollutants but the Butte County Air Quality Management District—less than 10 miles northeast of the project area—has developed such thresholds (Butte County Air Quality Management District 2014). Table 4 shows the estimated maximum unmitigated daily and yearly emission from the implementation phase of the project in comparison to the Butte County Air Quality Management District air quality thresholds of significance for key air pollutants.

Table 4. Estimated Unmitigated Project Implementation Emissions.

Emissions	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Project Emissions (pounds per day)					
Maximum pounds per day	4.5	21.9	30.4	20.0	11.6
Significance threshold	137	137	N/A	80	80
Threshold exceeded?	No	No	N/A	No	No
Project Emissions (tons per year)					
Maximum tons per year	0.03	0.32	0.20	0.10	0.06
Significance threshold	4.5	4.5	N/A	N/A	N/A
Threshold exceeded?	No	No	N/A	N/A	N/A

As shown in Table 4, all emissions from project implementation are well below the Butte County Air Quality Management District thresholds of significance for key air pollutants and thus the project is considered to have a less-than-significant impact on air quality. *Conservation Measure #2 – Air Pollution and Dust Control,* discussed under Section 2.5.2 of this initial study will be implemented to maintain air quality and further reduce potential construction-related impacts to a less-than-significant level. Long-term emissions from periodic maintenance trips will be minimal based on the infrequent nature of these emissions.

c) ***Less than Significant with Mitigation Incorporated.*** As discussed under item b) above, the project construction will result in short-term air quality impacts. However, it will not result in substantial long-term or cumulatively considerable increases in air quality pollutant emissions for which Colusa County is currently in nonattainment (i.e., state PM_{10}). *Conservation Measure #2 – Air Pollution and Dust Control* will be implemented to maintain air quality and reduce any project construction-related impacts to a less-than-significant level.

d) ***Less than Significant with Mitigation Incorporated.*** Surrounding properties are mostly devoted to agricultural uses with few residences with sensitive receptors loacated within 0.5 mile of the project area. *Conservation Measure #2 – Air Pollution and Dust Control* will be implemented to address air quality and reduce any project construction- related impacts to a less-than-significant level.

e) ***No Impact.*** The project will not create any new or increased objectionable odors.

Mitigation Measures

Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure #2 – Air Pollution and Dust Control* (described in Section 2.5.2 of the initial study) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

IV. BIOLOGICAL RESOURCES- Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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 Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion of Impacts

a) ***Less than Significant with Mitigation Incorporated.*** River Partners prepared a Biological Assessment (BA) report to describe the existing site conditions and identify potentially occurring special-status plant and animal species, waters of the United States, and other sensitive biological resources in the project area.

A list of potentially occurring special-status wildlife species was compiled based on review of pertinent literature, a USFWS species list, California Natural Diversity Database (CNDDB) records, a query of the California Wildlife Habitats Relationship System, and field survey results. For each species, habitat requirements were assessed and compared to the habitats in the project area and immediate vicinity to determine if potential habitat occurs in the project area. Based on the BA, thirty-five special-status plant species and wildlife species were determined to potentially occur in the project area:

Species	Common Name	Listing Status	Likelihood of Occurrence
Birds			
Agelaius tricolor	Tricolored blackbird	CESA: Threatened CDFW: SSC	**Moderate:** Potential breeding habitat and nearby population.
Antgone canadensis tabida	Greater sandhill crane	CESA: Threatened CDFW: FP	**Low:** Poor foraging habitat. Flocks occurring nearby were last observed in 1987
Branta hutchinsii leucopareia	Aleutian cackling goose	ESA: Delisted CDFW: WL	**Low:** Poor foraging habitat. Flocks occurring nearby were last observed in 1987
Buteo swainsoni	Swainson's hawk	CESA: Threatened	**Moderate:** Suitable foraging and nesting habitat available nearby. Successful nesting documented nearby.
Coccyzus americanus occidenttalis	Western yellow-billed cuckoo	ESA: Threatened CESA: Endangered	**Low:** Lack of suitable habitat
Haliaeetus leucocephalus	Bald eagle	ESA: Delisted CESA: Endangered CDFW: FPS	**High:** Observed near project area, nearby nest sites known, suitable habitat.
Plegadis chihi	White-faced ibis	CDFW: WL	**Moderate:** Seen in area during highwater events.
Pandion haliaetus	Osprey	CDFW: WLS	**High:** Observed within project area, nearby nest sites known, suitable habitat
Melospiza melodia pop.1	Song sparrow "Modesto" population	CDFW: SSC	**Low:** Lack of suitable habitat.
Riparia riparia	Bank swallow	CESA: Threatened	**High:** Past observations within the project area, suitable habitat.
Mammals			
Dipodomys californicus eximius	Marysville California kangaroo rat	CDFW: SSC	**Low:** Last seen in the Sutter Buttes in the 1930s.
Taxidea taxus	American badger	CDFW: SSC	**Moderate:** Suitable habitat in project area and nearby.
Lasiurus blossevillii	Western red bat	CDFW: SSC	**High:** Riparian foraging and roosting habitat available, nearby occurrences.
Reptiles			
Emys marmorata	Western pond turtle	CDFW: SSC	**High:** Nearby populations and potential suitable habitat.
Thamnophis gigas	Giant gartersnake	ESA: Threatened CESA: Threatened	**Moderate:** Suitable habitat nearby.
Amphibians			
Rana boylii	Foothill yellow-legged frog	CESA: Endangered, CDFW: SSC	**Moderate:** Potential suitable habitat in project area.

Fish			
Acipenser medirostris	Green sturgeon - southern DPS	ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is current habitat for this species.
Oncorhynchus mykiss irideus	Steelhead - Central Valley DPS	ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Oncorhynchus tshawytscha	Winter-run Chinook salmon	CESA: Endangered ESA: Endangered	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Oncorhynchus tshawytscha	Spring-run Chinook salmon	CESA: Threatened ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Spirinchus thaleichthys	longfin smelt	CESA: Threatened	**Low:** No recent occurrences.
Invertebrates			
Branchinecta lynchi	Vernal pool fairy shrimp	ESA: Threatened	**Low:** No suitable habitat in project area.
Lepidurus packardi	Vernal pool tadpole shrimp	ESA: Endangered	**Low:** No suitable habitat in project area.
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	ESA: Threatened	**High:** Suitable habitat and nearby occurrences. Few host plant in project area.
Plants			
Amsinckia lunaris	Bent-flowered fiddleneck	CNPS: 1B.2	**Low:** No suitable habitat.
Astragalus tener var. ferrisiae	Ferris' milk-vetch	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Atriplex cordulata var. cordulata	Heartscale	CNPS: 1B.2	**Low**: Lack of suitable habitat.
Atriplex depressa	Brittlescale	CNPS: 1B.2	**Low:** Lack of suitable habitat
Atriplex persistens	Vernal pool smallscale	CNPS: 1B.2	**Low:** Lack of suitable habitat.
Chloropyron palmatum	Palmate-bracted bird's-beak	ESA: Endangered CESA: Endangered CNPS: 1B.1	**Low:** Lack of suitable habitat
Extriplex joaquinana	San Joaquin spearscale	CNPS: 1B.2	**Low:** Lack of suitable habitat
Hibiscus lasiocarpos var. occidentalis	Woolly rose-mallow	CNPS: 1B.2	**Low:** Lack of suitable habitat
Lasthenia glabrata ssp. Coulteri	Coulter's goldfields	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Layia septentrionalis	Colusa layia	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Puccinellia simplex	California alkali grass	CNPS: 1B.2	**Low:** Lack of suitable habitat.

For a full list on avoidance and minimization impacts on all special status species refer to the full BA report (Appendix 4, Biological Report). Additionally, Mitigation Measures #2-7 described in the 'Mitigations Section' specifically address the 'Discussion of Impacts' above in this initial study.

b) ***Less-than-Significant Impact.*** Riparian habitat (i.e., Valley Foothill Riparian) occurs in the project area and is considered a sensitive vegetation community. Project activities will primarily take place in annual grassland and seasonal wetland habitats that are currently dominated by non-native, herbaceous vegetation. An existing orchard will be removed during the project. River Partners will obtain all necessary permits (e.g., CDFW Lake and Streambed Alteration Agreement) and meet any permit conditions prior to any work in riparian habitats. Potential impacts on existing riparian vegetation will be temporary and less than significant. The project has been designed to increase the abundance and quality of riparian habitat in the project vicinity. The project plantings will reestablish sensitive riparian habitats to the project area and will benefit resident and migratory birds, fish, mammals, and invertebrates. The project will have a less-than-significant impact on riparian and other sensitive natural communities.

c) ***Less than Significant with Mitigation Incorporated.***. Through a process of fieldwork, data analysis, and consultations with regulatory agencies the project area was mapped for wetlands. The area surveyed was about 68 acres, of which 11.56 acres were determined to be Forested Riparian Wetland and 52.86 acres were determined to be Sacramento River. This determination is consistent with the wetland definition at 33 CFR 328.3(c)(16), the 1987 Corps of Engineers Wetlands Delineation Manual. For the full description of potential waters of the United States refer to Appendix 5, Wetland Delineation. Additionally, Mitigation Measures #2-7 described in the 'Mitigation Section' specifically address the 'Discussion of Impacts' above in this initial study.

d) ***Less-than-Significant Impact.*** The project has been designed to increase the movement of fish and wildlife through the project area. Although project construction could temporarily discourage wildlife from passing near active project activities, this impact will be temporary and less than significant. Alternative passage areas occur in the surrounding area and are currently actively used. In the long term, the project will benefit wildlife migration and/or travel corridors by re-establishing native riparian vegetation and the connection of the floodplain to the Sacramento River. The floodplain at Rancho Caleta currently provides fish habitat when it is inundated by high water events. However, as river levels recede, the floodplain becomes disconnected from the river and fish become stranded. Through grading, the project will establish a connection between the floodplain and the Sacramento River, allowing fish to return to the Sacramento River. The project will have a less-than-significant impact on wildlife nursery sites.

e) ***No Impact.*** The project will not conflict with any local biological resource policies or ordinances. The project will have no impact on any local policies or ordinances protecting biological resources.

f) ***No Impact.*** There are no adopted Habitat Conservation Plans, Natural Community

Conservation Plans, or other approved habitat conservation plans that cover the project area. The project will not conflict with any local, regional, or state conservation plans. The project will have no impact on any conservation plans.

Mitigation Measures

Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure #3 – Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure #5 – Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #3—Worker Environmental Training

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on sensitive biological resources:

- Worker Environmental Awareness Training shall be provided to all work crews. The training shall be administered by a qualified biologist and shall provide the workers with information on their responsibilities regarding the sensitive biological resources in the project area. The program shall specifically address the status of the species listed under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). The training shall cover the species' life history, how to identify the species and their habitat, the need to protect the species, the project conservation measures, and avoidance and minimization measures.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #4—Valley Elderberry Longhorn Beetle

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on valley elderberry longhorn beetle:

- To the extent practicable, project activities within 100 feet of elderberry shrubs shall be timed to occur outside of the valley elderberry longhorn beetle active season (active season is mid-March through mid-May; U.S. Fish and Wildlife Service 1984).

- Prior to construction activities, an environmentally sensitive area shall be designated around elderberry shrubs using exclusionary fencing, signs, and flagging under the supervision of a qualified biologist. Because some project activities may encroach within 100 feet of the

shrubs, exclusionary fencing shall be placed at 20 feet or more from the dripline of the shrubs. The signs shall be placed in clearly visible locations and shall be readable from 20 feet.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #5—Anadromous Fish

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on anadromous fishes: due to the nearly year-round presence of at least one freshwater life stage of the listed fish species, use of seasonal work windows to entirely avoid injury or mortality of the listed anadromous salmonids and green sturgeon is not practicable. Therefore, to protect the most vulnerable life stages that occur within the action area, salmon fry, all work along the riverbank shall be restricted to the period between August 1 and October 31. This seasonal work window is a compromise between minimizing direct effects by conducting work preceding and during the beginning of the winter-run emigration period and when river stage is lowest in the action area minimizing the extent of riverbank construction.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #6—Migratory Birds and Raptors

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting resident and migratory birds and raptors:

- To the extent practicable, project activities shall be scheduled to avoid the nesting season. The typical nesting seasons in northern California extend from February 15 through September 15.

- If the nesting season cannot be completely avoided, a qualified biologist shall conduct a minimum of one pre-construction survey for nesting resident and migratory birds and raptors within the project area and a buffer shall be established (250 feet for resident and migratory birds, 0.25 mile for Swainson's hawk, 500 feet for all other raptors). The survey shall be conducted no more than 14 days prior to the initiation of activities in any given area. If an active nest is found, a qualified biologist shall determine the extent of a construction-free buffer zone to be established around the nest. If it is anticipated that project activities will encroach on the buffer, a biological monitor shall be present to monitor the nesting birds for signs of disturbance.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #7—Waters of the United States

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on waters of the United States:

- To the extent practicable, the discharge of dredged or fill material into potential waters of the United States, including wetlands, shall be avoided.

- Prior to initiating work involving the disturbance or placement of dredge or fill materials into potential waters of the United States, River Partners shall obtain all regulatory permits and authorizations required by regulatory agencies including, but not necessarily limited to, the U.S Army Corps of Engineers, Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW).
- To the extent practicable, activities that increase the erosion potential in the project area shall be restricted to the relatively dry summer and early fall period to minimize the potential for rainfall events to transport sediment to surface water features. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures shall be in place and operational at the end of each construction day and maintained until permanent erosion control structures are in place.

- Any monitoring, maintenance, and reporting required by regulatory agencies (i.e., U. S Army Corps of Engineers, RWQCB, and CDFW) shall be implemented and completed. All measures contained in the permits or associated with agency approvals shall be implemented.

- Stockpiles that are to remain on site through the wet season shall be protected to prevent erosion (e.g., silt fence, straw bales).

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

V. CULTURAL RESOURCES- Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
e) Cause a substantial adverse change in the significance of a Tribal resource pursuant to AB 52?	☐	☐	☒	☐

Discussion of Impacts

a, b) ***Less than Significant with Mitigation Incorporated.*** The Archaeological Resources Study (Anthropological Studies Center Sonoma State University [ASC] 2023) did not identify any recorded archaeological resources in the project area. Background research indicates a moderate sensitivity for small prehistoric archaeological resources on the surface and a low sensitivity for historic-era archaeological resources on the surface within the project area. The area's overall sensitivity for buried prehistoric archaeological resources is high; however, within the project site it is considered moderate to low. No information has been received from the Native American Heritage Commission (NAHC) or the people on the list of contacts provided by the NAHC that suggests the presence of cultural resources in the project area. The pedestrian archaeological survey located no archaeological resources in the project area. Although recorded historic and cultural sites occur near the project, no recorded sites will be impacted by the project. Although no impacts on known cultural resources are anticipated, currently undetected cultural resources could be exposed during project excavation activities. *Mitigation Measure #8 – Cultural Resources* will be implemented in the case of an unanticipated discovery of cultural resources; and will reduce potential impacts to a less-than-significant level.

c) ***No Impact.*** The project will not impact any unique paleontological resources or unique geologic features.

d) ***Less than Significant Impact with Mitigation Incorporated.*** Although no impacts on known cultural resources are anticipated, currently undetected cultural resources or evidence of human remains could be exposed during project excavation activities. *Mitigation Measure #8 – Cultural Resources* and *Mitigation Measure #9 - Human Remains* will be implemented in the

case of an unanticipated discovery of cultural resources or human remains; and will reduce potential impacts to a less-than-significant level.

e) ***Less-than-Significant Impact.*** Assembly Bill 52 (AB 52), passed in 2014, amends sections of CEQA relating to Native Americans. AB 52 establishes a new category of cultural resources, named Tribal Cultural Resources (TCRs), and states that a project that may cause a substantial adverse change in the significance of a TCR may have a significant effect on the environment. Defined in Section 21074 (a, b, and c) of the Public Resources Code, TCRs are:

A.1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:

a. Included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR); or

b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(A.2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(B) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(C) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to newly chaptered Section 21080.3.2, or according to Section 21084.3. Section 21084.3 identifies mitigation measures that include avoidance and preservation of TCRs and treating TCRs with culturally appropriate dignity, considering the tribal cultural values and meaning of the resource.

The Cachil DeHe Band of Wintun Indians have visited the site, engaged with River Partners in discussions about the long-term management of Rancho Caleta, and plan to contribute to the restoration planning efforts, pending a subcontracting agreement.

Mitigation Measures

Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts

on cultural resources. Any construction-related impacts on cultural resources accidentally unearthed during the project requires that all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation, and data recovery) shall be implemented in coordination with Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains. If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and the Colusa County coroner notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

VI. ENERGY-Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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?	☐	☐	☐	☒

Discussion of Impacts

a, b) ***No Impact.*** The project will not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

VII. GEOLOGY AND SOILS — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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?	☐	☐	☐	☒
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 strata 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 Uniform Building Code, creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature	☐	☐	☐	☒

Discussion of Impacts

a-i, ii, iii, iv) ***No Impact.*** The project area is not located within an Alquist-Priolo Earthquake Fault Zone or Seismic Hazard Zone (California Department of Conservation 2018) and there are no active faults mapped in the project area (U.S. Geological Survey 2018). The Willows Fault Zone, a deeply buried and poorly understood group of faults, is mapped about 2 miles west of the project (California Geologic Society 2010), but overall, the project vicinity is considered to have a low risk for damaging earthquakes (California Department of Conservation 2003). The project will not expose people or structures to potential substantial adverse effects from seismic ground shaking or seismic-related ground failure. The topography in the project area is nearly level except for the slopes of the Corps levee and the Sacramento River bank. None of the slopes in the project area are at risk of landslides. The project will have no impact.

b) ***Less-than-Significant Impact.*** Project activities will result in soil disturbance on approximately 30 acres and will redistribute topsoil in portions of the project area to create positive drainage

away from the Corps levee and toward the Sacramento River. All graded material will stay on site. Overall soil loss will be minimal with implementation of standard construction practices for dust control and stormwater pollution prevention. Erosion and sediment control measures included in *Conservation Measure #3 – Increased Turbidity and Suspended Sediment* (described in Section 2.5.2 of the initial study) shall be implemented during construction to minimize the potential for erosion. River Partners shall revegetate the project site with native riparian vegetation shortly after site grading, thus reducing the potential for erosion during high water events that may inundate the floodplain. The project will result in less-than-significant impacts relating to soil erosion and loss of topsoil.

c, d) ***No Impact.*** As discussed under items a-ii, iii, and iv above, the project will not create a substantial risk as a result of geologic hazards in the project area. The project involves planting native riparian vegetation on land previously used for agriculture. Planting riparian vegetation will decrease the potential for erosion and slope instability in the project area. The project area does not have any fine-grained clay soils that are prone to high expansion. The project will have no impact.

e) ***No Impact.*** The project does not involve wastewater facilities and therefore no impact is anticipated.

f) ***No Impact.*** The project does not involve any unique paleontological resources or geological features and therefore no impact is anticipated.

Mitigation Measures

No project-specific mitigation is required.

VIII. GREENHOUSE GAS EMISSIONS — Would the Project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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 any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion of Impacts

a) ***Less than Significant with Mitigation Incorporated.*** Greenhouse gases (GHGs) are recognized by wide consensus among the scientific community to contribute to global warming/climate change and associated environmental impacts because of their ability to trap heat in the atmosphere and affect the climate. The major GHGs that are released from human activity include carbon dioxide, methane, and nitrous oxide (Governor's Office of Planning and Research 2008). The primary sources of GHGs are vehicles (including planes and trains), energy plants, and industrial and agricultural activities (such as dairies and hog farms). Emissions of GHGs from the project will be generated onsite from construction-related equipment. The project will not increase the generation of emissions after construction is complete. The long-term impact of the project may be reduction of GHG levels due to the capacity of the vegetation planted and maintained in the project to sequester atmospheric carbon dioxide into their biomass.

Emissions of GHGs resulting from off-road heavy-duty diesel engines during construction activities will be short-term and minor. Implementation of *Conservation Measure #2— Air Pollution and Dust Control* will reduce potential impacts to a less-than-significant level.

b) ***No Impact.*** The project will not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing the emission of GHGs. The project will have no impact.

Mitigation Measures

Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure #2 – Air Pollution and Dust Control* (described in Section 2.5.2 of the initial study) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

IX. HAZARDS AND HAZARDOUS MATERIALS — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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 compatibility 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 for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐

Discussion of Impacts

a, b) ***Less than Significant with Mitigation Incorporated.*** The use of diesel or gasoline powered construction equipment (trucks, excavators, etc.) and lubricants (such as oil, hydraulic fluids, and herbicides) could pose a hazard to the public and the environment; however, construction-related hazards will be temporary and use of these materials for project maintenance will be consistent with existing agricultural practices in the project vicinity. All equipment will be routinely maintained and inspected to avoid leaks. Best management practices described in *Conservation Measure #4 – Potential Spill of Hazardous Materials* and *Conservation Measure #5 – Herbicide Application* will be implemented to reduce potential impacts associated with accidental spills of pollutants in the project area to a less-than-significant level.

c) ***No Impact.*** The project is not within 0.25 mile of any existing or proposed schools. The project will have no impact.

d) ***No Impact.*** A search of the State Department of Toxic Substances Control (DTSC) EnviroStor database (California Department of Toxic Substances Control 2018) and the State Water Resources Control Board's GeoTracker database (State Water Resources Control Board 2018) found no record of any contaminated sites in the project area. The nearest recorded hazardous site to the project area is in Princeton, approximately 13 miles north of the project area. The project will have no impact.

e, f) ***No Impact.*** The Colusa County Airport is approximately 1 mile southwest of the project area. The project area is within zones C-2 and D of the Colusa County Airport Influence Area as defined in the Colusa County Airport Land Use Compatibility Plan (Colusa County Airport Land Use Commission 2014). The land use proposed for the project area doesn't include risk-sensitive land uses and therefore will have no impact on the airport.

g) ***No Impact.*** The project will take place on privately owned parcels and will not involve work in public roads or rights-of-way. Access to the project area during implementation will be through public and private roads, including levee access roads. The project is not anticipated to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan because vehicular access will be maintained through the project area during construction. The project will have no impact.

h) ***Less than Significant with Mitigation Incorporated.*** The project area is not in a high fire hazard zone (California Department of Forestry and Fire Protection 2007) but the use of construction equipment in and around vegetated areas increases the potential for wildfire ignition. *Conservation Measure #6 – Wildfire Potential* will be implemented to reduce the risk of wildfire associated with project construction to a less-than-significant level. Operation of the project will have no impact on wildfire potential.

Mitigation Measures

Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure #4 – Potential Spill of Hazardous Materials*, *Conservation Measure #5 – Herbicide Application*, and *Conservation Measure #6 – Wildfire Potential* (described in Section 2.5.2 of the initial study) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

X. HYDROLOGY AND WATER QUALITY — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion of Impacts

a) ***Less than Significant with Mitigation Incorporated.*** Construction, maintenance, and operation of the project will not violate any water quality standards or waste discharge requirements set forth by the RWQCB in its water quality control plan for the Central Valley region. Water pollution control measures were incorporated into the project design to avoid and/or minimize impacts on water quality. In addition, project activities will comply with the requirements set forth in a 401 Water Quality Certification, which is required by the RWQCB prior to project

implementation. These measures, in conjunction with *Conservation Measure #3 – Increased Turbidity and Suspended Sediment*, *Conservation Measure #4 – Potential Spill of Hazardous Materials,* and *Conservation Measure #5 – Herbicide Application* will reduce potential impacts to a less-than-significant level.

b) ***Less-than-Significant Impact.*** Maintenance and establishment of the riparian plantings will require irrigation for approximately 3 years. The design flow for drip irrigation shall be 0.6 gallons per hour per emitter (1.8 gallons/plant/hour). This equates to approximately 1 million gallons/month and approximately 8 million gallons/year and therefore anticipated to not have a significant impact on the local aquifer or groundwater table nor will irrigation interfere substantially with groundwater recharge. The project will have a less-than-significant impact.

c, d) ***Less-than-Significant Impact.*** The project will involve grading activities that will modify the contours of the project area. The overall drainage patterns will remain consistent with current conditions with surface runoff traveling west through the existing swale to the Sacramento River. The planting of native riparian vegetation will stabilize the soil and reduce the water velocity in the project area during high water events and thus reduce the potential for erosion or siltation on- and off-site. The impact will be less than significant.

e) ***Less than Significant with Mitigation Incorporated.*** The project involves planting native riparian vegetation which will likely increase the water holding capacity of the soil and reduce runoff from the project area. *Conservation Measure #3 – Increased Turbidity and Suspended Sediment*, *Conservation Measure #4 – Potential Spill of Hazardous Materials,* and *Conservation Measure #5 – Herbicide Application* were incorporated into the project design to reduce potential impacts of runoff on water quality to a less-than-significant level.

f) ***Less than Significant with Mitigation Incorporated.*** Construction and maintenance of the project will involve the use of hazardous materials (e.g., petroleum-based fuels and lubricants, herbicides). However, the project will not involve any activities that will substantially degrade water quality. The project includes measures to avoid adverse impacts on water quality. *Conservation Measure #3 – Increased Turbidity and Suspended Sediment*, *Conservation Measure #4 – Potential Spill of Hazardous Materials,* and *Conservation Measure #5 – Herbicide Application* will reduce potential impacts on water quality to a less-than-significant level.

g) ***No Impact.*** The project does not involve the construction of housing in a flood hazard area. The project will have no impact.

h, i) ***Less-than-Significant Impact.*** Flood flows will not be redirected off-site and will remain within the existing U.S Army Corps of Engineers levee system. Portions of the project will be graded to facilitate controlled drainage of water to the Sacramento River. The Hydraulic Impact Analyses prepared by MBK Engineers (Appendix 3, Hydraulic Impact Analysis) was used to develop proposed habitat enhancement activities and will result in a less than significant impact.

j) ***No Impact.*** The project area is not in an area with potential for a seiche, tsunami, or mudflow. The project will have no impact.

Mitigation Measures

Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure #3 – Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure #5 – Herbicide Application* (discussed in Section 2.5.2 of the initial study) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure #4 – Potential Spill of Hazardous Materials*, *Conservation Measure #5 – Herbicide Application*, and *Conservation Measure #6 – Wildfire Potential* (described in Section 2.5.2 of the initial study) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

XI. LAND USE AND PLANNING — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?	☐	☐	☐	☒

Discussion of Impacts

a) ***No Impact.*** The project will not divide an established community. The project will have no impact.

b, c) ***No Impact.*** The project is consistent with applicable land use plans, policies, and regulations.

The project will not conflict with any applicable conservation plans. The project will not involve a change in existing land use and will not conflict with any habitat conservation plans or natural communities' conservation plans. All necessary land use authorizations, if required, will be in place prior to the onset of construction. The project will have no impact on land use.

Mitigation Measures

No project-specific mitigation is required.

XII. MINERAL RESOURCES — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known mineral resources 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?	☐	☐	☐	☒

Discussion of Impacts

a) ***No Impact.*** The project area has not been mapped by the State Division of Mines and Geology (California Department of Conservation 2001). The project will have no impact on any known mineral resource zones.

b) ***No Impact.*** No locally important mineral resource recovery sites are located within the project area. The project will have no impact.

Mitigation Measures

No project-specific mitigation is required.

XIII. NOISE- Would the project result in:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant*	*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?	☐	☐	☐	☒
b) Generation of excess groundbourne vibration or groundbourne noise levels?	☐	☐	☐	☒
c) For a project located within the vicinity of a private airstrip or an airport land use compatibility 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?	☐	☐	☒	☐

Discussion of Impacts

a) ***No Impact.*** Construction and maintenance activities will temporarily increase noise levels in the vicinity of the project area. Actual noise levels will vary throughout the period of construction, depending on the type of construction equipment involved, activities being implemented, and distance between the source of the noise and receptors. The project will not result in noise levels in excess of the Colusa County General Plan (Colusa County 2012) or other applicable standards. The project will have no impact.

b) ***No Impact.*** Construction-related ground borne vibration resulting from the movement of heavy equipment within the construction area will be temporary and localized. There is no potential for persons outside of the immediate construction area to be impacted by excessive ground borne vibration.

c) ***Less-than-Significant Impact.*** Construction- and maintenance-related noise will be less than significant and temporary. Temporary project-related noise levels will be similar to those produced by agricultural land uses in the project vicinity. The project will have a less-than-significant impact on local ambient noise levels.

Mitigation Measures

No project-specific mitigation is required.

Less than

XIV. POPULATION AND HOUSING — Would the project:	*Potentially Significant Impact*	*Significant with Mitigation Incorporated*	*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 housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion of Impacts

a, b, c) ***No Impact.*** The project will have no direct or indirect impact on population growth or housing.

Mitigation Measures

No project-specific mitigation is required.

XV. PUBLIC SERVICES — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) 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 public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion of Impact

a) ***No Impact.*** The project will not create a need for additional public services and will have no impact on existing public services.

Mitigation Measures

No project-specific mitigation is required.

XVI. RECREATION — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Would the project 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?	☐	☐	☐	☒

Discussion of Impacts

a, b) ***No Impact.*** The project will not result in an increased demand for recreational facilities, or require the construction or expansion of recreational facilities. The project will have no impact.

Mitigation Measures

No project-specific mitigation is required.

XVII. TRANSPORTATION — Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion of Impacts

a, b) ***No Impact.*** Construction and maintenance traffic (e.g., equipment and materials transport, River Partners employee traffic) will temporarily increase traffic on local roads during the construction phase and temporarily increase the use of the main access roads into the project area. If a project generates fewer than 110 daily vehicular trips, it can be assumed there is an insignificant vehicle miles traveled (VMT) impact and the project is exempt from further analysis. This project will generate less than 110 daily vehicular trips and therefore, no further VMT analysis is needed. The volume and type of traffic associated with the project will not exceed the level of service for roads in the project vicinity and the project will be consistent with the goals and policies of the Colusa County General Plan (Colusa County 2012). The project will have no impact on applicable traffic management plans, ordinances, or standards.

c) ***No Impact.*** The project will not involve activities that could increase hazards due to a design feature or create incompatible uses in the project area. The project will not affect the operation of farm or levee maintenance equipment in the project vicinity. The project will have no impact.

d) ***No Impact.*** The project will not impede the ingress or egress to any properties in the project vicinity. Construction and maintenance vehicles may temporarily increase traffic on roads near the project area but will not impact emergency vehicle access through the region. The project will have no impact.

Mitigation Measures

No project-specific mitigation is required.

XVIIII. TRIBAL CULTURAL RESOURCES-Would the project cause:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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 geographic 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 a 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.	☐	☒	☐	☐

Discussion of Impacts

a, b) On November 16, 2016, the Anthropological Studies Center at Sonoma State University (ASC) requested a list of local Native American groups and individuals who might have an interest in or concerns with the project from the NAHC. Concurrently, ASC requested that the Native American Heritage Commission (NAHC) conduct a review of its Sacred Lands database for culturally significant properties. ASC used the contact list provided by NAHC to solicit input from Native American representatives and organizations. The Yocha Dehe Wintun Nation was the only organization contacted who expressed an interest in the project area due to their determination that the project area is within their aboriginal territories. River Partners contacted Yoche Dehe Wintun Nation to discuss the project and it was determined that a project site visit would not be necessary. Yoche Dehe Wintun Nation did not have any further concerns regarding the project.

NAHC responded that no records of sacred lands were found as a result of its database search. Tribal outreach and archival research did not result in the identification of any historical or cultural resources, historical or cultural properties, or locations of Native American traditional use in the project area. In addition to the early consultation with the Yocha Dehe Wintun Nation discussed above, Colusa County processed the AG 52 notification using the contact list maintained by the NAHC. In addition, this notification also included those tribes that had previously requested to be notified. No request for formal consultation was made. In summary, no tribal cultural resources, as defined in Public Resources Code Section 21074, have been identified that could be impacted by the proposed project. As such, the project is not anticipated to impact any known tribal cultural resources. However, if such resources are inadvertently

discovered during project construction, *Mitigation Measure #8 – Cultural Resources* and *Mitigation Measure #9 - Human Remains* will be implemented to reduce any potential impacts to a less-than-significant level.

Mitigation Measures

Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on cultural resources. If previously unidentified cultural resources are unearthed during the project, all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation and data recovery) shall be implemented in coordination with Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains:

- If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and that the Colusa County coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

XIX. UTILITIES AND SERVICE SYSTEMS- Would the project:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*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 waste water treatment provider, which serves or may 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 wase reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion of Impacts

a–e) ***No Impact.*** The project does not involve any actions that will require a water supply or generate wastewater. Maintenance and establishment of the riparian plantings will require irrigation for approximately 3 years. The design flow for drip irrigation shall be 0.6 gallons per hour per emitter (1.8 gallons/plant/hour) and therefore anticipated to not have a significant impact on the local aquifer or groundwater table nor will irrigation interfere substantially with groundwater recharge. The project will not generate solid waste that will require off-site disposal and therefore will have no impact.

Mitigation Measures

No project-specific mitigation is required.

XX. 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 Incorporated*	*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 uncontrolled spread of a wildfire?	☐	☒	☐	☐
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?	☐	☒	☐	☐

Discussion of Impacts

a–d) ***Less than Significant with Mitigation Incorporated.*** The project area is not in a high fire hazard zone (California Department of Forestry and Fire Protection 2007) but the use of construction equipment in and around vegetated areas including the Sacramento River increases the potential for wildfire ignition. *Conservation Measure #6– Wildfire Potential* will be implemented to reduce the risk of wildfire associated with project construction to a less-than-significant level.

Mitigation Measures

Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure #4 – Potential Spill of Hazardous Materials*, *Conservation Measure #5 – Herbicide Application*, and *Conservation Measure #6 – Wildfire Potential* (described in Section 2.5.2 of the initial study) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

XXI. MANDATORY FINDINGS OF SIGNIFICANCE — (To be filled out by Lead Agency if required)	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
a) Does the project have the potential to 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, 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) Does the project 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) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion of Impacts

a) ***Less-than-Significant with Mitigation Incorporated.*** Construction-related activities could result in impacts on special-status species, nesting migratory birds and raptors, and previously undiscovered cultural resources. Mitigation measures described in Section 3.2 (Biological Resources) will be used to avoid or minimize potential impacts on fish and wildlife. Although no cultural resources or tribal cultural resources are anticipated to be impacted by project construction, mitigation measures described in Section 3.2 (Cultural Resources and Tribal Cultural Resources) will be implemented in the event of an inadvertent discovery of cultural resources or human remains. Conservation measures were included in the project design (as described in Section 2.5.2) and will be implemented to further reduce potential project-related environmental effects. The project will have a less-than-significant impact with mitigation incorporated.

b) ***Less-than-Significant Impact.*** The project will not result in cumulatively considerable impacts with implementation of standard construction measures and mitigation measures described in this Initial Study. The project will not introduce any new land uses or result in the need for any reasonably foreseeable future projects within Colusa County. All impacts resulting from project implementation can be fully mitigated at the project level. As a result, cumulative impacts are considered less-than-significant.

c) ***Less-than-Significant Impact with Mitigation Incorporated.*** The project could result in temporary impacts on human beings. Potential adverse effects will be related to temporary increases in air pollutants, water quality impacts, and any accidental spills of hazardous materials. The implementation of the project conservation measures described in Section 2.5.2 and the mitigation measures described in Section 3.2 (Hazardous Materials) will reduce potential construction-related impacts on human beings to a less-than-significant level, and no long-term or operational-related impacts are anticipated.

3. Mitigation Monitoring and Reporting Program

This chapter comprises the Mitigation Monitoring and Reporting Program (MMRP) for the Sacramento River Floodplain Enhancement Project at Rancho Caleta. The purpose of this MMRP is to memorialize the mitigation responsibilities of River Partners in implementing the Rancho Caleta Project. The mitigation measures listed herein are required by law or regulation and will be adopted by Colusa County as part of the overall project approval. Mitigation is defined by the California Environmental Quality Act (CEQA) – Section 15370 as a measure that:

- avoids the impact altogether by not taking a certain action or parts of an action.
- minimizes impacts by limiting the degree or magnitude of the action and its implementation.
- rectifies the impact by repairing, rehabilitating, or restoring the impacted environment.
- reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project.
- compensates for the impacts by replacing or providing substitute resources or environments.

Mitigation measures provided in this MMRP have been identified in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures of the Initial Study (IS)/Mitigated Negative Declaration (MND) and are considered feasible and effective in mitigating project-related environmental impacts.

This MMRP includes discussions of the following: legal requirements, intent of the MMRP; development and approval process for the MMRP; the authorities and responsibilities associated with implementation of the MMRP; a method of resolution of noncompliance complaints; and a summary of monitoring requirements.

Legal Requirements: The legal basis for the development and implementation of the MMRP lies within CEQA (including the California Public Resources Code). Sections 21002 and 21002.1 of the California Public Resources Code state:

- Public agencies are not to approve projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such projects.

- Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.

Section 21081.6 of the California Public Resources Code further requires that:

- The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation.

- The monitoring program must be adopted when a public agency makes its findings under CEQA so that the program can be made a condition of project approval in order to mitigate significant effects on the environment. The program must be designed to ensure

compliance with mitigation measures during project implementation to mitigate or avoid significant environmental effects.

Intent of the Mitigation Monitoring and Reporting Program: The MMRP is intended to satisfy the requirements of CEQA as they relate to the project. It will be used by Colusa County and River Partners staff, participating agencies, project contractors, and mitigation monitoring personnel during implementation of the project. The primary objective of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will provide for monitoring of construction activities as needed, onsite identification and resolution of environmental problems, and proper reporting to lead agency staff.

Authorities and Responsibilities: Colusa County, functioning as the CEQA Lead Agency, will have the primary responsibility for ensuring implementation of the MMRP and maintenance of records demonstrating the status of all required mitigation measures.

River Partners, as project sponsor, is responsible for implementing the mitigation measures by incorporating them into the project specifications (contract documents) and enforcing the conditions of the contracts in the field during construction. Some pre- and post-construction activities may be implemented directly by River Partners.

Resolution of Noncompliance Complaints: Any person or agency may file a complaint that alleges noncompliance with the mitigation measure(s) adopted as part of the approval process for the project. The complaint shall be directed to Colusa County, Kent Johanns (220 12th Street, Colusa, CA 95932) in written form describing the purported violation in detail. Colusa County shall conduct an investigation and determine the validity of the complaint. If noncompliance with a mitigation measure is verified, Colusa County shall take the necessary action(s) to remedy the violation. Complaints shall be responded to in writing including descriptions of Colusa County's investigation findings and the corrective action(s) taken, if applicable.

Summary of Monitoring Requirements: Following this discussion are the mitigation measures and associated monitoring requirements for the project. The mitigation measures are organized by environmental issue area (i.e., Biological Resources, Cultural Resources, etc.) and consist of the following:

- Mitigation Measure(s): lists the mitigation measure(s) identified for each potentially significant impact discussed in the IS/MND. The same mitigation numbering system used in the IS/MND is carried forward in this MMRP.

- Timing: Indicates at what point in time or project phase the mitigation measure will need to be implemented.

- Implementation: Indicates which agency or entity is responsible for implementation of the mitigation measure.

- Monitoring/Reporting: Indicates which agency or entity is responsible for monitoring and reporting the results of each mitigation measure.

- Verification: Provides a space to be signed and dated by the individual responsible for verifying compliance with each mitigation measure.

3.1 Conservation Measures

River Partners is committed to implementing the following conservation measures during construction and maintenance of the Sacramento River Floodplain Habitat Enhancement Project at Rancho Caleta:

Conservation Measure #1—Ground Disturbance

Ground disturbance caused by grading shall occur according to engineering designs to direct floodwater to flow back into the main river channel. Grading activities shall be managed to control air pollution, dust, and sediment according to the Conservation Measures (#2 & #3) described in the initial study. Grading equipment shall be fitted to operate in the fields and operated without disturbing large native trees. A cultural resource monitor shall be on site during grading.

Conservation Measure #2—Air Pollution and Dust Control

Air pollution control will conform to all applicable air pollution control rules, regulations, ordinances, and statutes. Dust will be controlled during construction activities and subsequent operation of the project. Dust controls may include, but will not be limited to the following elements, as appropriate:

- Pursuant to California Vehicle Code (Section 23114) (California Legislative Information 2016), all trucks hauling soil and other loose material to and from the construction site shall be covered or shall maintain at least 6 inches of freeboard (i.e., minimum vertical distance between top of load and the trailer).

- Any soil that is removed during construction shall be stored onsite in piles not to exceed 4 feet in height. These spoil piles shall be clearly marked and flagged. Spoil piles that will not be immediately returned to use shall be revegetated with a non-persistent erosion control seed mixture.

- Watering shall be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.

- River Partners or its contractor shall designate a person to monitor dust control and to order increased watering as necessary to prevent transporting dust offsite. This person shall also respond to any citizen complaints.

- Idling time shall be minimized by shutting off all equipment after five minutes when not in use.

Conservation Measure #3—Increased Turbidity and Suspended Sediment

The project has been designed to avoid impacts on Corps-jurisdictional features (i.e., waters of the

United States), as well as waters of the State, to the extent practicable. The construction contractor will be required to prepare and implement a SWPPP, including measures to be implemented during construction, that will minimize disturbance to fine-grained sediments in the Sacramento River and prevent the discharge of sediment into the river from upland activities. River Partners will be responsible for ensuring implementation of these measures and compliance with Basin Plan objectives. The SWPPP will include at a minimum, but is not limited to, the following measures:

- Fill material (quarry stone, riprap, and backfill) will be composed of washed materials from a local source. Stone materials will be washed to remove any silt, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Gravel and stone materials will pass California cleanliness test #227 (or equivalent test) with a value of 85 or greater. Soil-filled quarry stone will only be placed above the average water surface elevation during construction.

- Suitable erosion and sediment control structures (e.g., silt fences, straw wattles, or catch basins) will be used to capture impeded erosion or sediment from upland and near-channel activities before it enters the Sacramento River. Sediment control structures will be placed near the edge of surface water features (i.e., along the bank of the river or along wetland features) to ensure sediment is sequestered before entering the water column. These structures will be installed prior to the start of any construction activities and will need to be cleaned or maintained on a regular basis to retain their effectiveness.

- Bare soil will be kept to the minimum required by designs. Erosion control devices or measures, such as those listed previously, will also be used in areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season and before new vegetation becomes established.

- All imported fill material stockpiles will be stored in upland areas with erosion controls properly installed and maintained. All applicable erosion control standards will be required during stockpiling of materials.

- To the maximum extent practicable, activities that increase the potential for erosion in the project area will be restricted to the relatively dry summer and early fall periods to minimize the potential for rainfall events to transport sediment into the river. If these activities must take place during the late fall, winter, or spring, temporary erosion and sediment control structures will be in place and operational at the end of each construction day and maintained until permanent erosion control is in place.

- If on-site erosion control devices are found to be nonfunctional, they will be repaired or replaced immediately or by the end of the workday. In cases where repairs cannot be made immediately for safety reasons, the repairs should be completed as soon as the work can be safely performed.

Conservation Measure #4—Potential Spill of Hazardous Materials

The construction contractor will be responsible for implementing the construction measures listed below to prevent hazardous materials from entering the water column during all construction activities.

- To the extent practicable, equipment and materials will be stored a minimum of 200 feet away from wetland and surface water features.

- Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of hazardous materials.
- All construction equipment will be inspected daily for leaks prior to the start of any activities. Steam cleaning will be used to remove any oil, grease, or hydraulic fluid prior to making contact with the waters of the Sacramento River. Untreated wash and rinse water must be adequately treated prior to discharge into the river if that is the desired disposal option.

- Hazardous materials, including fuels, oils, and solvents, will not be stored or transferred within 150 feet of the active Sacramento River channel. Areas for fuel storage, refueling, and servicing will also be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor will be responsible for maintaining spill containment booms on-site at all times during construction operations and staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

- The contractor will develop and implement site-specific best management practices, a water pollution control plan, and emergency spill control plan and will be responsible for immediate containment and removal of any toxins released into the Sacramento River or project area.

Conservation Measure #5—Herbicide Application

The following BMPs have been incorporated into the project to avoid and minimize the potential for adverse direct and indirect effects from use of herbicide for project maintenance activities.

- A spill contingency plan shall be prepared in advance of treatment.

- All herbicide applications shall be directly supervised by a certified pesticide applicator. Mixing of herbicides and filling of tanks will occur in staging areas at least 100 feet away from sensitive biological resources. All applications will conform to label directions.

- To control drift during spray applications, spray applications will follow a site-specific prescription that accounts for terrain and identifies spray exclusion areas, buffer areas, formulation, equipment, droplet size, spray height, application pattern, flow rate, limiting factors of wind speed and direction, temperature, and relative humidity.

- An herbicide spill contingency plan will be developed and implemented for the use of any herbicides.

- The cleaning and disposal of herbicide containers will be completed in accordance with federal, state, and local laws, regulations, and guidance.

- All herbicides will be mixed and used according to their labeled specifications, and the mixing or storage of herbicides will take place more than 100 feet from the Sacramento

River. Basal and foliar application of herbicides will also be prohibited within 100 feet of the Sacramento River. Removal of weeds within 100 feet of the Sacramento River will be restricted to mechanical methods, including disking, floating, mowing, and chopping prior to seed set.

- Prior to herbicide applications, all elderberry plants will be flagged within 100 feet of areas to be treated.

- No herbicide application will take place within 20 feet of existing elderberry shrubs.

Conservation Measure #6—Wildfire Potential

River Partners shall include the following measure in the construction bid documents to minimize project-related potential for wildfire ignition:

- Per the requirements of Public Resources Code Section 4442, River Partners or their contractor shall include a note on all construction plans that internal combustion engines shall be equipped with an operational spark arrester, or the engine must be equipped for the prevention of fire.

3.2 Mitigation Measures

Colusa County and River Partners are committed to implementing the following mitigation measures during construction of the Sacramento River Salmonid Stranding Reduction and Floodplain Habitat Restoration Project at Rancho Caleta:

3.2.1 Air Quality and Greenhouse Gas Emissions

Mitigation Measure #1—Air Quality

River Partners or their contractor shall implement the measures included in *Conservation Measure #2 – Air Pollution and Dust Control* (described in Section 2.5.2) to mitigate potential impacts on air quality in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

3.2.2 Biological Resources

Mitigation Measure #2—Herbicide Application and Water Quality Protection

River Partners or their contractor shall implement the measures included in *Conservation Measure #3 – Increased Turbidity and Suspended Sediment Prevention* and *Conservation Measure #4 – Herbicide Application* (discussed in Section 2.5.2) to mitigate potential impacts to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

Mitigation Measure #3—Worker Environmental Training

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on sensitive biological resources:

- Worker Environmental Awareness Training will be provided to all work crews. The training will be administered by a qualified biologist and will provide the workers with information on their responsibilities regarding the sensitive biological resources in the project area. The program will specifically address the status of the species listed under the ESA and the CESA, the species life history, how to identify the species and their habitat, the need to protect the species, and the project conservation and avoidance and minimization measures.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

Mitigation Measure #4—Valley Elderberry Longhorn Beetle

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on valley elderberry longhorn beetle:

- To the extent practicable, project activities within 100 feet of elderberry shrubs will be timed to occur outside of the valley elderberry longhorn beetle active season (active season is mid-March through mid-May; U.S. Fish and Wildlife Service 1984).

- Prior to construction activities, an environmentally sensitive area will be designated around elderberry shrubs using exclusionary fencing, signs, and flagging under the supervision of a qualified biologist. Because some project activities may encroach within 100 feet of the shrubs, exclusionary fencing will be placed at 20 feet or more from the dripline of the shrubs.

The signs will be placed in clearly visible locations and will be readable from 20 feet. Fencing and signs will be maintained throughout the entire duration of construction activities.

Timing:	Prior to construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

Mitigation Measure #5—Anadromous Fish

The following measure shall be implemented to avoid or minimize the potential for project-related impacts on anadromous fishes:

- Due to the nearly year-round presence of at least one freshwater life stage of the listed fish species, use of seasonal work windows to entirely avoid injury or mortality of the listed anadromous salmonids and green sturgeon is not practicable. Therefore, we will mitigate our work to protect the most vulnerable life stages that occur within the action area, salmon fry. To protect the salmon fry, all work along the river bank will be restricted to the period between August 1 and October 31. This seasonal work window is a compromise between minimizing direct effects by conducting work preceding and during the beginning of the winter-run emigration period and when river stage is lowest in the action area minimizing the extent of riverbank construction.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

Mitigation Measure #6—Migratory Birds and Raptors

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting resident and migratory birds and raptors. To the extent practicable, project activities will be scheduled to avoid the nesting season. The typical nesting season in northern California extends from February 15 through September 15. If the nesting season cannot be completely avoided, the following measures shall be implemented:

- A qualified biologist shall conduct a minimum of one pre-construction survey for nesting resident and migratory birds and raptors within the project area and a buffer (250 feet for resident and migratory birds, 0.25 mile for Swainson's hawk, 500 feet for all other raptors). The survey shall be conducted no more than 14 days prior to the initiation of activities in any given area. If an active nest is found, a qualified biologist shall determine the extent of a construction-free buffer zone to be established around the nest. If it is anticipated that project activities will encroach on the buffer, a biological monitor shall be present to monitor the nesting birds for signs of disturbance.

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

Mitigation Measure #7—Waters of the United States

The following measures shall be implemented to avoid or minimize the potential for adverse impacts on potential waters of the United States:

- To the extent practicable, the discharge of dredged or fill material into potential waters of the United States, including wetlands, shall be avoided.
- Prior to initiating work involving the disturbance or placement of dredge or fill materials into waters of the United States, River Partners shall obtain all regulatory permits and authorizations required by regulatory agencies including, but not necessarily limited to, the Corps, RWQCB, and CDFW.
- To the extent practicable, activities that increase the erosion potential in the project area shall be restricted to the relatively dry summer and early fall period to minimize the potential for rainfall events to transport sediment to surface water features. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures shall be in place and operational at the end of each construction day and maintained until permanent erosion control structures are in place.
- Any monitoring, maintenance, and reporting required by regulatory agencies (i.e., Corps, RWQCB, and CDFW) shall be implemented and completed. All measures contained in the permits or associated with agency approvals shall be implemented.
- Stockpiles that are to remain on site through the wet season shall be protected to prevent erosion (e.g., silt fence, straw bales).

Timing:	Prior to and during construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

3.2.3 Cultural Resources and Tribal Cultural Resources

Mitigation Measure #8—Cultural Resources

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on cultural resources:

- If previously unidentified cultural resources are unearthed during the project, all work that may disturb the cultural resources shall be halted until a qualified archaeologist can assess the significance of the find. If the discovered cultural resources are determined to be significant, appropriate avoidance measures or conservation measures (e.g., preserve in place, evaluation and data recovery) shall be implemented in coordination with the Colusa County and a qualified archaeologist prior to resuming activities that may disturb the cultural resources.

  Timing: During construction
  Implementation: River Partners or its contractor
  Monitoring/Reporting: River Partners to report compliance to Colusa County

  Verification (sign and date): _____

Mitigation Measure #9—Human Remains

River Partners shall include provisions in the construction bid documents to minimize project impacts on cultural resources. The following measure shall be implemented to avoid construction-related impacts on inadvertently discovered human remains:

- If human remains are found, the California Health and Safety Code requires that excavation be halted in the immediate area and that the Colusa County coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (California Health and Safety Code Section 7050.5[c]). As necessary, River Partners shall consult with a Most Likely Descendent (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine if additional burials could be present in the vicinity. Project activities in the vicinity of the find shall not resume until the appropriate protective measures have been implemented.

  Timing: During construction
  Implementation: River Partners or its contractor
  Monitoring/Reporting: River Partners to report compliance to Colusa County

  Verification (sign and date): _____

3.2.4 Hazardous Materials

Mitigation Measure #10—Hazardous Materials and Wildfire

River Partners or their contractor shall implement the measures included in *Conservation Measure #4 – Potential Spill of Hazardous Materials*, *Conservation Measure #5 – Herbicide Application*, and *Conservation Measure #6 – Wildfire Potential* (described in Section 2.5.2) to mitigate potential impacts associated with accidental spills of pollutants and wildfire ignition in the project area to a less-than-significant level.

Timing:	During construction
Implementation:	River Partners or its contractor
Monitoring/Reporting:	River Partners to report compliance to Colusa County

Verification (sign and date): _____

4. Report Preparation

4.1 Colusa County, Development Services Department – CEQA Lead Agency

Greg Plucker	Community Development Director
Steve Geiger	Principal Planner

4.2 River Partners – Environmental Review

Jennifer Rotnem	Project Manager
Holly Ferrara	Restoration Ecologist

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6. Appendices

Appendix 1. Grading Plan

Appendix 2. Climate Report

Appendix 3. Hydraulic Impact Analysis

Appendix 4. Biological Report

Appendix 5. Wetland Delineation

Appendix 1

Appendix 1

GENERAL NOTES

1. ALL GRADING, SITE PREPARATION, PLACING AND COMPACTION OF FILL TO BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND UNDER THE DIRECT SUPERVISION OF THE GEOTECHNICAL ENGINEER.

2. ALL CUT SLOPES SHALL BE ROUNDED TO MEET EXISTING GRADES AND BLEND WITH THE SURROUNDING TOPOGRAPHY.

3. ANY DEVIATION FROM APPROVED GRADING PLAN REQUIRES APPROVAL OF THE ENGINEER.

4. WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FINEST QUALITY ARE TO BE USED.

5. LINES AND GRADES: ALL DISTANCES AND MEASUREMENTS ARE GIVEN AND WILL BE MADE IN A HORIZONTAL PLANE. GRADES ARE GIVEN FROM THE TOP OF HUBS OR NAILS UNLESS OTHERWISE NOTED.

6. BASIS OF BEARING: ALL BEARINGS ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE II. DISTANCES ARE GROUND.

7. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, 800-642-2444, TWO WORKING DAYS (48 HOURS) PRIOR TO ANY EXCAVATION. THE U.S.A. AUTHORIZATION NUMBER WILL BE KEPT AT THE JOB SITE.

8. SHOULD IT APPEAR THAT THE WORK TO BE DONE, OR ANY MATTER RELATIVE THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT MBK ENGINEERS AT (916) 456-4400 FOR SUCH FURTHER EXPLANATION AS MAY BE NECESSARY.

9. THE CONTRACTOR SHALL COMPLY WITH ALL RULES, REGULATIONS AND PROCEDURES OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) FOR MUNICIPAL CONSTRUCTION AND INDUSTRIAL ACTIVITIES AS PROMULGATED BY THE CALIFORNIA STATE WATER RESOURCE CONTROL BOARD OR ANY OF ITS REGIONAL WATER QUALITY CONTROL BOARDS.

10. THE CIVIL ENGINEERING DESIGN SHOWN HEREON WAS PREPARED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING AND/OR SURVEYING PRACTICES APPLICABLE ON THE DATE OF THE SIGNATURE BY THE ENGINEER. IF CONSTRUCTION OF THE IMPROVEMENTS SHOWN HEREON DOES NOT COMMENCE WITHIN EIGHT MONTHS FROM THE DATE OF SIGNATURE BY THE ENGINEER, THE PLANS MUST BE REVIEWED FOR CURRENT COMPLIANCE WITH GENERALLY ACCEPTED ENGINEERING AND/OR SURVEYING PRACTICES AND REISSUED BY THE ENGINEER PRIOR TO ANY WORK BEING PERFORMED.

11. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

12. CONTRACTOR SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS. CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS FOR THE OWNER, AMBULANCE, POLICE AND FIRE DEPARTMENTS.

13. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING THAT MAY BE REQUIRED FOR THE PROJECT.

14. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY WORK PERFORMED BY THE CONTRACTOR BASED ON DRAWINGS WHICH HAVE NOT BEEN SIGNED AND SEALED BY THE ENGINEER, APPROVED BY THE OWNER, AND SPECIFICALLY NOTED AS "APPROVED FOR CONSTRUCTION" BY THE ENGINEER. ALL INFORMATION SHOWN ON PRELIMINARY DRAWINGS IS SUBJECT TO CORRECTION AND/OR CHANGE AND THE CONTRACTOR SHALL PERFORM ANY AND ALL IMPROVEMENTS AT THEIR OWN RISK.

15. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL EASEMENTS, RIGHTS-OF-ENTRY, ETC. NECESSARY TO CONSTRUCT ANY WORK SHOWN HEREON.

16. OBSTRUCTIONS INDICATED ARE FOR INFORMATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH WITH THE APPROPRIATE AGENCIES PRIOR TO CONSTRUCTION. NEITHER THE OWNER NOR THE ENGINEER ASSUMES RESPONSIBILITY THAT THE OBSTRUCTIONS INDICATED WILL BE THE OBSTRUCTIONS ENCOUNTERED. ALL EXISTING ELEVATIONS SHOWN ARE AS MEASURED IN THE FIELD UNLESS OTHERWISE NOTED.

17. IF ARCHEOLOGIC MATERIALS ARE UNCOVERED DURING GRADING, TRENCHING OR OTHER EXCAVATION, EARTHWORK WITHIN 100 FEET OF THESE MATERIALS SHALL BE STOPPED UNTIL A PROFESSIONAL ARCHEOLOGIST WHO IS CERTIFIED BY THE SOCIETY OF CALIFORNIA ARCHAEOLOGY (SCA), AND/OR THE SOCIETY OF PROFESSIONAL ARCHAEOLOGY (SOPA) HAS HAD AN OPPORTUNITY TO EVALUATE THE SIGNIFICANCE OF THE FIND AND SUGGEST APPROPRIATE MITIGATION MEASURES, IF THEY ARE DEEMED NECESSARY.

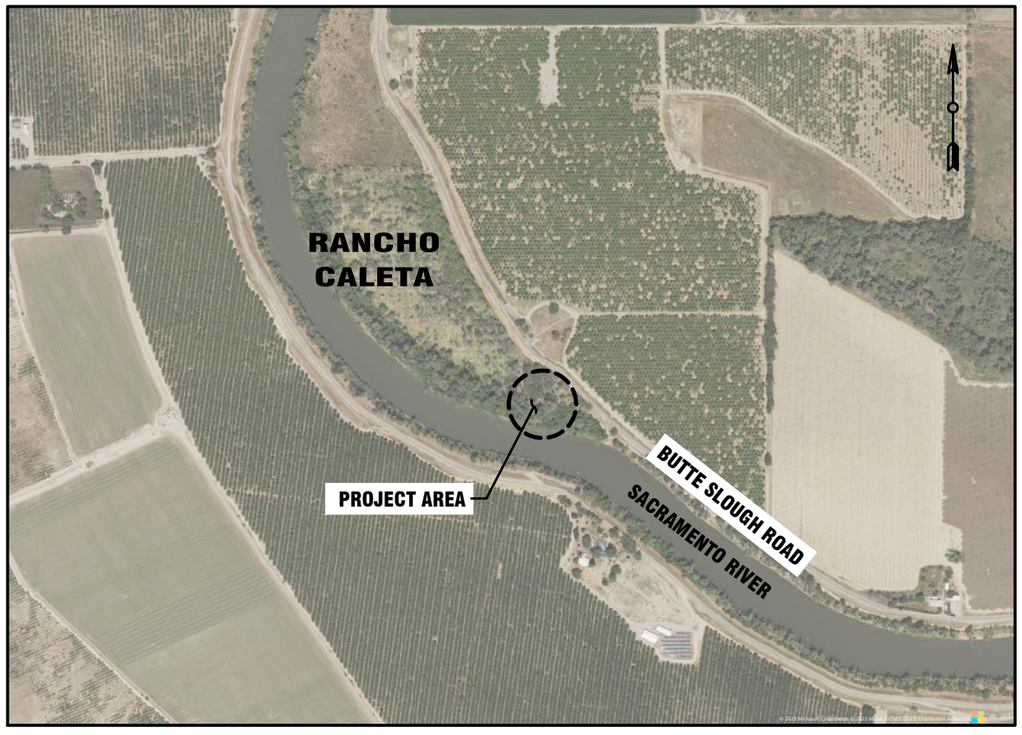
18. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT WRITTEN AUTHORIZATION FROM MBK ENGINEERS.

19. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGGERS, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY IN ACCORDANCE WITH COUNTY AND CAL-OSHA SPECIFICATIONS.

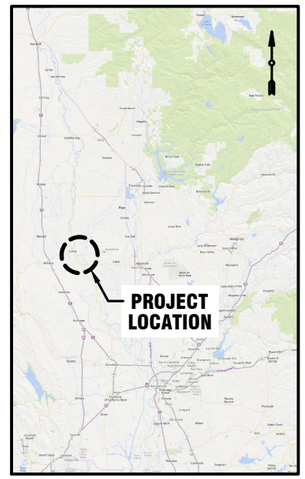
20. STRIPPINGS SHALL BE STOCKPILED IN THE DESIGNATED AREA(S) PER PLAN.

CALL BEFORE YOU DIG 800-227-2600

GRADING PLANS FOR:
RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA



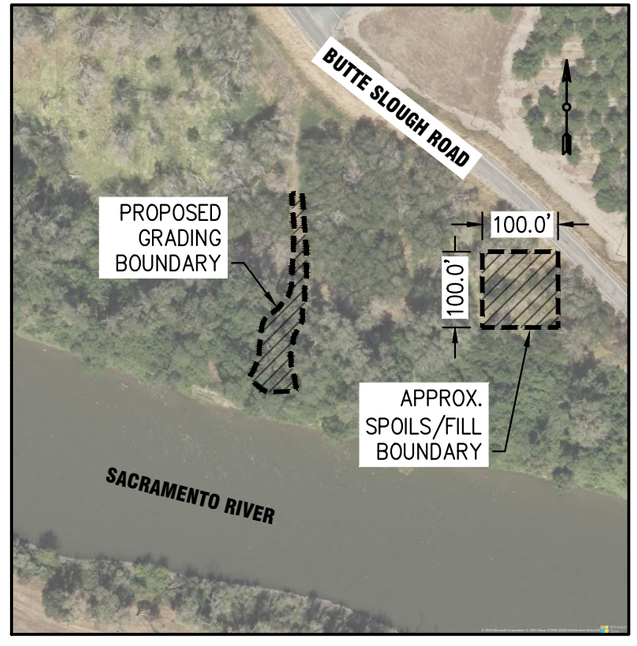
PROJECT AREA MAP
SCALE: 1" = 1000'



VICINITY MAP
SCALE: N.T.S.



REGIONAL MAP
SCALE: N.T.S.



SITE MAP
SCALE: 1" = 200'

LEGEND

10	EX. MAJOR CONTOUR
	EX. MINOR CONTOUR
10	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
x 100.0	PROPOSED SPOT ELEV.

ABBREVIATIONS

APPROX.	APPROXIMATELY
CL	CENTERLINE
ELEV.	ELEVATION
EX.	EXISTING
EG	EXISTING GRADE
FG	FINISH GRADE
PROP.	PROPOSED
TYP.	TYPICAL

EARTHWORK SUMMARY

TOTAL PROJECT CUT = 632 CY

BASIS OF BEARINGS

ALL BEARINGS ARE BASED UPON THE CALIFORNIA COORDINATE SYSTEM, ZONE 2.

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
C1	COVER SHEET AND NOTES
C2	PLAN AND PROFILE VIEWS
C3	TYPICAL CROSS SECTIONS

CIVIL ENGINEER

MBK ENGINEERS
455 UNIVERSITY AVENUE, SUITE 100
SACRAMENTO, CA 95825
(916) 456-4400 FAX: (916) 456-0253
ATTN: PATRICK HO

OWNER

RIVER PARTNERS
580 VALLOMBROSA AVENUE
CHICO, CA 95926
(530) 894-5401 FAX (530) 894-2970
ATTN: MICHAEL ROGNER

REGISTERED PROFESSIONAL ENGINEER
Patrick Ho
No. C076677
Exp. 12/31/24
Civil
STATE OF CALIFORNIA

MBK ENGINEERS
455 University Avenue, Suite 100
Sacramento, California 95825
Phone: (916) 456-4400 • Fax: (916) 456-0253

NO.	DATE	REVISION

PRELIMINARY PLAN SET

RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA

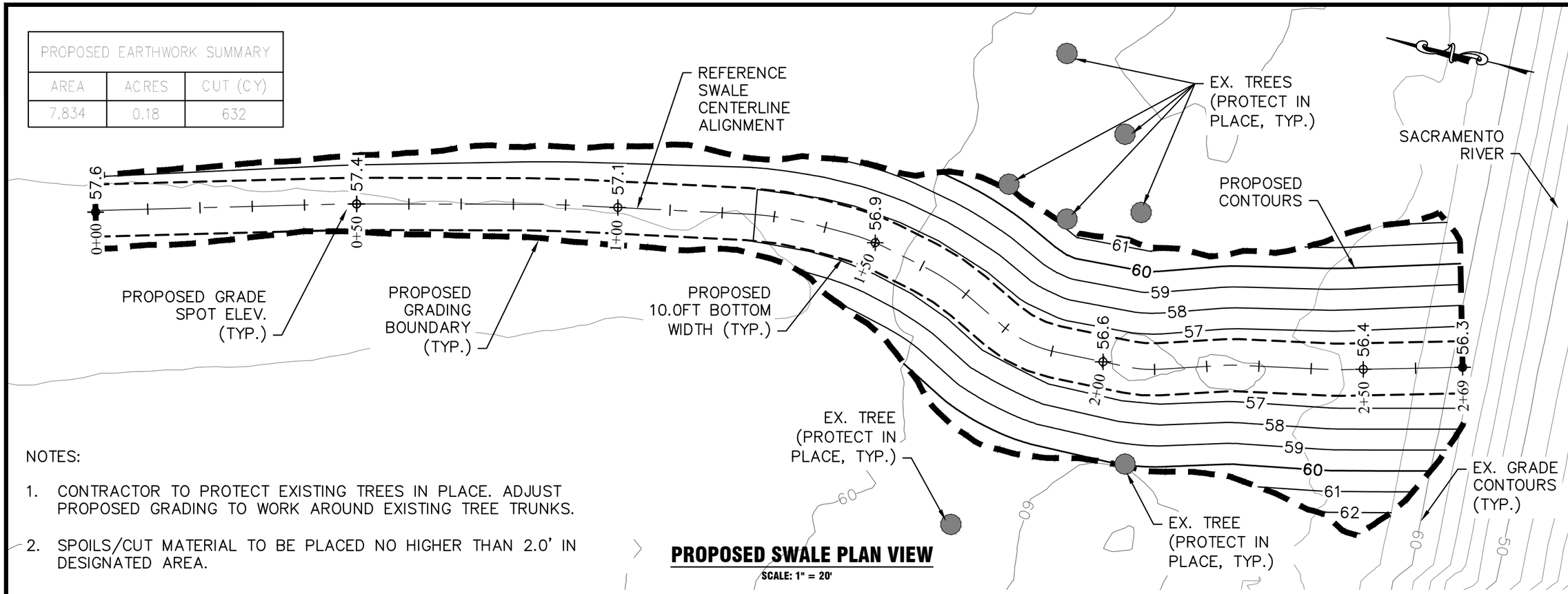
COVER SHEET AND NOTES

SCALE:	AS NOTED
JOB NO:	4738.001
BY:	JB
CHK:	PH
DATE:	11/01/2023

SHEET C1 OF 3 SHEETS

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PROPOSED EARTHWORK SUMMARY		
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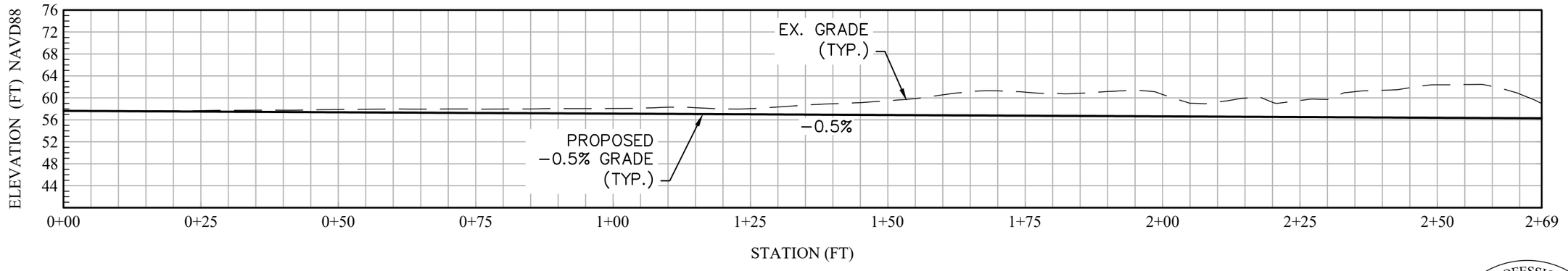


NOTES:

1. CONTRACTOR TO PROTECT EXISTING TREES IN PLACE. ADJUST PROPOSED GRADING TO WORK AROUND EXISTING TREE TRUNKS.
2. SPOILS/CUT MATERIAL TO BE PLACED NO HIGHER THAN 2.0' IN DESIGNATED AREA.

PROPOSED SWALE PLAN VIEW

SCALE: 1" = 20'



PROPOSED SWALE PROFILE VIEW

SCALE: 1" = 20'

CALL BEFORE YOU DIG 800-227-2600

REGISTERED PROFESSIONAL ENGINEER
Patrick Ho
No. C076677
Exp. 12/31/24
Civil
STATE OF CALIFORNIA

MBK ENGINEERS
455 University Avenue, Suite 100
Sacramento, California 95825
Phone: (916) 456-4400 • Fax: (916) 456-0253

NO.	DATE	REVISION

PRELIMINARY PLAN SET

RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA

PLAN AND PROFILE VIEWS

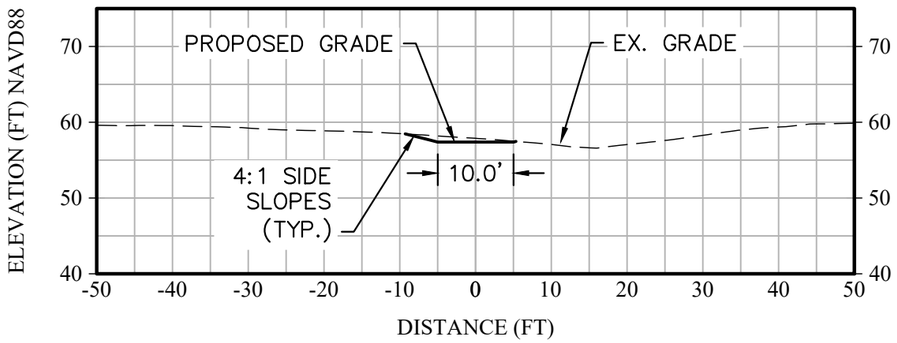
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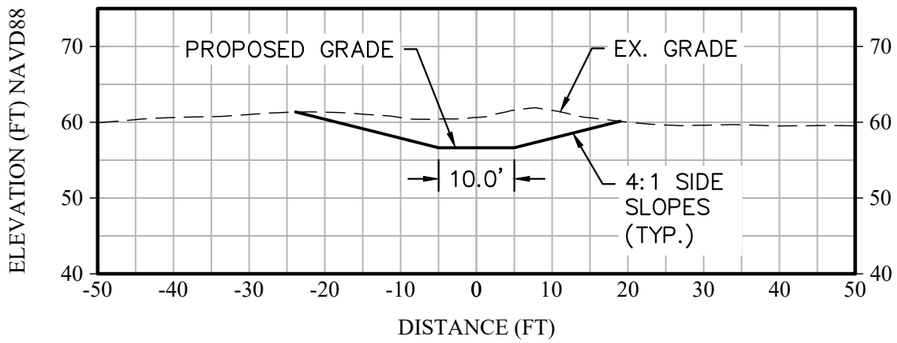
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SCALE: 1" = 20'

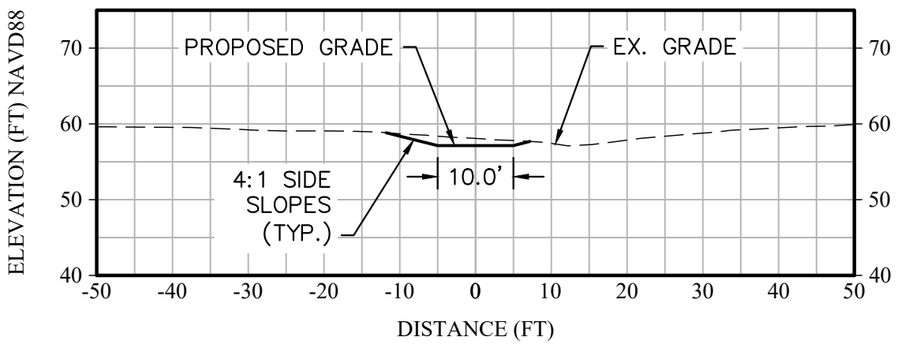
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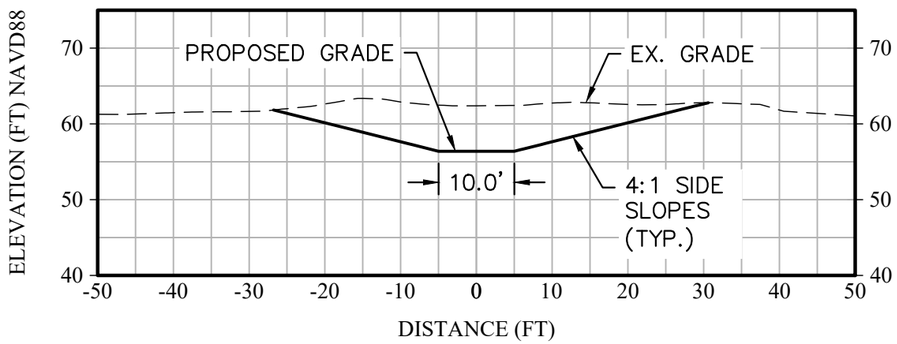
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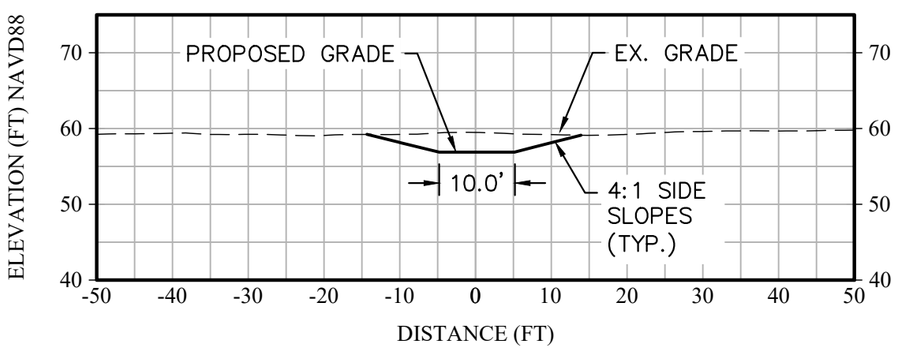
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SWALE CENTERLINE ALIGNMENT REFERENCE COORDINATES

STATION (FT)	NORTHING (FT)	EASTING (FT)	DESCRIPTION
0+00	2195864.89	6566691.10	SWALE CL
0+25	2195839.90	6566691.77	SWALE CL
0+50	2195814.91	6566692.38	SWALE CL
0+75	2195789.91	6566692.33	SWALE CL
1+00	2195764.92	6566691.69	SWALE CL
1+25	2195739.95	6566690.43	SWALE CL
1+50	2195715.66	6566684.94	SWALE CL
1+75	2195694.52	6566671.85	SWALE CL
2+00	2195672.05	6566662.14	SWALE CL
2+25	2195647.21	6566661.52	SWALE CL
2+50	2195622.23	6566660.71	SWALE CL
2+69	2195603.23	6566661.10	SWALE CL

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REGISTERED PROFESSIONAL ENGINEER
Patrick Ho
No. C076677
Exp. 12/31/24
Civil
STATE OF CALIFORNIA

MBK ENGINEERS
455 University Avenue, Suite 100
Sacramento, California 95825
Phone: (916) 456-4400 • Fax: (916) 456-0253

NO.	DATE	REVISION
		PRELIMINARY PLAN SET

RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA

TYPICAL CROSS SECTIONS

SCALE:	1" = 20'
JOB NO:	4738.001
BY:	JB
CHK:	PH
DATE:	11/01/2023

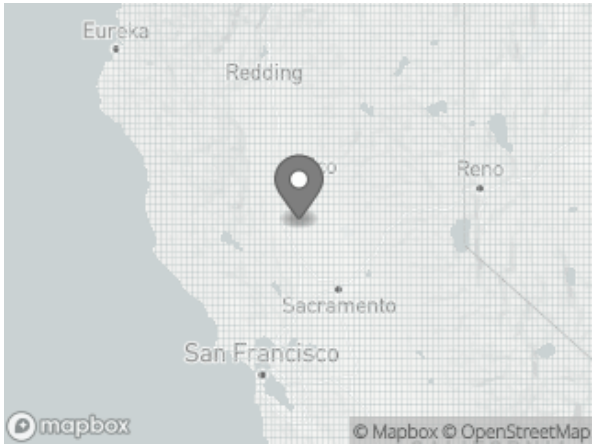
SHEET C3 OF 3 SHEETS

R:_Hydraulics\River Partners\Colusa Properties\Tasks\ACAD\Grading Plan SPII.dwg 11/2/2023 9:30 AM benton

Appendix 2

Appendix 2

Local Climate Change Snapshot



3133 Butte Slough Road

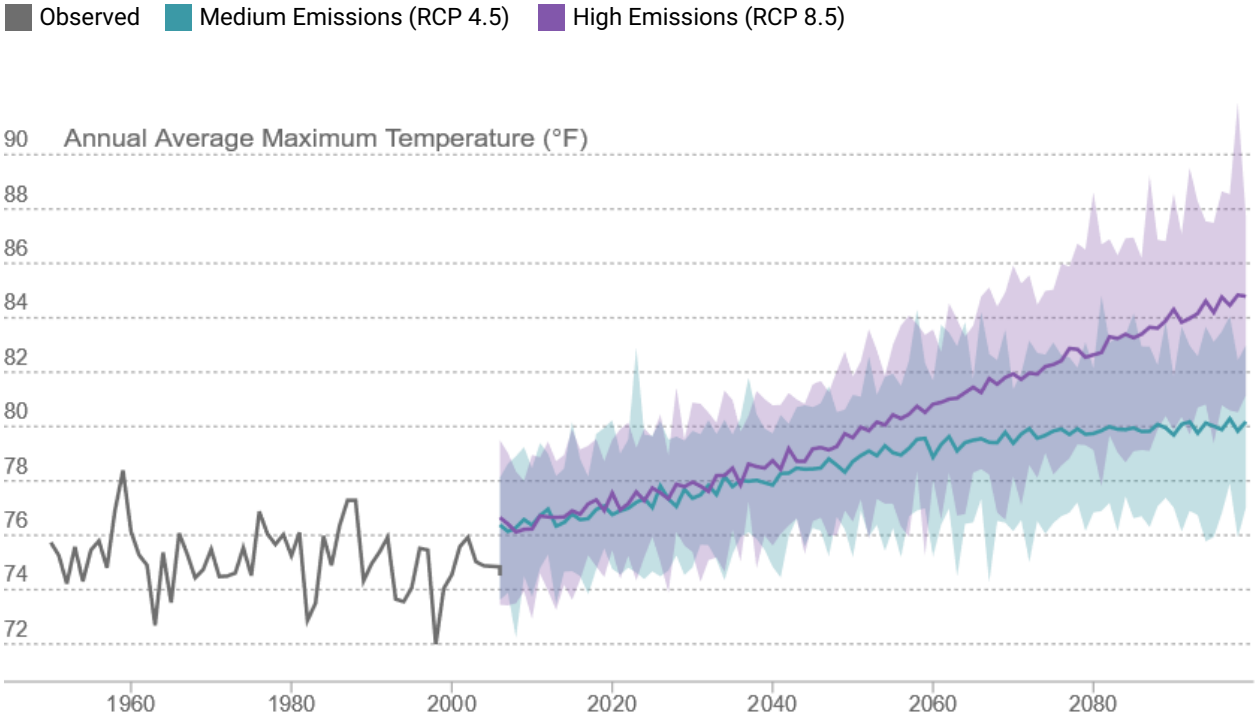
Colusa, California 95932, United States

Temperature

Overall temperatures are projected to rise in California during the 21st century. While the entire state will experience temperature increases, the local impacts will vary greatly with many communities and ecosystems already experiencing the effects of rising temperatures.

Annual Average Maximum Temperature

Average of all the hottest daily temperatures in a year.



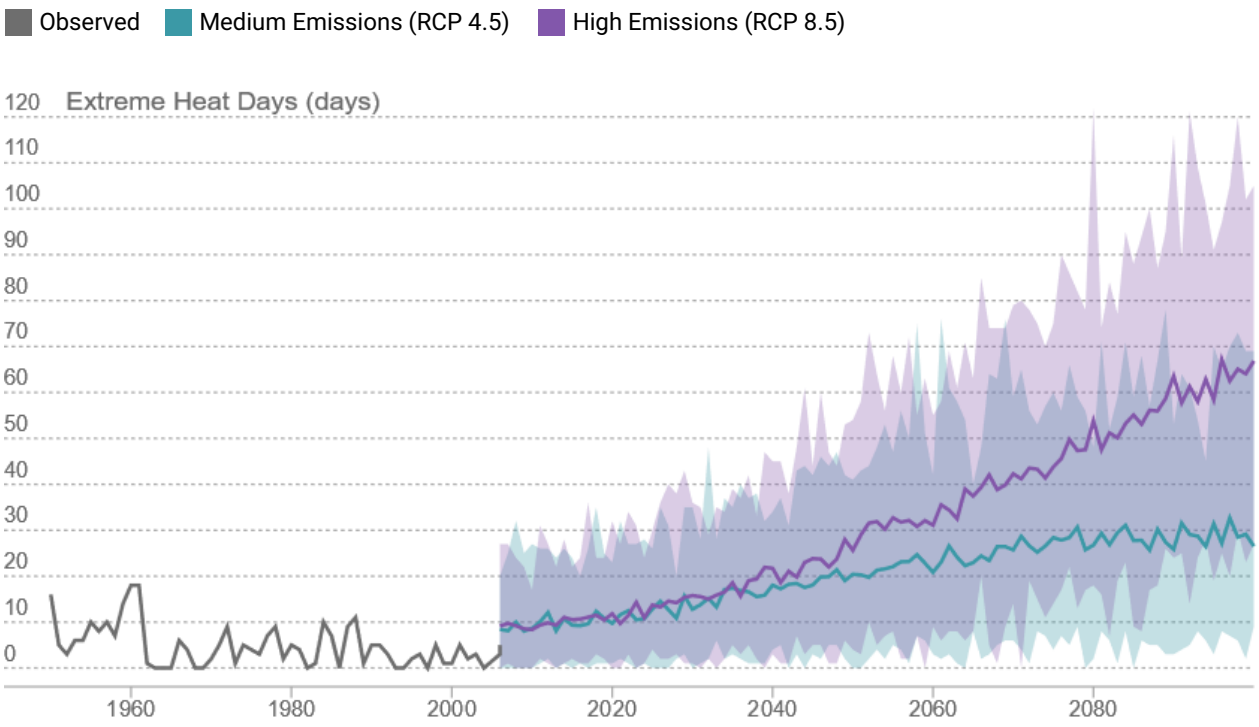
Observed (1961-1990) 30yr Average: 75.2 °F

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	75.0 °F	74.8 - 75.2 °F
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+3.7 °F	78.7 °F	77.2 - 80.2 °F
HIGH EMISSIONS (RCP 8.5)	+4.6 °F	79.6 °F	77.5 - 80.9 °F
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+4.9 °F	79.9 °F	77.6 - 81.6 °F
HIGH EMISSIONS (RCP 8.5)	+8.3 °F	83.3 °F	80.1 - 85.3 °F

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Extreme Heat Days

Number of days in a year when daily maximum temperature is above a threshold temperature



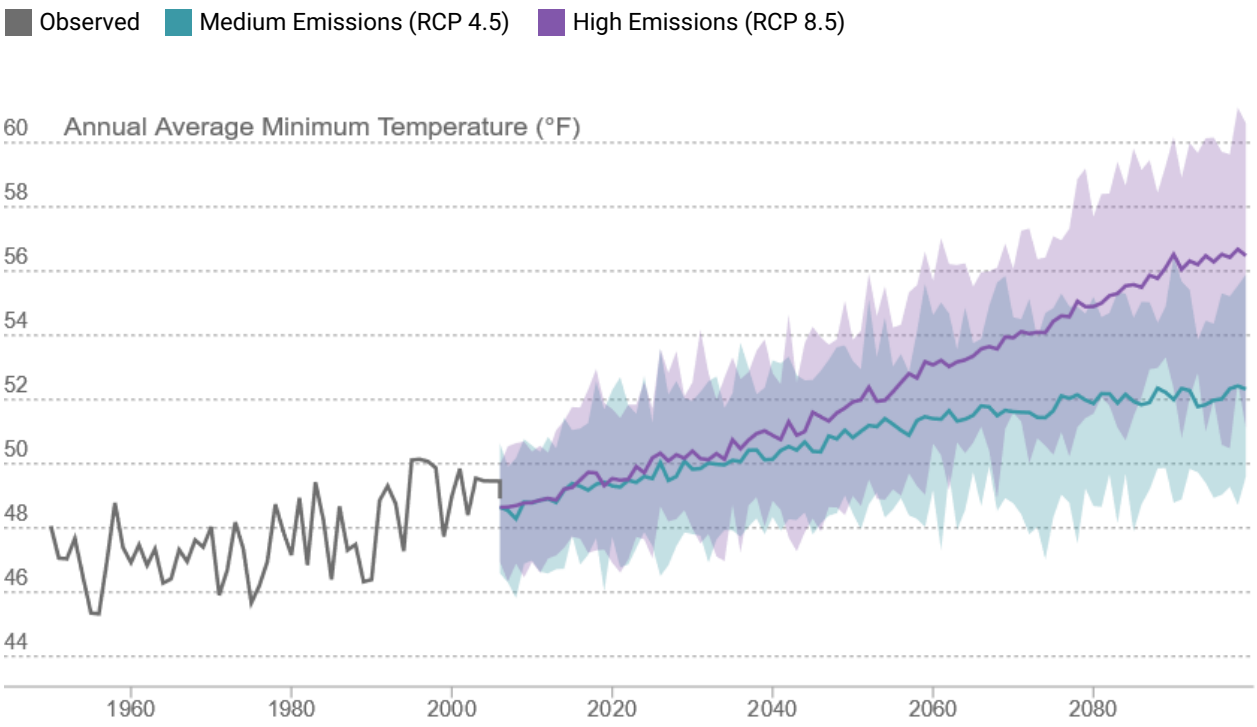
Observed (1961-1990) 30yr Average: 4 days

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	4 days	3 - 5 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+16 days	20 days	11 - 31 days
HIGH EMISSIONS (RCP 8.5)	+23 days	27 days	10 - 40 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+24 days	28 days	13 - 53 days
HIGH EMISSIONS (RCP 8.5)	+49 days	53 days	27 - 77 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.
4. Threshold temperature for a location is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at that location.

Annual Average Minimum Temperature

Average of all coldest daily temperatures in a year.



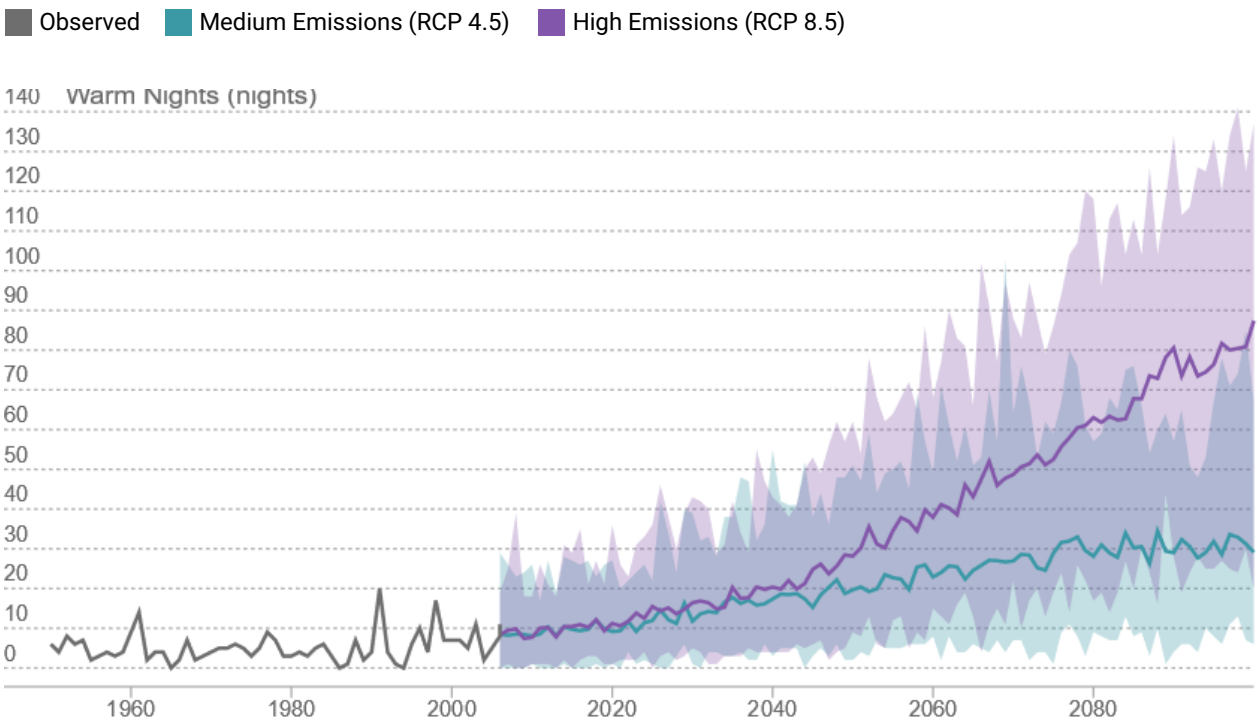
Observed (1961-1990) 30yr Average: 47.3 °F

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	47.6 °F	47.2 - 47.9 °F
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+3.2 °F	50.8 °F	49.3 - 52.1 °F
HIGH EMISSIONS (RCP 8.5)	+4.3 °F	51.9 °F	49.7 - 53.4 °F
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+4.4 °F	52.0 °F	49.7 - 54.2 °F
HIGH EMISSIONS (RCP 8.5)	+7.8 °F	55.4 °F	52.3 - 57.8 °F

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Warm Nights

Number of days in a year when daily minimum temperature is above a threshold temperature



Observed (1961-1990) 30yr Average: 4 nights

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	4 nights	2 - 8 nights
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+16 nights	20 nights	11 - 36 nights
HIGH EMISSIONS (RCP 8.5)	+25 nights	29 nights	13 - 47 nights
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+26 nights	30 nights	15 - 55 nights
HIGH EMISSIONS (RCP 8.5)	+63 nights	67 nights	34 - 99 nights

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.
4. Threshold temperature for a location is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at that location.

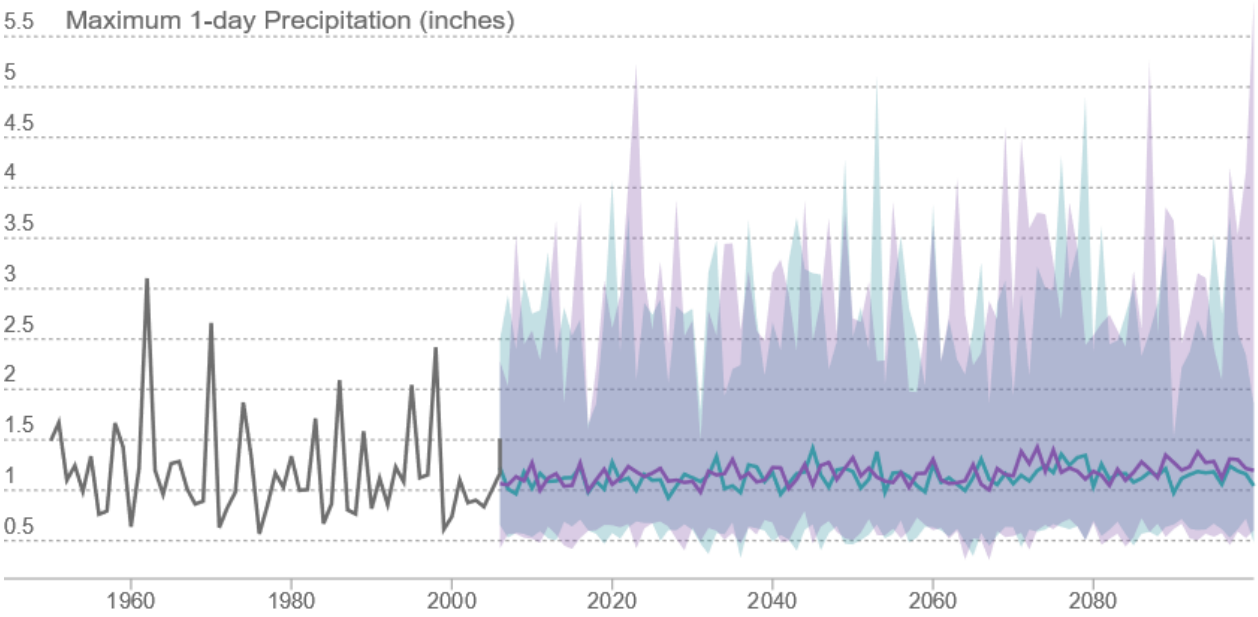
Precipitation

California's climate varies between wet and dry years. Research suggests that for much of the state, wet years will become wetter and the dry years will become drier. Dry years are also likely to be followed by dry years, increasing the risk of drought. While California does not see the average annual precipitation changing significantly in the next 50-75 years, precipitation will likely be delivered in more intense storms and within a shorter wet season. We are already seeing some of the impacts from a shift towards larger year to year fluctuations.

Maximum 1-day Precipitation

The maximum daily precipitation amount for each year. In other words, the greatest amount of daily rain or snow (over a 24 hour period) for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 1.212 inches

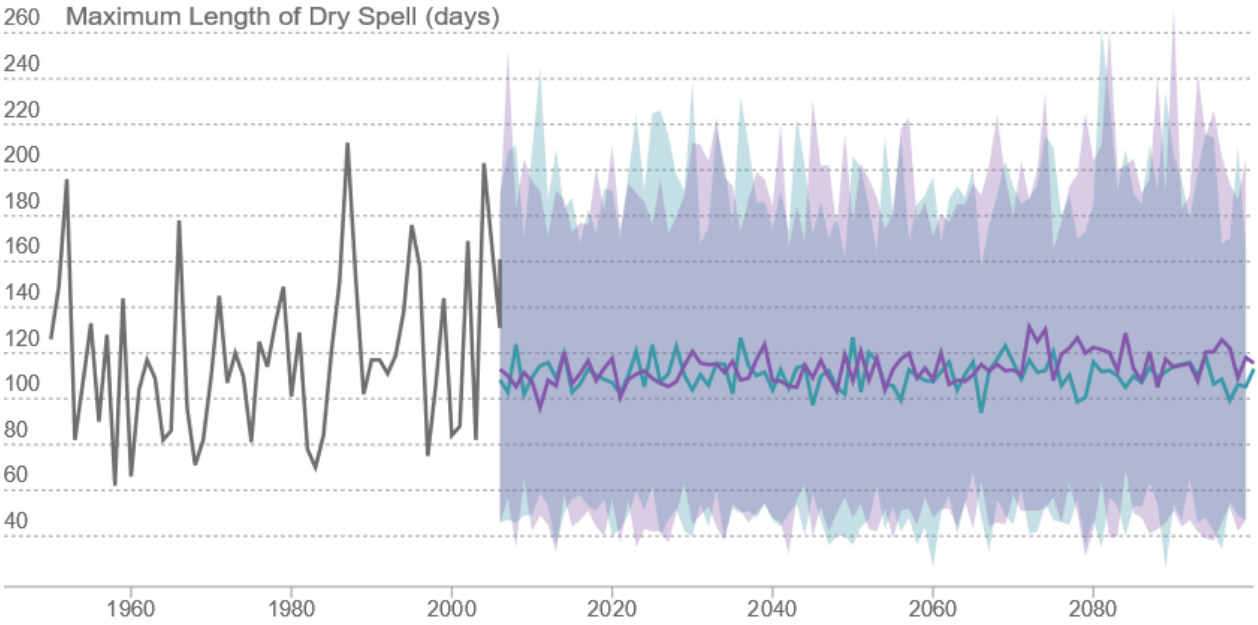
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	1.062 inches	0.965 - 1.198 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+0.066 inches	1.128 inches	0.996 - 1.403 inches
HIGH EMISSIONS (RCP 8.5)	+0.093 inches	1.155 inches	0.943 - 1.529 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+0.108 inches	1.170 inches	0.959 - 1.431 inches
HIGH EMISSIONS (RCP 8.5)	+0.169 inches	1.231 inches	0.947 - 1.662 inches

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Maximum Length of Dry Spell

The maximum length of dry spell for each year. In other words, the maximum number of consecutive days with precipitation < 1mm for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 115 days

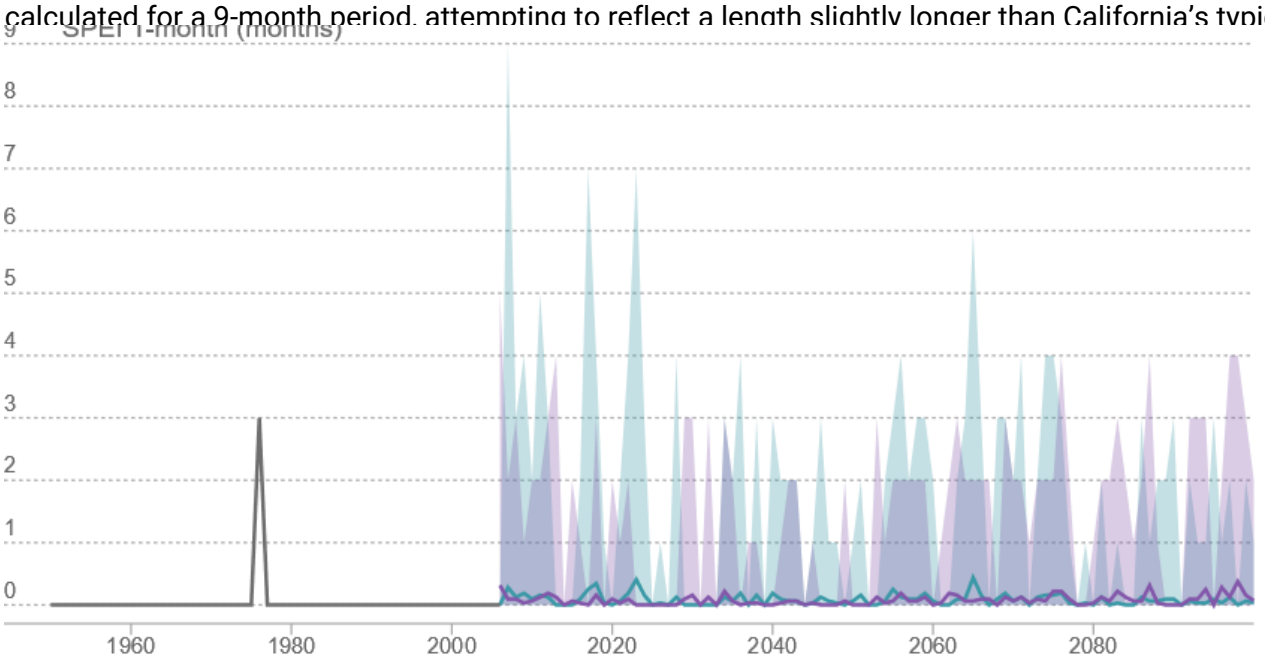
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	103 days	92 - 122 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+7 days	110 days	84 - 129 days
HIGH EMISSIONS (RCP 8.5)	+9 days	112 days	97 - 131 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+7 days	110 days	92 - 133 days
HIGH EMISSIONS (RCP 8.5)	+15 days	118 days	77 - 151 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

SPEI 1-month

Number of months in a year with a Standardised Precipitation-Evapotranspiration Index (SPEI) <= -1. SPEI is a multi-scalar drought index and can be used to detect, monitor and analyze droughts.

The standardized precipitation-evaporation index (SPEI) depicts the combined impacts of precipitation deficits and potential evapotranspiration on soil moisture. SPEI does not include impacts from effects like wind speed, relative humidity or solar radiation impacts (typically short-term forcing) – making it more reflective of long-term hydrological and ecological drought conditions. Here we present SPEI calculated for a 9-month period, attempting to reflect a length slightly longer than California's typical



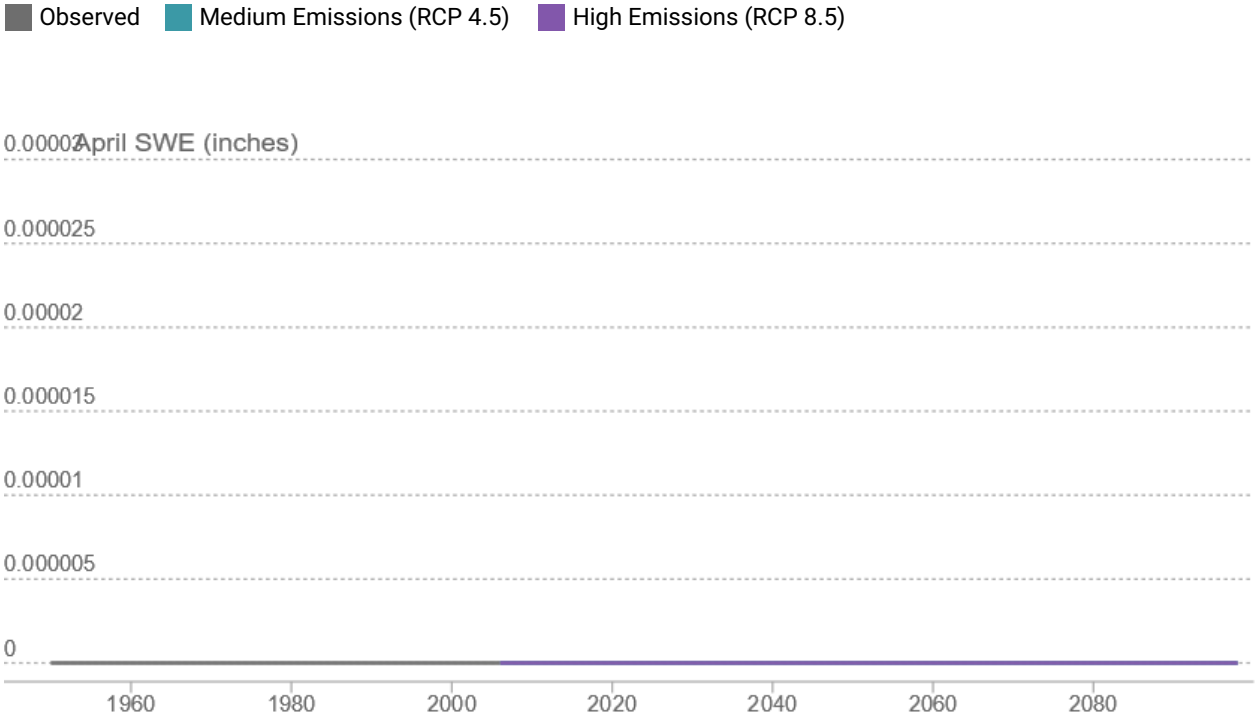
Observed (1961-1990) 30yr Average: 0.1 months

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	0.1 months	0.0 - 0.5 months
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	0.0 months	0.1 months	0.0 - 0.3 months
HIGH EMISSIONS (RCP 8.5)	-0.1 months	0.0 months	0.0 - 0.2 months
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	0.0 months	0.1 months	0.0 - 0.3 months
HIGH EMISSIONS (RCP 8.5)	+0.0 months	0.1 months	0.0 - 0.5 months

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

April SWE

Snow Water Equivalent (SWE), is a commonly used measurement used by hydrologists and water managers to gage the amount of liquid water contained within the snowpack.



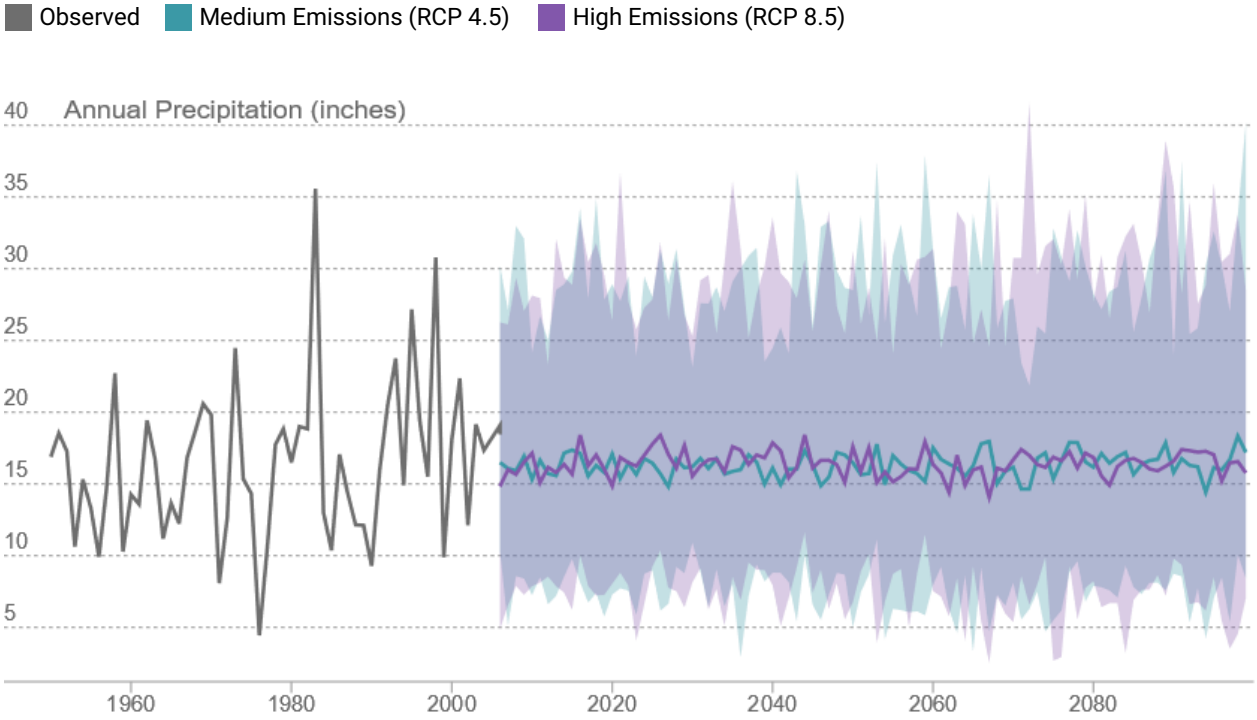
Observed (1961-1990) 30yr Average: 0.0 inches

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	0.0 inches	0.0 - 0.0 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	-	0.0 inches	0.0 - 0.0 inches
HIGH EMISSIONS (RCP 8.5)	-	0.0 inches	0.0 - 0.0 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	-	0.0 inches	0.0 - 0.0 inches
HIGH EMISSIONS (RCP 8.5)	-	0.0 inches	0.0 - 0.0 inches

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Annual Precipitation

Total precipitation projected for a year



Observed (1961-1990) 30yr Average: 15.6 inches

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	16.5 inches	15.3 - 17.8 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	-0.3 inches	16.2 inches	13.9 - 21.4 inches
HIGH EMISSIONS (RCP 8.5)	-0.1 inches	16.4 inches	13.5 - 21.7 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	0.0 inches	16.5 inches	14.1 - 20.6 inches
HIGH EMISSIONS (RCP 8.5)	+0.0 inches	16.5 inches	12.3 - 21.3 inches

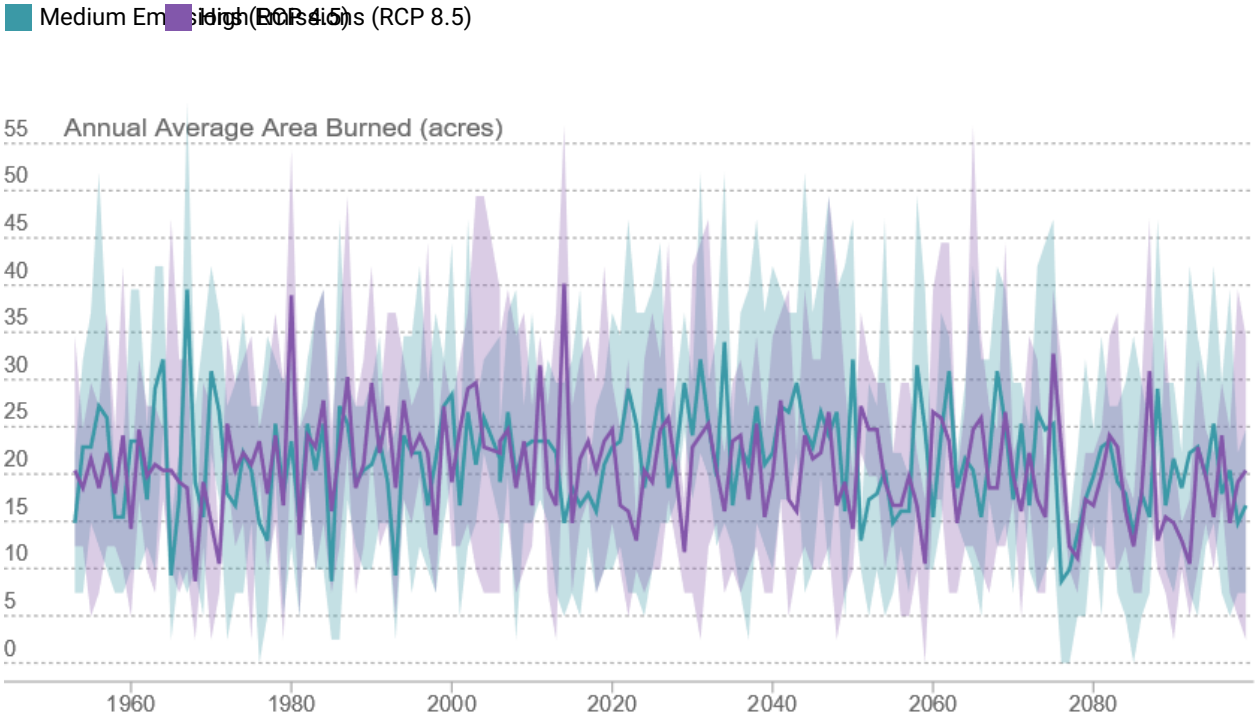
1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Wildfire

The frequency, severity and impacts of wildfire are sensitive to climate change as well as many other factors, including development patterns, temperature increases, wind patterns, precipitation change and pest infestations. Therefore, it is more difficult to project exactly where and how fires will burn. Instead, climate models estimate increased risk to wildfires. The Annual Average Area Burned can help inform at a high level if wildfire activity is likely to increase. However, this information is not complete - many regions across the state have no projections (such as regions outside combined fire state and federal protection responsibility areas), and more detailed analyses and projections are needed for local decision-making. These projections are most robust for the Sierra Nevada given model inputs. However, as we have seen in recent years, much of California can expect an increased risk of wildfire, with a wildfire season that starts earlier, runs longer, and features more extreme fire events. Fire danger is complex. It is impacted by human activity, vegetation, wind, temperature, relative humidity, atmospheric stability, etc. The Keetch-Byram Drought Index (KBDI) represents a simplified proxy for favorability of occurrence and spread of wildfire but is not itself a predictor of fire.

Annual Average Area Burned

Average of the area projected to be at risk to burning in a year.



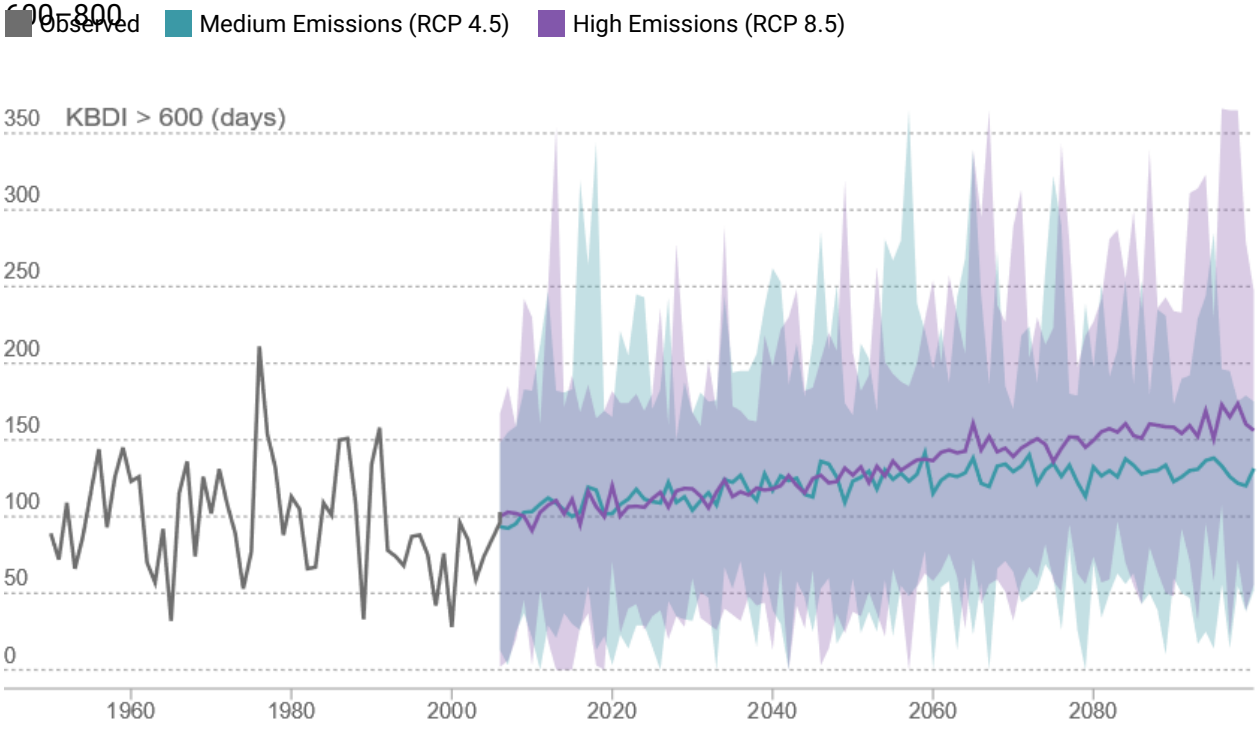
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MEDIUM EMISSIONS (RCP 4.5)	-	21.3 acres	18.0 - 24.3 acres
HIGH EMISSIONS (RCP 8.5)	-	21.1 acres	18.7 - 23.1 acres
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+1.0 acres	22.3 acres	18.6 - 27.4 acres
HIGH EMISSIONS (RCP 8.5)	-0.5 acres	20.6 acres	17.8 - 23.0 acres
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	-1.9 acres	19.4 acres	18.1 - 20.9 acres
HIGH EMISSIONS (RCP 8.5)	-2.7 acres	18.4 acres	17.0 - 19.9 acres

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

KBDI > 600

Number of days in a year where Keetch-Byram Drought Index (KBDI) > 600. KBDI provides an estimate for how dry the soil and vegetative detritus is.

KBDI is cumulative. The KBDI values increase on dry and warm days and decrease during rainy periods. In California we would expect KBDI to increase from the end of the wet season (spring) into the dry season (summer & fall). The list below explains what values of KBDI represent:
0–200
200–400
400–600
600–800



Observed (1961-1990) 30yr Average: 104 days

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	82 days	62 - 99 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+42 days	124 days	98 - 152 days
HIGH EMISSIONS (RCP 8.5)	+46 days	128 days	105 - 149 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+47 days	129 days	103 - 153 days
HIGH EMISSIONS (RCP 8.5)	+72 days	154 days	124 - 186 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented is for LOCA grid cell (~ 6km x 6km resolution) at -121.98641,39.1978.

Appendix 3

Appendix 3

Rancho Caleta Restoration Project

Colusa, Colusa County, California

Hydraulic Impact Analysis

Prepared for:

RIVER PARTNERS

Prepared by:

MBK ENGINEERS

December 8, 2023

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PE Certification

This report has been prepared by or under the supervision of the following Registered Engineer. The Registered Civil Engineer attests to the technical information contained herein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.



Patrick Ho, P.E., MBK Engineers

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1. Purpose

River Partners proposes to enhance and restore agricultural lands along the Sacramento River in Colusa County back into native riparian habitat. The Rancho Caleta Restoration Project (Project) is located along the left (east) banks of the Sacramento River just below the Colusa Bridge (**Figure 1**). The Project area is owned in-fee title by River Partners. The goal of the Project is to enhance and restore a degraded orchard farm and is achieved through replanting of native riparian forests and associated habitats. MBK Engineers (MBK) has prepared a hydraulic impact analysis of the proposed Project to support the California Central Valley Flood Protection Board's (CVFPB) Encroachment Permit Application. The purpose of this report is to document the analysis.

2. Project Description

The Project consists of enhancing and restoring approximately 48 acres of an existing orchard farm into native riparian habitat. The Project area is located on the Sacramento River, approximately 2 miles downstream of the Colusa (Highway 20) Bridge, and is situated on an elevated bank that has historically been used for orchard farming. The plan is to restore the current agricultural fields to native riparian floodplain habitat, and with providing increased connectivity between the floodplain and river. Two restoration plant communities are planned: Mixed Riparian Forests, and Riparian Willow Scrubs. In addition, minor clearing of debris along the southern edge of the property, and a small channel will be graded in order to promote positive drainage into the Sacramento River and remove potential fish stranding hazards.

2.1 Habitat Restoration

The proposed habitat restoration areas for the Project site are shown in **Figure 2**. The habitat restoration consists of active vegetation restoration using two plant communities. The following sections describe each plant community, including a list and composition of the native plants in each type of location.

2.1.1 Mixed Riparian Forest Community

The Mixed Riparian Forest community has a diverse and even mix of trees, shrubs, and herbaceous species. This community will be planted at a density of approximately 216 plants per acre on approximately 32 acres of the Project site. **Table 1** lists the plants and density for the Mixed Riparian Forest Community.

Table 1. Mixed Riparian Forest Community

Common Name	Scientific Name	Percent Composition (%)	Density (plants/acre)	Total Number
Tree Species				
Black Willow	*Salix goodingii*	6%	13	299
Box Elder	*Acer negundo*	4%	9	207
Fremont Cottonwood	*Populus fremontii*	10%	22	506
Oregon Ash	*Fraxinus latifolia*	6%	13	299
Valley Oak	*Quercus lobata*	2%	4	92
Western Sycamore	*Platanus racemosa*	2%	4	92
Total Trees		**30%**	**65**	**1,495**
Shrub Species				
Arroyo Willow	*Salix lasiolepis*	4%	9	207
California Blackberry	*Rubus ursinus*	2%	4	92
Clematis	*Clematis ligusticifolia*	6%	13	299
Dutchman's Pipevine	*Aristolochia californica*	6%	13	299
Mulefat	*Baccharis salicifolia*	3%	7	161
Poison Oak	*Toxiodendron diversilobium*	4%	9	207
Blue Elderberry	*Sambucus cerulea*	4%	9	207
Sandbar Willow	*Salix exigua*	4%	9	207
Redbud	*Cercis occidentalis*	3%	7	161
Spicebush	*Calycanthus occidentalis*	3%	7	161
Wild Rose	*Rosa californica*	6%	13	299
Total Shrubs		**45%**	**100**	**2,300**
Herbaceous Species				
Mugwort	Artemisia douglasiana	5%	11	253
Showy Milkweed	Ascelpias speciosa	3%	7	161
Goldenrod	Euthamia occidentalis	5%	11	253
Deergrass	Muhlenbergia rigens	4%	8	184
Gumplant	Grindelia camporum	3%	6	138
Telegraph weed	Heterotheca grandiflora	3%	6	138
Hoary Nettle	Urtica dioica	2%	3	69
Total Herbaceous		**25%**	**51**	**1,196**
Totals		**100%**	**216**	**4,991**

2.1.2 Mixed Willow Riparian Scrub Community

The Mixed Willow Riparian Scrub community also has a diverse mix of tree and shrub species. The association will be planted at a density of 219 plants per acre on approximately 5.5 acres of the Project site. **Table 2** lists the plants and density for the Mixed Willow Riparian Scrub community.

Table 2. Mixed Willow Riparian Scrub Community

Common Name	Scientific Name	Percent Composition (%)	Density (plants/acre)	Total Number
Tree Species				
Box Elder	*Acer negundo*	4%	9	27
Fremont Cottonwood	*Populus fremontii*	2%	4	12
Gooding's Black Willow	*Salix goodingii*	2%	4	12
Total Trees		**8%**	**17**	**51**
Shrub Species				
Arroyo willow	*Salix lasiolepis*	10%	21	66
Buttonbush	*Cephalanthus occidentalis*	8%	17	51
California blackberry	*Rubus ursinus*	8%	17	51
California rose	*Rosa californica*	8%	17	51
California wild grape	*Vitis californica*	6%	13	39
Deergrass	*Muhlenbergia rigens*	6%	13	39
Dogbane	*Apocynum cannabinum*	4%	9	27
Evening Primrose	*Oenothera elata*	6%	17	51
Hoary Nettle	*Urtica dioica*	6%	13	39
Mugwort	*Artemisia douglasiana*	6%	13	39
Mule fat	*Baccharis salicifolia*	8%	17	51
Red willow	*Salix laevigata*	4%	9	27
Sandbar willow	*Salix exigua*	12%	26	78
Total Shrubs		**92%**	**202**	**609**
Totals		100%	219	660

2.2 Debris Clearing and Channel Grading

Debris clearing along the southern edge of the property, designated as enhancement area on the restoration plan (**Figure 2**), will be performed on approximately 10 acres to provide positive drainage on the Project site to remove potential fish stranding hazards. The existing dense riparian habitat within the enhancement area will remain. A small channel approximately 270 feet long will connect existing low ground on the property to the Sacramento River. This channel will be graded with an invert elevation of

56.3 feet North American Vertical Datum (NAVD88), a slope of 0.5%, with a 10 feet bottom width and 4 (horizontal) to 1 (vertical) side slope. The proposed channel is shown in **Figure 3** and **Figure 4**.

3. Hydraulic Model

A hydraulic model of the Sacramento River flood control system was developed for this study using HEC-RAS version 6.3.1. HEC-RAS is capable of simulating one-dimensional (1D) and two-dimensional (2D) unsteady flow calculations through a full network of open channels. The Rancho Caleta HEC-RAS model simulates the Upper Sacramento River, from Princeton to Meridian, and includes overflows at the Moulton Weir and Colusa Weir (**Figure 5**). The Rancho Caleta HEC-RAS model was developed using portions of an existing HEC-RAS model of the Sacramento River Flood Control Project (SRFCP), developed by the California Department of Water Resources (DWR) Flood Maintenance Office (DWR, 2016). The HEC-RAS model was truncated to the study area of interest, converted to 2D model components, and calibrated, in order to form the Rancho Caleta HEC-RAS model. The geometry refinements and calibration of the Rancho Caleta HEC-RAS model are described in the following sections.

3.1 Topography and Sources of Data

The Rancho Caleta HEC-RAS model and all the results are referenced in the Universal Transverse Mercator (UTM) Zone 10 coordinate horizontal system and the North American Vertical Datum of 1988 (NAVD88). All horizontal and vertical units are in U.S. survey feet. The primary source of topographic data for the development of the Rancho Caleta HEC-RAS model was Light Detection and Ranging (LiDAR) data compiled by DWR under the Central Valley Flood Evaluation and Delineation (CVFED) Program. The LiDAR data is comprised of points that densely cover the entire region. The minimum expected horizontal accuracy was tested to meet or exceed a 3.5-foot horizontal accuracy, at 95 percent confidence level using RMSE[1](r) x 1.7308, as defined by the National Standards for Spatial Data Accuracy (NSSDA). Final ground surface LiDAR point elevation data in areas other than open terrain meet or exceed NSSDA standards of 0.6-foot RMSE vertical (Accuracy z = 1.2 feet at the 95 percent confidence level). Accuracy was tested to meet a 0.6-foot fundamental vertical accuracy at 95 percent confidence level using RMSE(z) x 1.9600, as defined by the NSSDA.

3.2 HEC-RAS Model Geometry Development

The Rancho Caleta HEC-RAS model simulates the Sacramento River, from Princeton to Meridian, and includes the Moulton Weir and Colusa Weir overflows along the Sacramento River. The Rancho Caleta model is a truncated version of the Butte Basin HEC-RAS CVFED model. The model was reduced to the area of interest and the Sacramento River channel was converted entirely to a 2D flow area, which provides additional detail of spatially varied proposed land cover and project features at the Project site. The Rancho Caleta HEC-RAS model schematic is shown in **Figure 5**.

3.3 Model Calibration

The Rancho Caleta HEC-RAS model was calibrated to the January 2006 flood event using observed data throughout the model domain. The calibration was performed to verify that the selected model

[1] root-mean-square error

parameters are reasonable and that the model can reasonably reproduce an actual flood event. The January 2006 flood event was selected for calibration as: the flood event was contained within the SRFCP features on the Sacramento River; availability of ample observed flow and stage data; availability of high-water marks (HWM) throughout the Project reach; and flows are similar to the 1957 Design Flow.

3.4 Boundary Conditions

Upstream and downstream boundary conditions for the Rancho Caleta model were obtained from the January 2006 simulation of the CVFED model (MBK, 2019). Results from the CVFED model simulation were utilized for the flow and stage boundary conditions, as well as to develop the downstream rating curve from the Rancho Caleta model. **Table 3** shows the location and type of boundary conditions used in the Rancho Caleta model. The upstream flow hydrograph used for the calibration simulation is shown in **Figure 6**. A plot of the downstream rating curve is provided in **Figure 7**.

Table 3. Boundary Conditions – January 2006 Calibration

HEC-RAS Location	Boundary Condition Type
2D Boundary Condition (SAC R18 136.590)	Upstream Flow
Butte Basin downstream of Moulton Weir (approx. 2.2 miles downstream of the Moulton Weir in the Butte Basin)	Downstream Stage
Butte Basin downstream of Colusa Weir (SUB R03 97.602)	Downstream Stage
2D Boundary Condition (SAC R18 128.842)	Rating Curve

3.5 Observed Data

Observed stage and flow data for the January 2006 flood event was available from DWR and U.S. Geological Survey (USGS) gaging stations. The observed peak stage and flow at the gages were used to compare with the computed peak stage and flow from the January 2006 flood simulation. **Table 4** lists the available gages within the model domain.

Table 4. Stage and Flow Gages

Gage	Type
Moulton Weir Spill to Butte Basin near Princeton; DWR Gage Sta. #A02986	Flow and Stage
Colusa Weir Spill to Butte Basin near Colusa; DWR Gage Sta. #A02981	Flow and Stage
Sacramento River at Colusa; USGS Gage Sta. #11389500	Flow and Stage
Sacramento River at Butte Slough Outfall Gates; DWR Gage Sta. #A02400	Stage

Surveyed high-water marks from DWR (DWR and CVFED, 2015) were available along the Sacramento River for the January 2006 flood event. The high-water marks were used to calibrate Rancho Caleta HEC-RAS model by comparing the high-water mark elevation with the computed maximum water surface elevation (WSE). The locations of the HWMs are shown in **Figure 5**.

3.6 Manning's Roughness Coefficient

Manning's n-value roughness coefficients were assigned to the 2D flow area spatially based on land cover mapping of the Great Valley Ecoregion collected by the Department of Fish and Wildlife (DFW, 2018). The Manning's roughness coefficient values were based on Table 3-1 from the *HEC-RAS River Analysis Stem Hydraulic Reference Manual Version 5.0* (USACE, 2016) and adjusted using engineering judgement to calibrate the model. The land cover types, and associated n-values are summarized in **Table 5**. A map showing the spatial variation of the Manning's roughness coefficient for the 2D flow area are provided in **Figure 8**.

Table 5. April 2006 Calibration and Without-Project Manning's Roughness Coefficients

Land Use/Veg/Habitat	Manning's Roughness Coefficient
Reservoirs, Perennial Lakes and Ponds, Water	0.03 – 0.33
Annual Grasses and Forbs, Non-native Ornamental Grasses Wet Meadows Alkaline Mixed Grasses and Forbs Perennial Grasses and Forbs Urban Annual Grasses and Forbs	0.039
Barren	0.04
Giant Reed Pampas Grass Vernal Pool Tule - Cattail, Water	0.044
Wet Meadows, Perennial Grasses and Forbs Wet Meadows, Non-Native Ornamental Grass Tule - Cattail Orchard Agriculture, Vineyard-Shrub Agriculture, Pastures and Crop Agriculture	0.045
Wedgeleaf Ceanothus	0.048
Tamarisk California Bay	0.055
Baccharis (Riparian) Willow (Shrub)	0.06
Birchleaf Mountain Mahogany California Buckeye	0.061
Coyote Brush Scrub Oak North Coastal Scrub Soft Scrub - Mixed Chaparral	0.066
White Alder Willow	0.08
Valley Oak Non-native Ornamental Hardwood Interior Like Oak Blue Oak	0.09

Land Use/Veg/Habitat	Manning's Roughness Coefficient
Eucalyptus	
California Sycamore	0.092
Riparian Mixed Hardwood Riparian Mixed Shrub Fremont Cottonwood	0.1

3.7 Calibration Results

The Rancho Caleta HEC-RAS model was simulated with the January 2006 boundary conditions from Section 3.4. For each of the gage locations in **Table 4**, comparisons of computed values versus observed values are plotted in **Figure 9** through **Figure 15**. As shown in **Figure 9** through **Figure 15,** the model is reasonably quantifying the observed flows and stage on the Sacramento River within the Rancho Caleta Project reach.

Table 6 tabulates the surveyed high-water mark elevation, computed maximum water surface elevation, and the difference for each of the high-water mark locations in the Sacramento River near the Project. The surveyed high-water mark and the maximum WSE calculated by the model are compared in **Figure 16** for the entire model domain, and **Figure 17** compares the high-water marks and calculated maximum WSE for locations near the Project site. Points closer to the 1-to-1 line indicate that the model computed a WSE close to the high-water mark at the surveyed location. The results indicate the Rancho Caleta model reasonably quantifies the maximum water surface elevation in the Project area and is adequate for evaluating impacts to water surface elevation.

Table 6. High Water Mark and Computed Maximum Water Surface Elevation Comparison

HWM ID	Surveyed HWM (ft.-NAVD88)	Computed WSE (ft.-NAVD88)	Difference (ft.)
7077	63.90	64.14	0.25
7079	63.55	63.82	0.26
7081	63.65	63.39	-0.26
7084	62.24	63.06	0.82
7116	65.39	64.93	-0.46
7118	63.81	65.32	1.51
7122	65.30	65.65	0.35
7125	65.27	66.00	0.73
7127	65.47	66.35	0.88
7143	67.39	68.90	1.51
7147	68.38	67.95	-0.44
7149	66.70	67.28	0.58
7151	67.86	67.19	-0.67
7153	67.33	66.93	-0.41
7155	66.82	66.87	0.05

4. Hydraulic Analysis

4.1 Methodology

The methodology to determine hydraulic impacts was to configure and evaluate hydraulic model simulations of with- and without-Project conditions. The simulation results of the with-Project will be compared to the without-Project condition to determine changes in maximum water surface elevation and maximum flow velocity.

4.2 Without-Project Condition

The without-Project condition hydraulic model geometry was developed from the January 2006 flood event calibration geometry. Refinements to locations of orchards within the model domain were made to represent today's condition rather than the 2006 calibration condition. All Manning's roughness coefficients for the 2D flow area, remain the same from the calibration geometry. **Figure 18** shows the Manning's roughness coefficients for the without-Project condition in the Rancho Caleta vicinity. The without-Project condition tabulated by land use is shown in **Table 5**.

4.3 With-Project Condition

The with-Project condition hydraulic model geometry was developed from the without-Project condition geometry. The with-Project condition geometry reflects the proposed vegetation at the Project site along with the proposed channel at the southern end of the Project site, shown in **Figure *3*** and **Figure *4*** and described in Section 2.2. The proposed vegetation communities were simulated by modifying the Manning's roughness coefficients in the respective areas of the model domain. **Table 7** lists the Manning's roughness coefficients of the project condition vegetation for the 2D flow area, as shown in **Figure 19**. The proposed channel at the southern end of the Project site was represented in the with-Project hydraulic model by modifying the terrain in the HEC-RAS geometry to represent the graded channel.

Table 7. Project Condition – Manning's Roughness Coefficient 2D Flow Area

Land Use/Veg/Habitat	Manning's Roughness Coefficient
Enhancement Area	0.09
Great Valley Grassland	0.04
Mixed Willow Riparian Scrub	0.09
Mixed Riparian Forest	0.12

4.4 Hydrology

The with- and without-Project condition hydraulic model geometries were simulated for the 1957 Design Flow condition to evaluate impacts to water surface elevation. The Rancho Caleta HEC-RAS model was simulated in unsteady flow conditions for the USACE 1957 Design Flow for the Sacramento River at Princeton of 160,000 cfs (USACE, 1957). This flow was simulated in the hydraulic model by scaling the January 2006 flood event so that the peak flow in the Sacramento River near Princeton was 160,000 cfs. The downstream stage hydrographs at the Colusa and Moulton Weirs for the 1957 Design

Flow simulation were obtained from a CVFED hydraulic model simulation of the 1957 Design Flow simulation (MBK, 2019). The downstream rating curve boundary condition remained the same as the January 2006 calibration simulation. The 1957 Design flow on the Sacramento River at Colusa is 65,000 cfs. **Figure 20** plots the upstream flow boundary hydrograph on the Sacramento River near Princeton and **Figure 21** plots the flow hydrograph on the Sacramento River at Colusa for the USACE 1957 Design Flows being simulated.

4.5 Results

The with- and without-Project condition maximum water surface elevations were compared to determine the changes in the maximum water surface elevation due to the Project for the 1957 Design Flow conditions. **Figure 22** shows the changes due to the Project on the maximum water surface elevations for the USACE 1957 Design Flow. Increases in water surface elevation as a result of the proposed Project are shown as positive values (yellows), while decreases are shown as negative values (blues). The maximum increase in water surface elevation is +0.02', and the maximum decrease in water surface elevation is -0.05'.

The with- and without-Project flow velocities were also compared to assess potential effects of the Project on aggregation and erosion potential. Similar to the comparison between maximum water surface elevations, increases in velocity as a result of the proposed Project are shown as positive values, while decreases in velocity are shown as negative values in **Figure 23**. Changes in velocity occur primarily through the proposed swale and range between -1 feet per second (fps) to +3 fps. Increases in velocity generally occur along the proposed swale and is provided to improve connectivity between the Sacramento River and the Project site.

5. Conclusion

River Partners proposes to enhance and restore 48 acres of habitat along the Sacramento River in Colusa County. This hydraulic analysis assesses the Project's potential hydraulic effects to the state and federal flood control systems. The results of the hydraulic analysis show changes to WSE under the with-project condition. Increases in WSE of at most +0.02 feet occur within the Project area and Designated Floodway during a 1957 Design Flow condition. Therefore, the Project is not expected to increase flood risk to neighboring properties or the flood control infrastructure.

Aggradation and erosion potential are measured using change in flow velocity. Significant reductions in flow velocity may cause sedimentation, and significant increases in flow velocity could potentially erode bare soils. The Project conditions show localized changes in flow velocities, on the order of -1 fps to +3 fps in the Project area. This magnitude is not expected to significantly increase potential for aggradation or erosion during the 1957 Design Flow.

6. References

(DFW, 2018). *Vegetation – Great Valley Ecoregion*. California Department of Fish and Wildlife. October 11, 2018.

(DWR and CVFED, 2015). *DWR CVFED Program High Water Mark Data Compilation*. August 8, 2015.

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(MBK, 2019). *Willow Bend Riparian Restoration Project, Hydraulic Model Development and Impact Analyses*. September 3, 2019.

(USACE, 1957). *Sacramento River Flood Control Project California, Levee and Channel Profiles*. U.S. Army Corps of Engineers, Sacramento District. March 15, 1957.

(USACE, 2016). *HEC-RAS River Analysis Stem Hydraulic Reference Manual Version 5.0, CPD-69. Fine-Scale Riparian Vegetation Mapping of the Central Valley Flood Protection Plan Area.* US Army Corps of Engineers Hydrologic Engineering Center. February 2016.

Figures

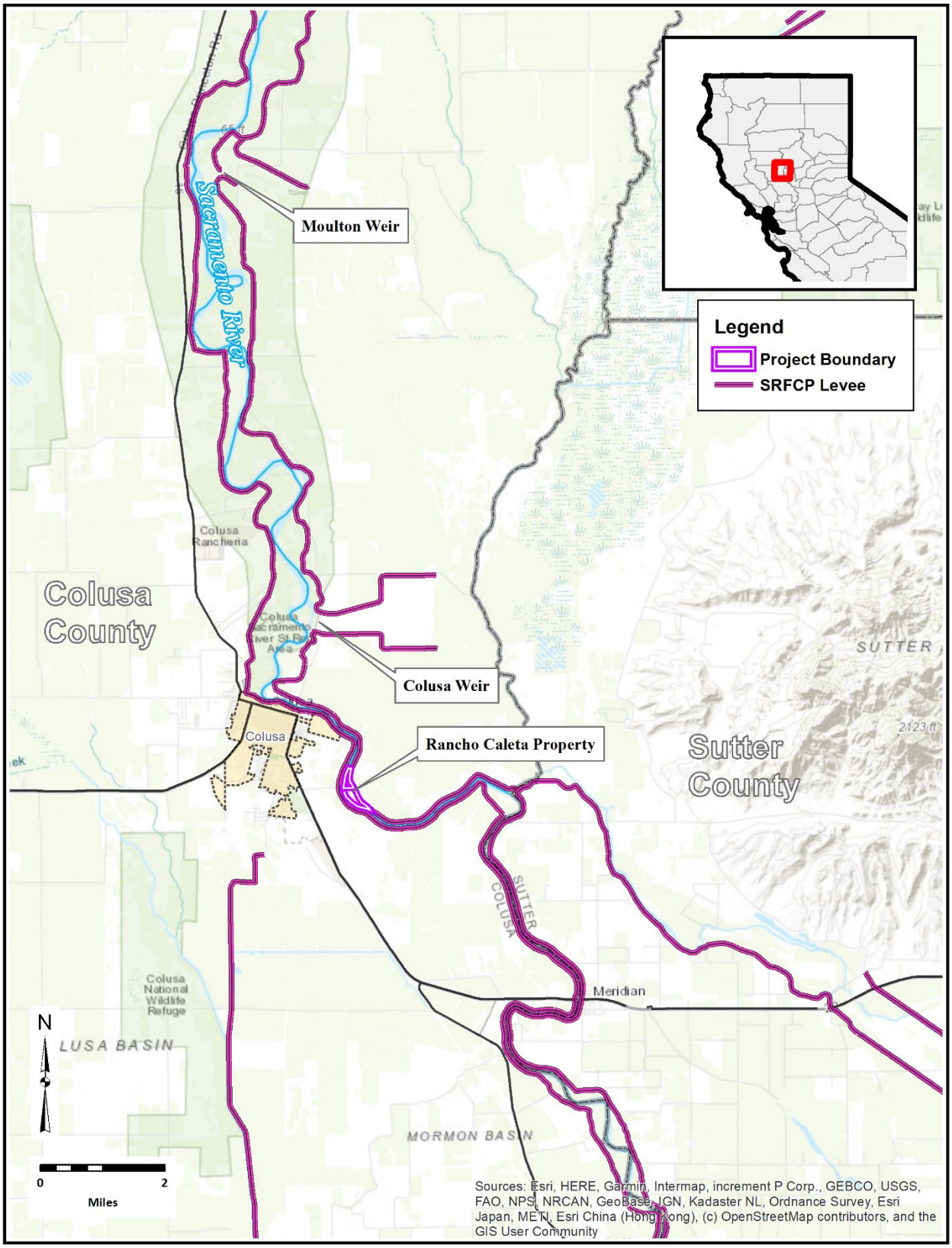


Figure 1. Vicinity Map

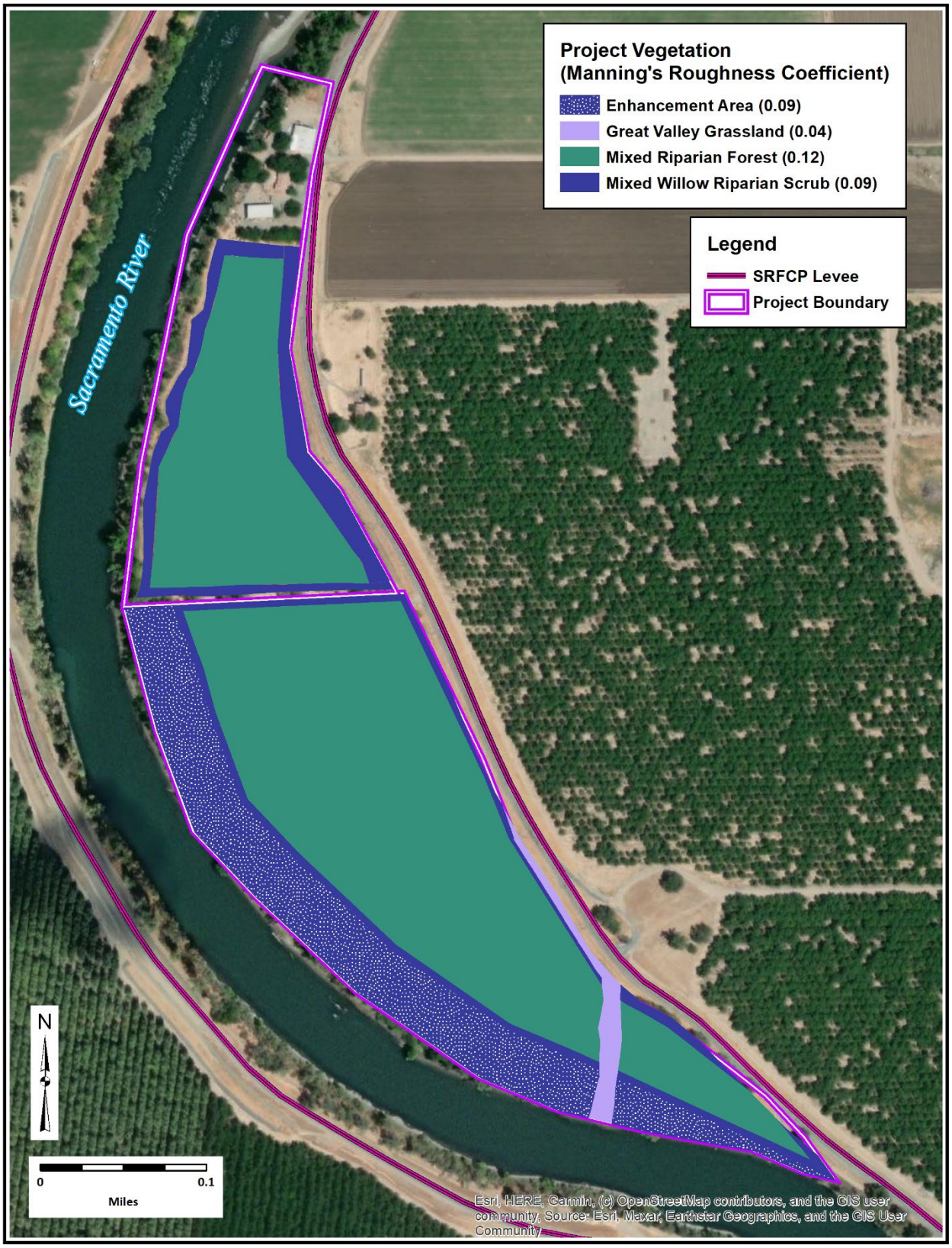


Figure 2. Restoration Feature

GENERAL NOTES

1. ALL GRADING, SITE PREPARATION, PLACING AND COMPACTION OF FILL TO BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND UNDER THE DIRECT SUPERVISION OF THE GEOTECHNICAL ENGINEER.

2. ALL CUT SLOPES SHALL BE ROUNDED TO MEET EXISTING GRADES AND BLEND WITH THE SURROUNDING TOPOGRAPHY.

3. ANY DEVIATION FROM APPROVED GRADING PLAN REQUIRES APPROVAL OF THE ENGINEER.

4. WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FINEST QUALITY ARE TO BE USED.

5. LINES AND GRADES: ALL DISTANCES AND MEASUREMENTS ARE GIVEN AND WILL BE MADE IN A HORIZONTAL PLANE. GRADES ARE GIVEN FROM THE TOP OF HUBS OR NAILS UNLESS OTHERWISE NOTED.

6. BASIS OF BEARING: ALL BEARINGS ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE II. DISTANCES ARE GROUND.

7. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, 800-642-2444, TWO WORKING DAYS (48 HOURS) PRIOR TO ANY EXCAVATION. THE U.S.A. AUTHORIZATION NUMBER WILL BE KEPT AT THE JOB SITE.

8. SHOULD IT APPEAR THAT THE WORK TO BE DONE, OR ANY MATTER RELATIVE THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT MBK ENGINEERS AT (916) 456-4400 FOR SUCH FURTHER EXPLANATION AS MAY BE NECESSARY.

9. THE CONTRACTOR SHALL COMPLY WITH ALL RULES, REGULATIONS AND PROCEDURES OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) FOR MUNICIPAL CONSTRUCTION AND INDUSTRIAL ACTIVITIES AS PROMULGATED BY THE CALIFORNIA STATE WATER RESOURCE CONTROL BOARD OR ANY OF ITS REGIONAL WATER QUALITY CONTROL BOARDS.

10. THE CIVIL ENGINEERING DESIGN SHOWN HEREON WAS PREPARED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING AND/OR SURVEYING PRACTICES APPLICABLE ON THE DATE OF THE SIGNATURE BY THE ENGINEER. IF CONSTRUCTION OF THE IMPROVEMENTS SHOWN HEREON DOES NOT COMMENCE WITHIN EIGHT MONTHS FROM THE DATE OF SIGNATURE BY THE ENGINEER, THE PLANS MUST BE REVIEWED FOR CURRENT COMPLIANCE WITH GENERALLY ACCEPTED ENGINEERING AND/OR SURVEYING PRACTICES AND REISSUED BY THE ENGINEER PRIOR TO ANY WORK BEING PERFORMED.

11. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

12. CONTRACTOR SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS. CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS FOR THE OWNER, AMBULANCE, POLICE AND FIRE DEPARTMENTS.

13. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING THAT MAY BE REQUIRED FOR THE PROJECT.

14. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY WORK PERFORMED BY THE CONTRACTOR BASED ON DRAWINGS WHICH HAVE NOT BEEN SIGNED AND SEALED BY THE ENGINEER, APPROVED BY THE OWNER, AND SPECIFICALLY NOTED AS "APPROVED FOR CONSTRUCTION" BY THE ENGINEER. ALL INFORMATION SHOWN ON PRELIMINARY DRAWINGS IS SUBJECT TO CORRECTION AND/OR CHANGE AND THE CONTRACTOR SHALL PERFORM ANY AND ALL IMPROVEMENTS AT THEIR OWN RISK.

15. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL EASEMENTS, RIGHTS-OF-ENTRY, ETC. NECESSARY TO CONSTRUCT ANY WORK SHOWN HEREON.

16. OBSTRUCTIONS INDICATED ARE FOR INFORMATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH WITH THE APPROPRIATE AGENCIES PRIOR TO CONSTRUCTION. NEITHER THE OWNER NOR THE ENGINEER ASSUMES RESPONSIBILITY THAT THE OBSTRUCTIONS INDICATED WILL BE THE OBSTRUCTIONS ENCOUNTERED. ALL EXISTING ELEVATIONS SHOWN ARE AS MEASURED IN THE FIELD UNLESS OTHERWISE NOTED.

17. IF ARCHEOLOGIC MATERIALS ARE UNCOVERED DURING GRADING, TRENCHING OR OTHER EXCAVATION, EARTHWORK WITHIN 100 FEET OF THESE MATERIALS SHALL BE STOPPED UNTIL A PROFESSIONAL ARCHEOLOGIST WHO IS CERTIFIED BY THE SOCIETY OF CALIFORNIA ARCHAEOLOGY (SCA), AND/OR THE SOCIETY OF PROFESSIONAL ARCHAEOLOGY (SOPA) HAS HAD AN OPPORTUNITY TO EVALUATE THE SIGNIFICANCE OF THE FIND AND SUGGEST APPROPRIATE MITIGATION MEASURES, IF THEY ARE DEEMED NECESSARY.

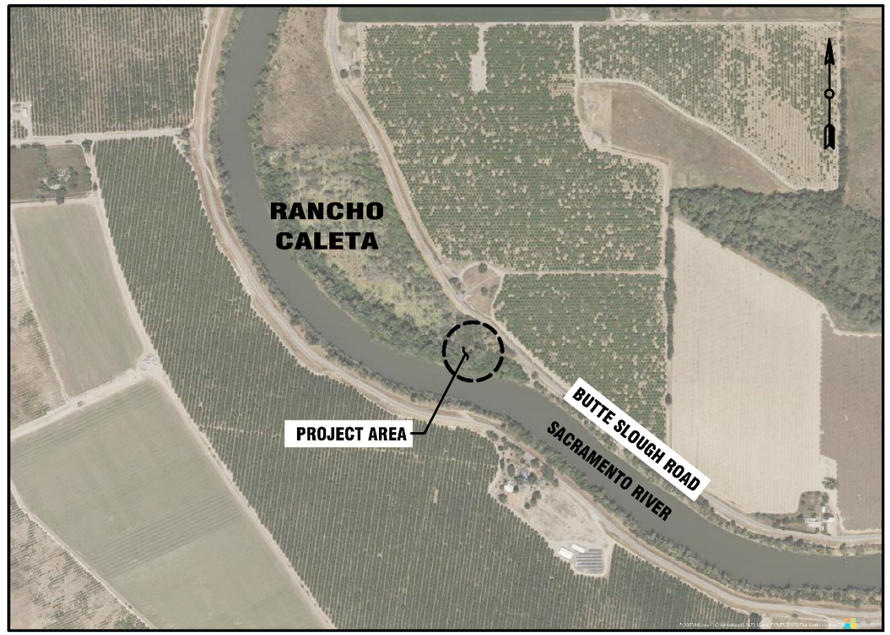
18. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT WRITTEN AUTHORIZATION FROM MBK ENGINEERS.

19. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGGERS, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY IN ACCORDANCE WITH COUNTY AND CAL-OSHA SPECIFICATIONS.

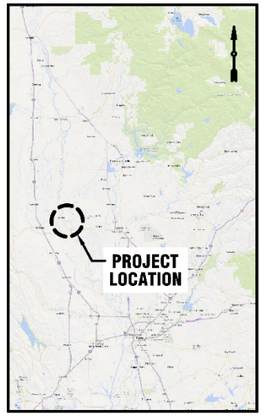
20. STRIPPINGS SHALL BE STOCKPILED IN THE DESIGNATED AREA(S) PER PLAN.

CALL BEFORE YOU DIG 811 or 1-800-227-2600

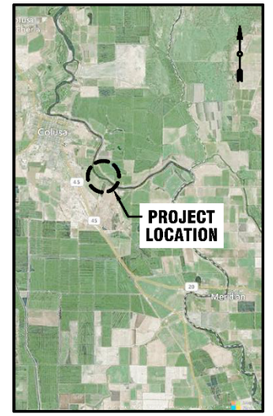
GRADING PLANS FOR:
RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA



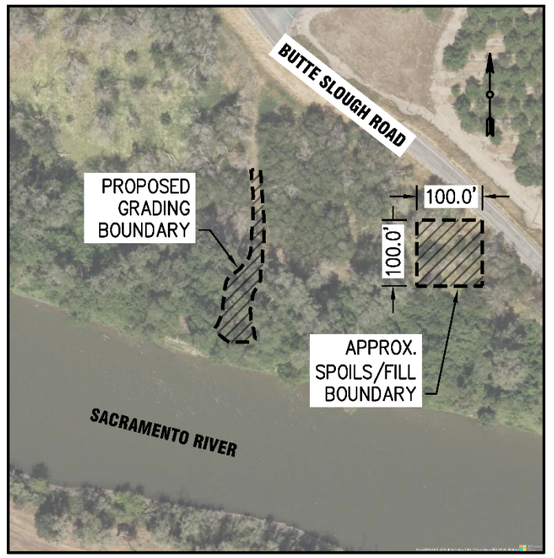
PROJECT AREA MAP
SCALE: 1" = 1000'



VICINITY MAP
SCALE: N.T.S.



REGIONAL MAP
SCALE: N.T.S.



SITE MAP
SCALE: 1" = 200'

LEGEND

—10—	EX. MAJOR CONTOUR
	EX. MINOR CONTOUR
—10—	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
x 100.0	PROPOSED SPOT ELEV.

ABBREVIATIONS

APPROX.	APPROXIMATELY
CL	CENTERLINE
ELEV.	ELEVATION
EX.	EXISTING
EG	EXISTING GRADE
FG	FINISH GRADE
PROP.	PROPOSED
TYP.	TYPICAL

EARTHWORK SUMMARY

TOTAL PROJECT CUT = 632 CY

BASIS OF BEARINGS

ALL BEARINGS ARE BASED UPON THE CALIFORNIA COORDINATE SYSTEM, ZONE 2.

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
C1	COVER SHEET AND NOTES
C2	PLAN AND PROFILE VIEWS
C3	TYPICAL CROSS SECTIONS

CIVIL ENGINEER

MBK ENGINEERS
455 UNIVERSITY AVENUE, SUITE 100
SACRAMENTO, CA 95825
(916) 456-4400 FAX: (916) 456-0253
ATTN: PATRICK HO

OWNER

RIVER PARTNERS
580 VALLOMBROSA AVENUE
CHICO, CA 95926
(530) 894-5401 FAX (530) 894-2970
ATTN: MICHAEL ROGNER

REGISTERED PROFESSIONAL ENGINEER
Patrick Ho
No. C076677
Exp. 12/31/24
Civil
STATE OF CALIFORNIA

MBK ENGINEERS
455 University Avenue, Suite 100
Sacramento, California 95825
Phone: (916) 456-4400 • Fax: (916) 456-0253

NO.	DATE	REVISION

PRELIMINARY PLAN SET

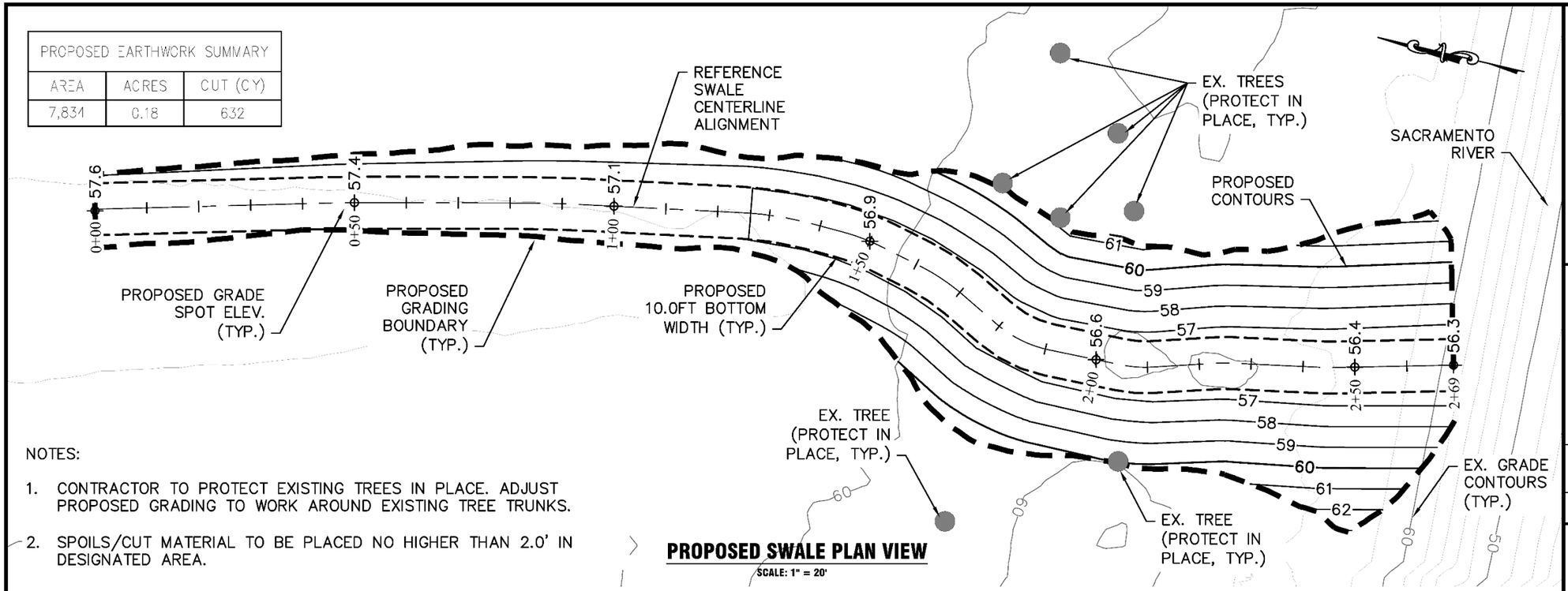
RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA

COVER SHEET AND NOTES

SCALE:	AS NOTED
JOB NO:	4738.001
BY:	JB
CHK:	PH
DATE:	11/01/2023
SHEET	C1 OF 3 SHEETS

Figure 3. Grading Plan - Cover Sheet

PROPOSED EARTHWORK SUMMARY		
AREA	ACRES	CUT (CY)
7,831	0.18	632

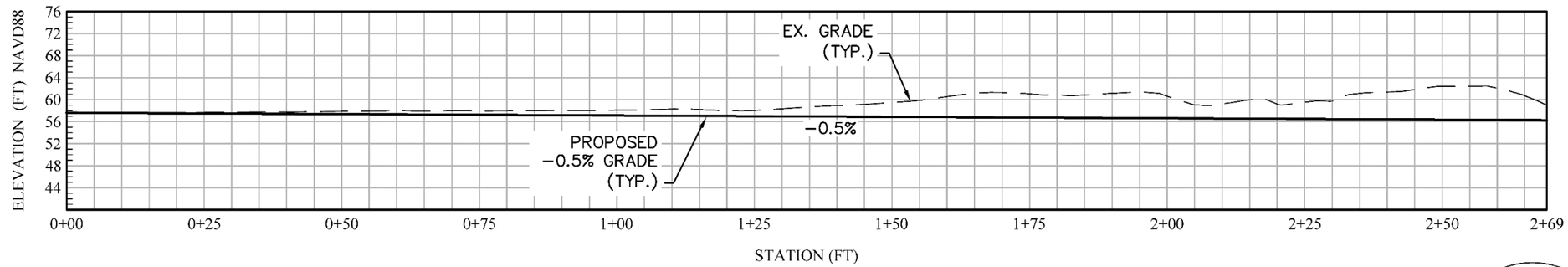


NOTES:

1. CONTRACTOR TO PROTECT EXISTING TREES IN PLACE. ADJUST PROPOSED GRADING TO WORK AROUND EXISTING TREE TRUNKS.
2. SPOILS/CUT MATERIAL TO BE PLACED NO HIGHER THAN 2.0' IN DESIGNATED AREA.

PROPOSED SWALE PLAN VIEW

SCALE: 1" = 20'



PROPOSED SWALE PROFILE VIEW

SCALE: 1" = 20'

MBK ENGINEERS
455 University Avenue, Suite 100
Sacramento, California 95825
Phone: (916) 456-4400 • Fax: (916) 456-0253

NO.	DATE	REVISION
		PRELIMINARY PLAN SET

RANCHO CALETA
RESTORATION PROJECT
COLUSA COUNTY, CALIFORNIA

PLAN AND PROFILE VIEWS

REGISTERED PROFESSIONAL ENGINEER
Patrick Ho
No. C076677
Exp. 12/31/24
Civil
STATE OF CALIFORNIA

SCALE:	1" = 20'
JOB NO:	4738.001
BY:	JB
CHK:	PH
DATE:	11/01/2023
SHEET	C2 OF 3 SHEETS

Figure 4. Grading Plan - Plan and Profile

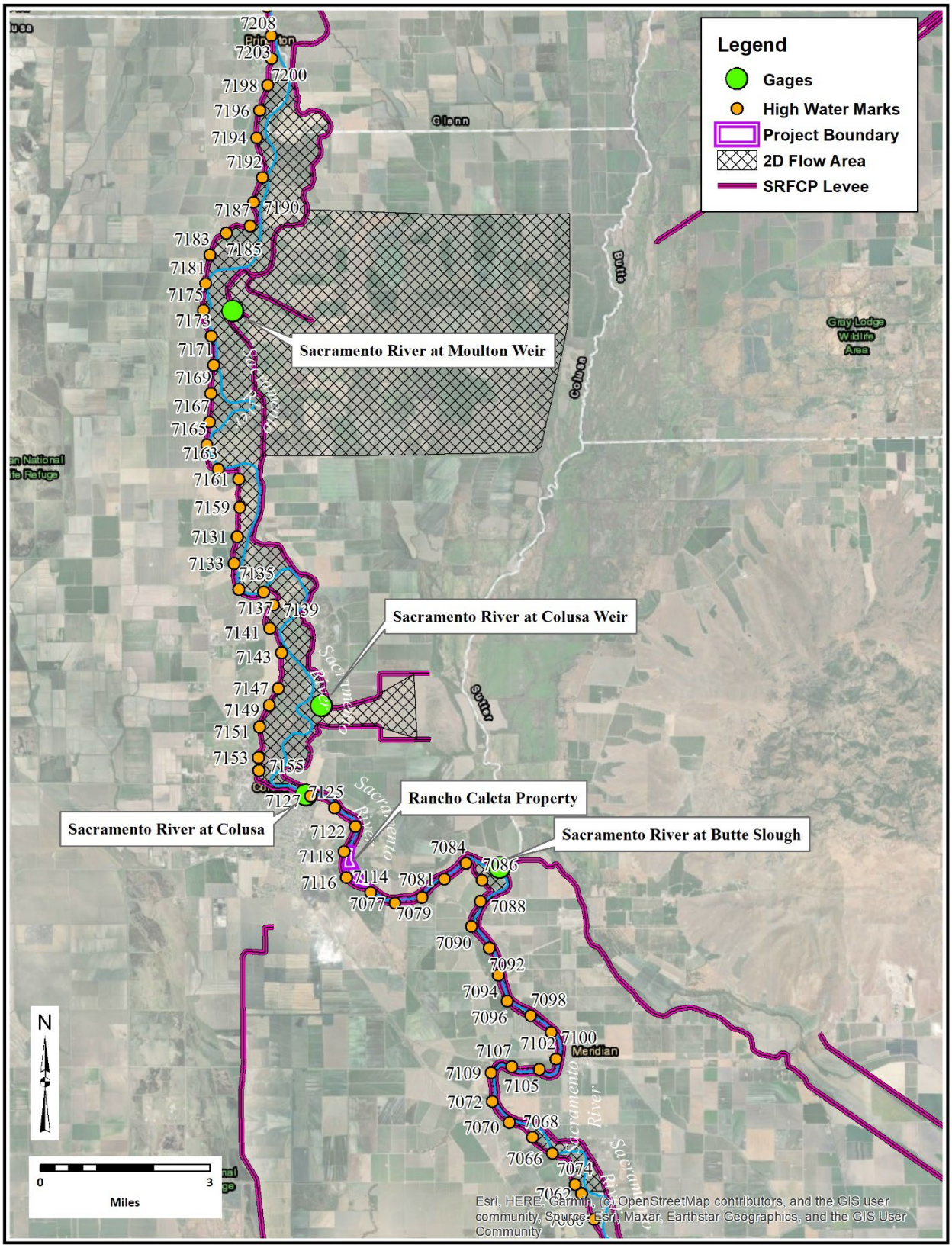


Figure 5. Model Domain and Calibration Points

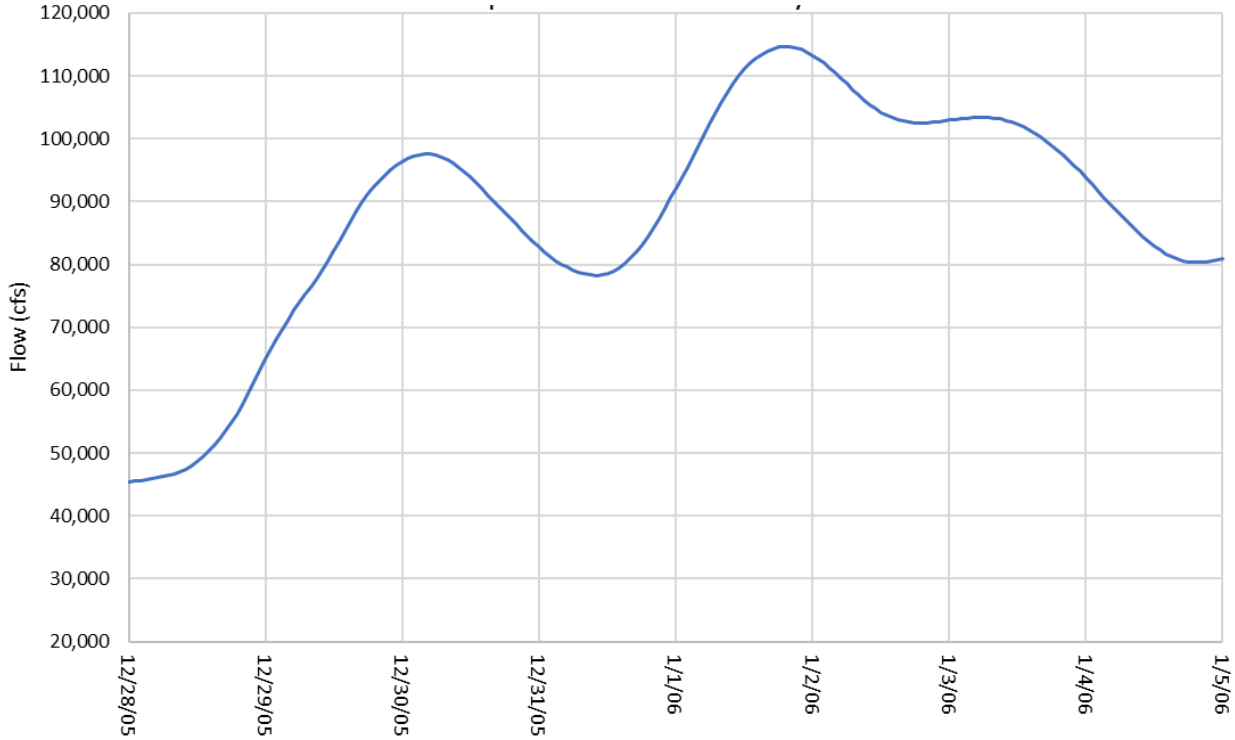


Figure 6. Upstream Boundary Flow on the Sacramento River at Cross-Section 164.35 – January 2006 Calibration Event

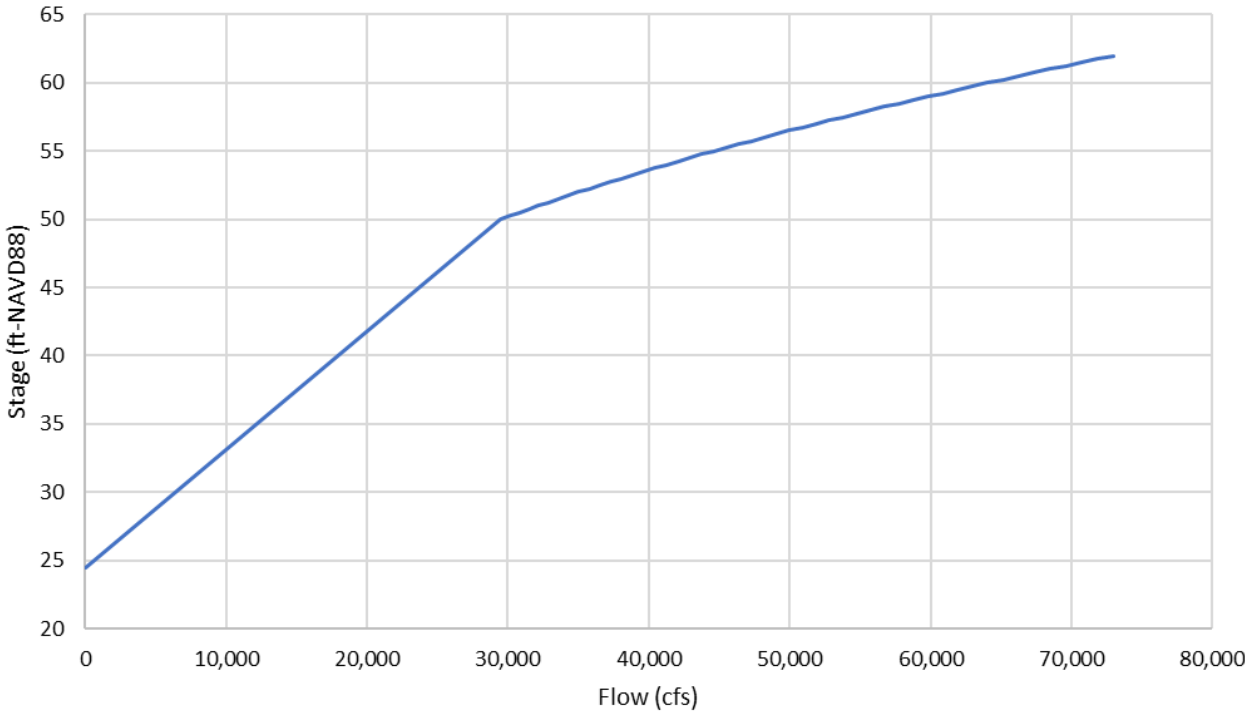


Figure 7. Downstream Boundary Rating Curve

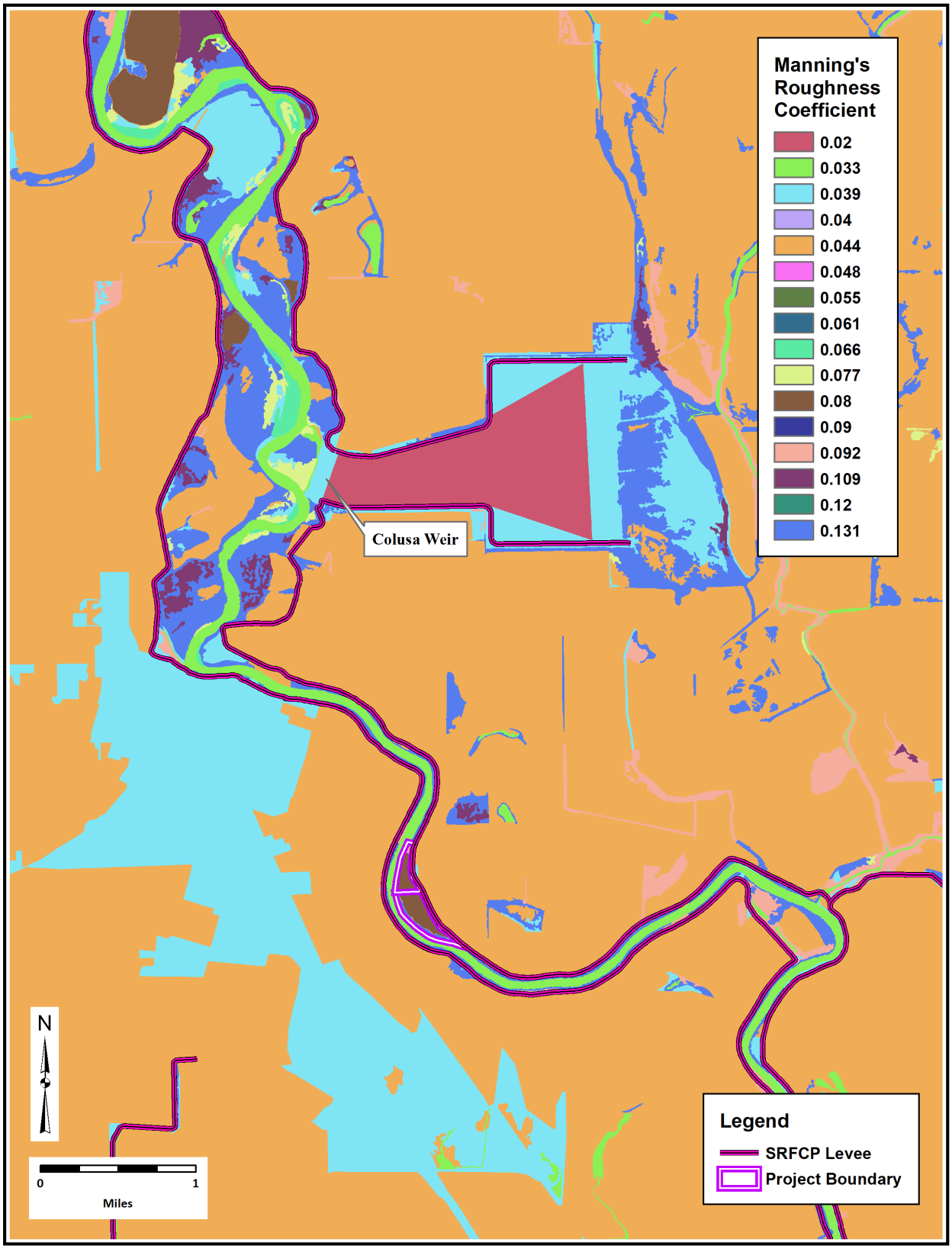


Figure 8. 2006 Calibration Event Manning's Roughness Coefficients

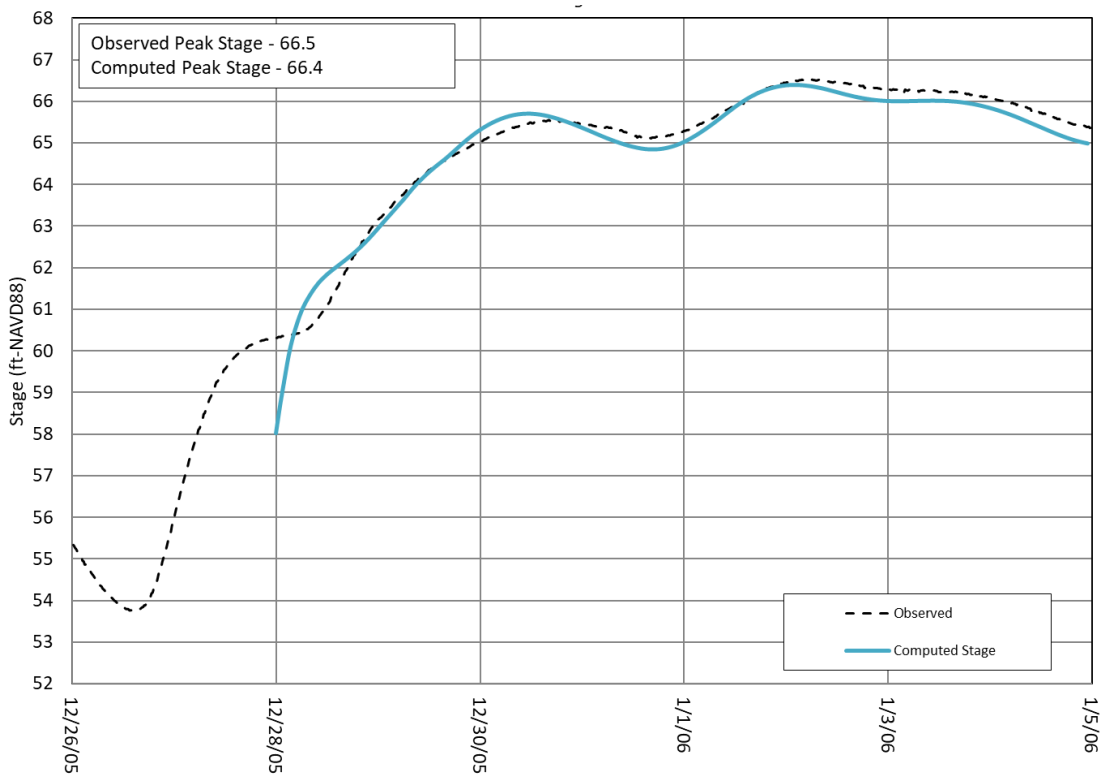


Figure 9. Sacramento River at Colusa Bridge (Stage) – 2006 Flood

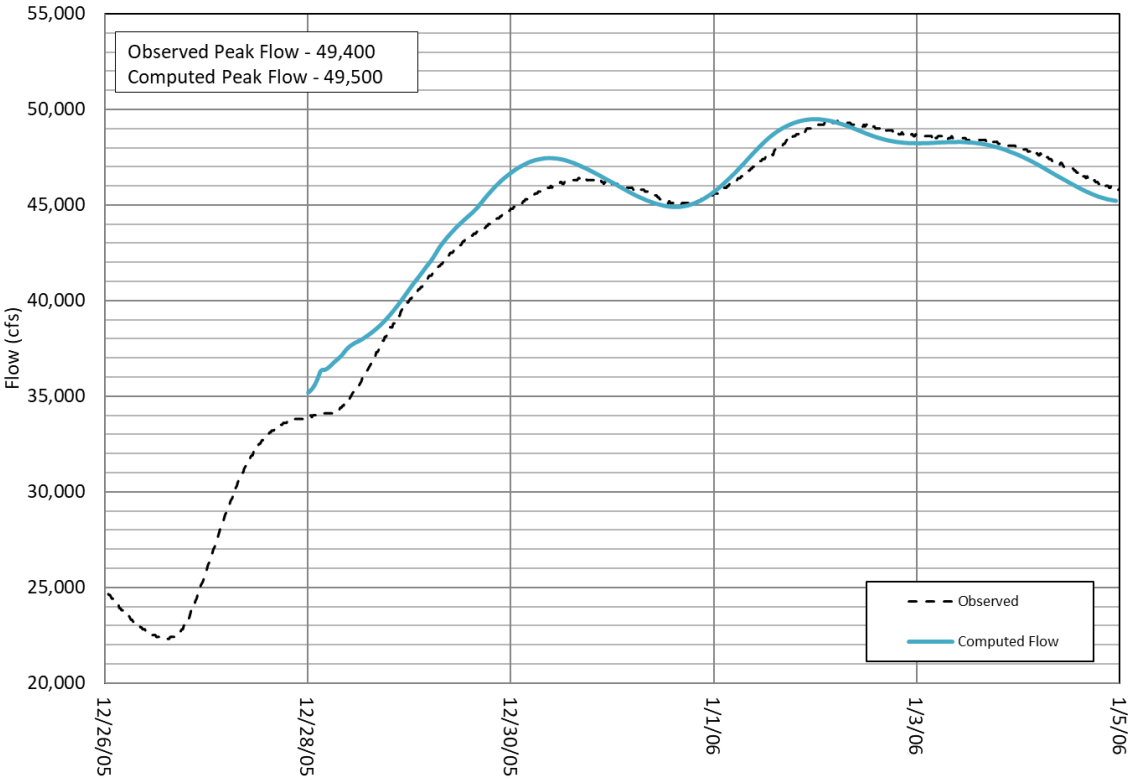


Figure 10. Sacramento River at Colusa Bridge (Flow) – 2006 Flood

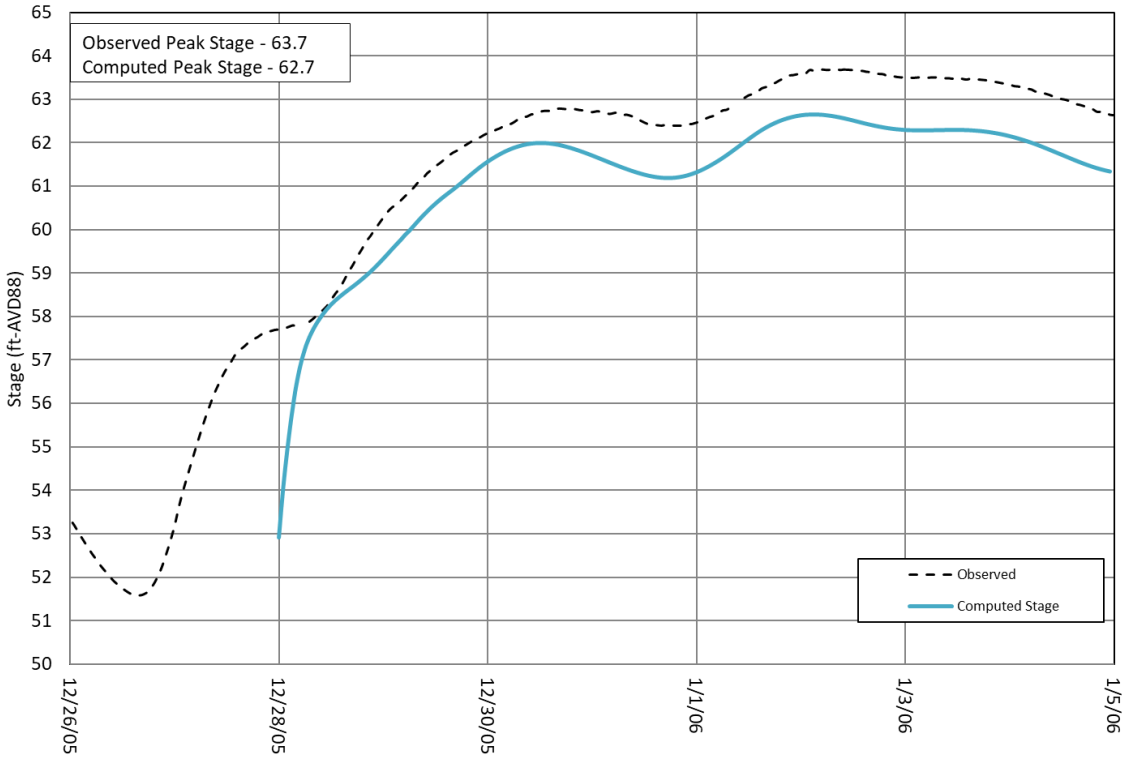


Figure 11: Sacramento River at Butte Slough Outfall Gates (Stage) – 2006 Flood

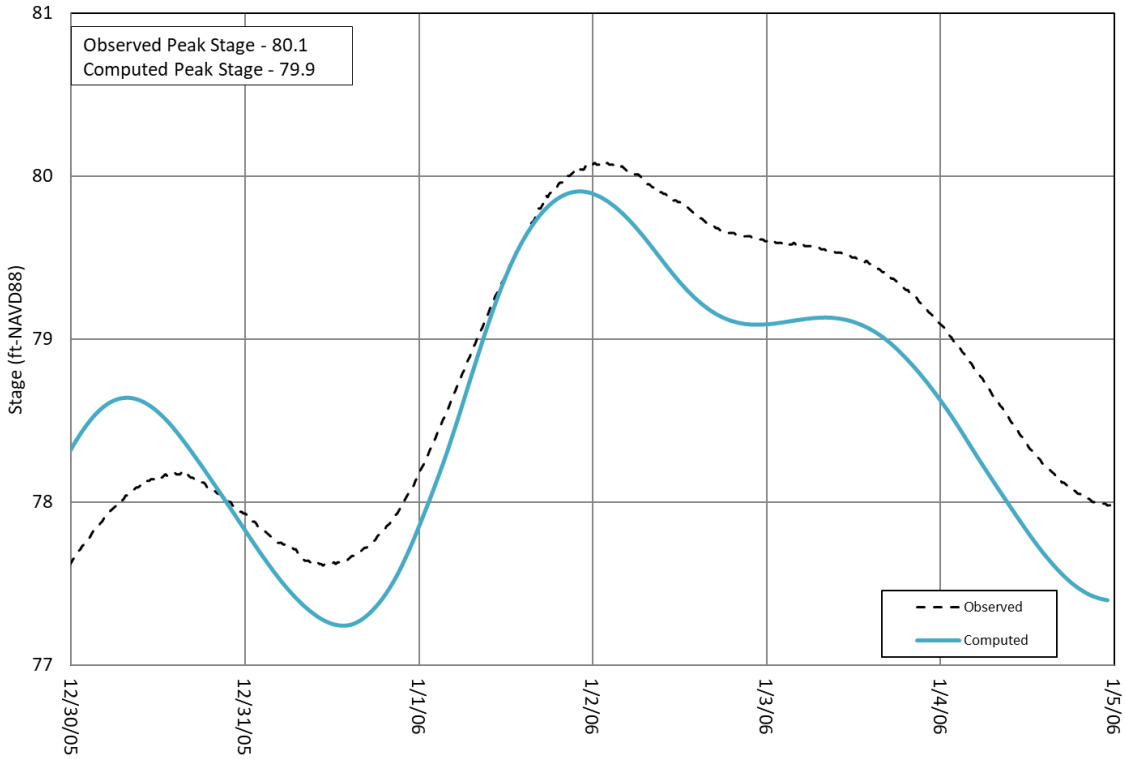


Figure 12. Moulton Weir Spill to Butte Basin near Princeton (Stage) – 2006 Flood

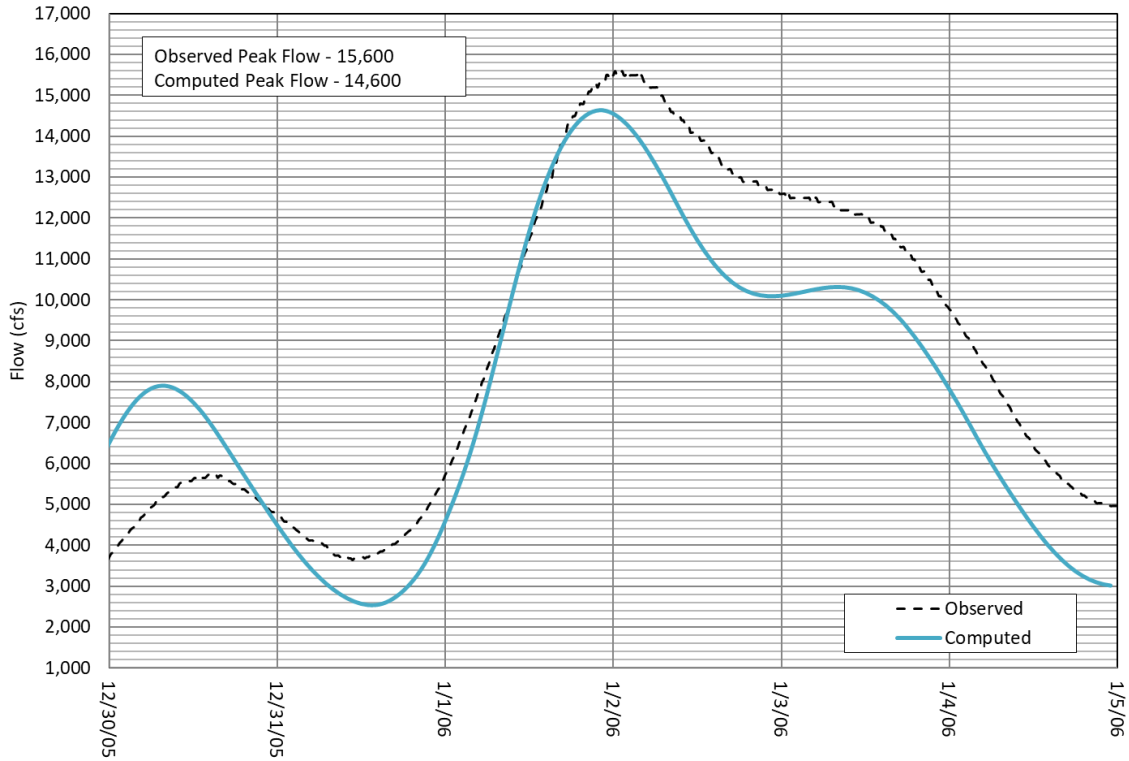


Figure 13. Moulton Weir Spill to Butte Basin near Princeton (Flow) – 2006 Flood

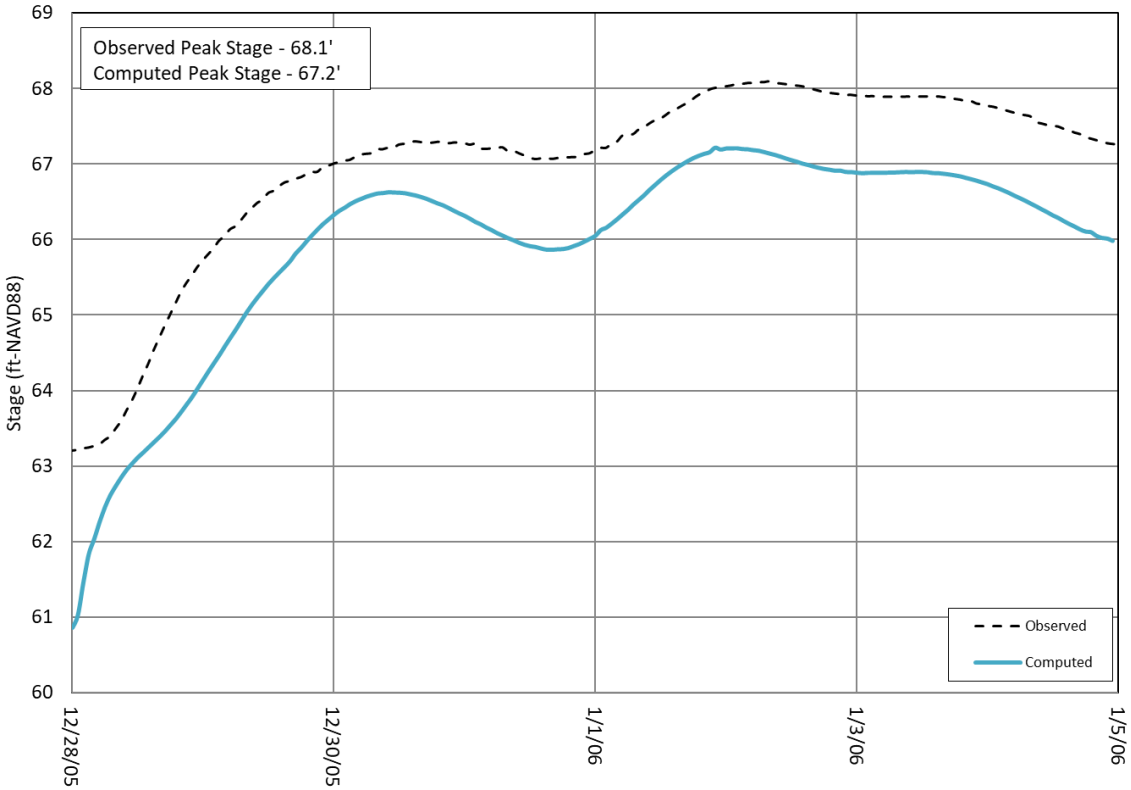


Figure 14. Colusa Weir Spill to Butte Basin near Colusa (Stage) – 2006 Flood

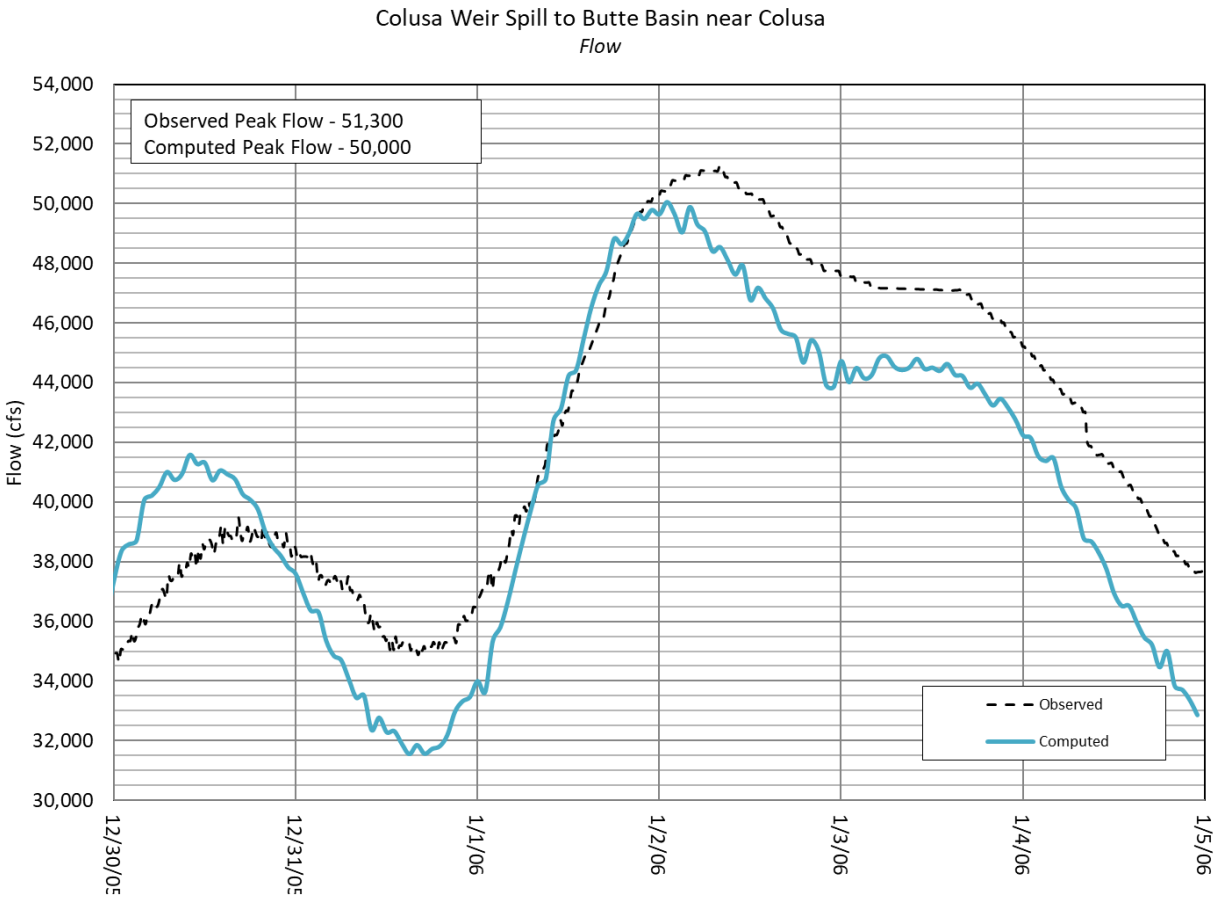


Figure 15. Colusa Weir Spill to Butte Basin near Colusa (Flow) – 2006 Flood

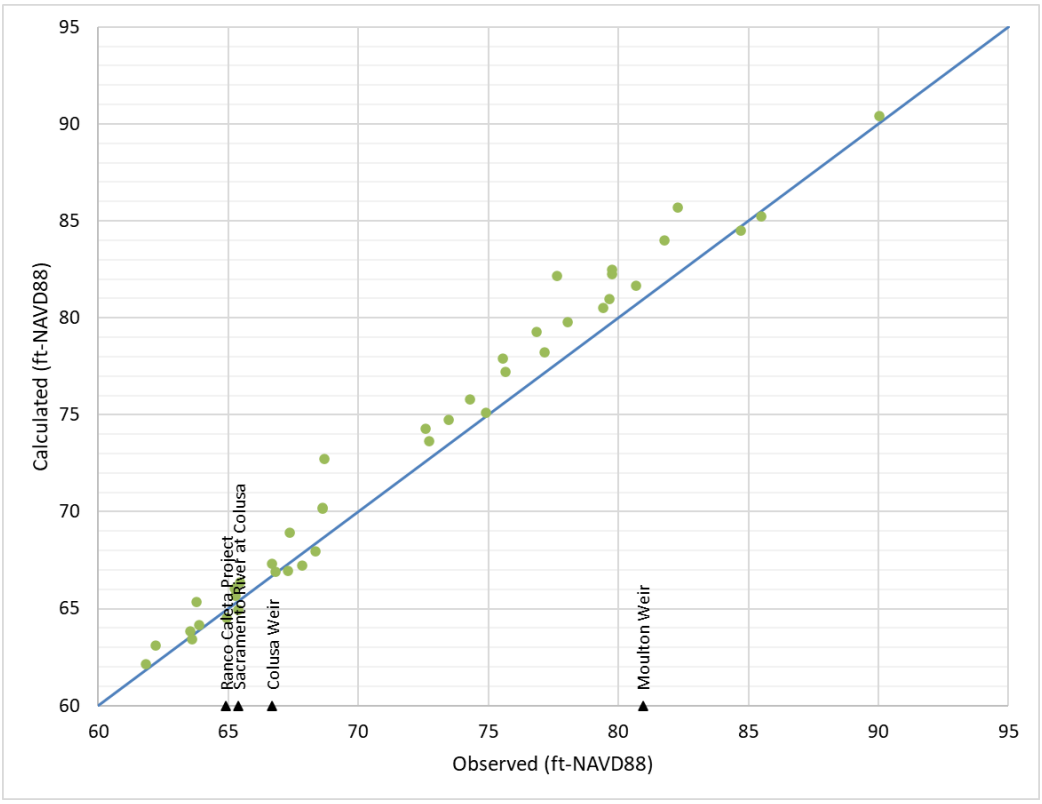


Figure 16. January 2006 Observed High Water Marks vs. Computed Stages – Sacramento River

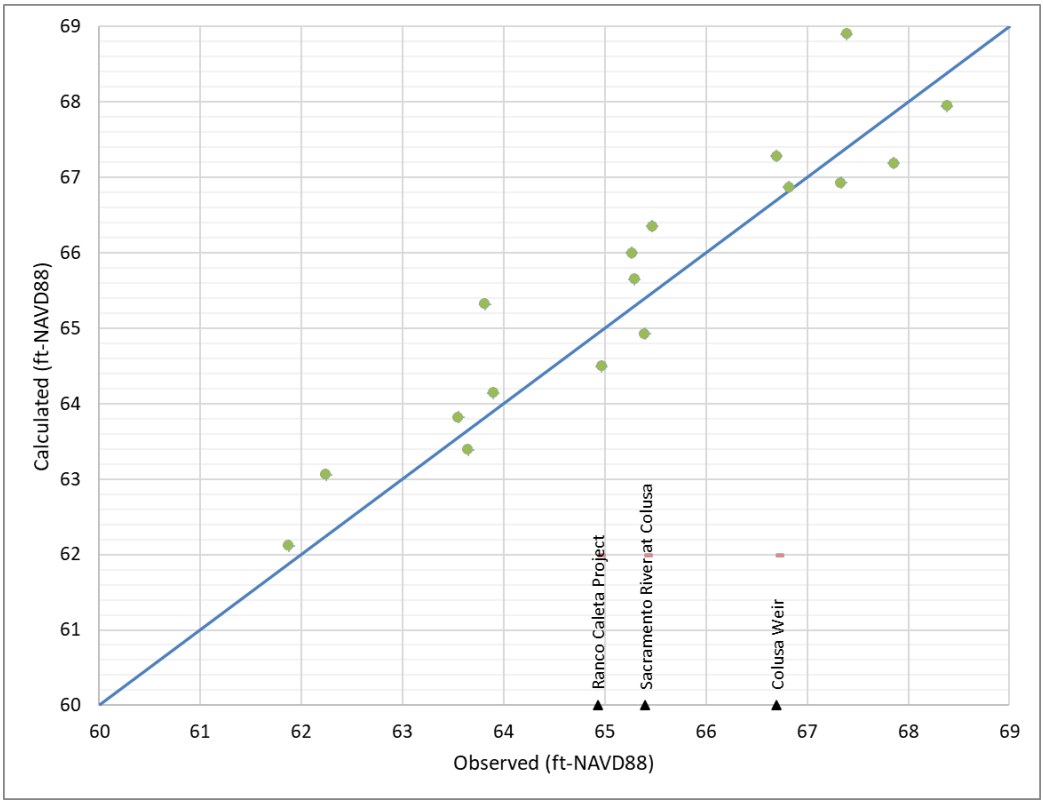


Figure 17. Calibration Stages – January 2006 Observed High Water Marks vs. Computed Stages – Sacramento River near Project Site

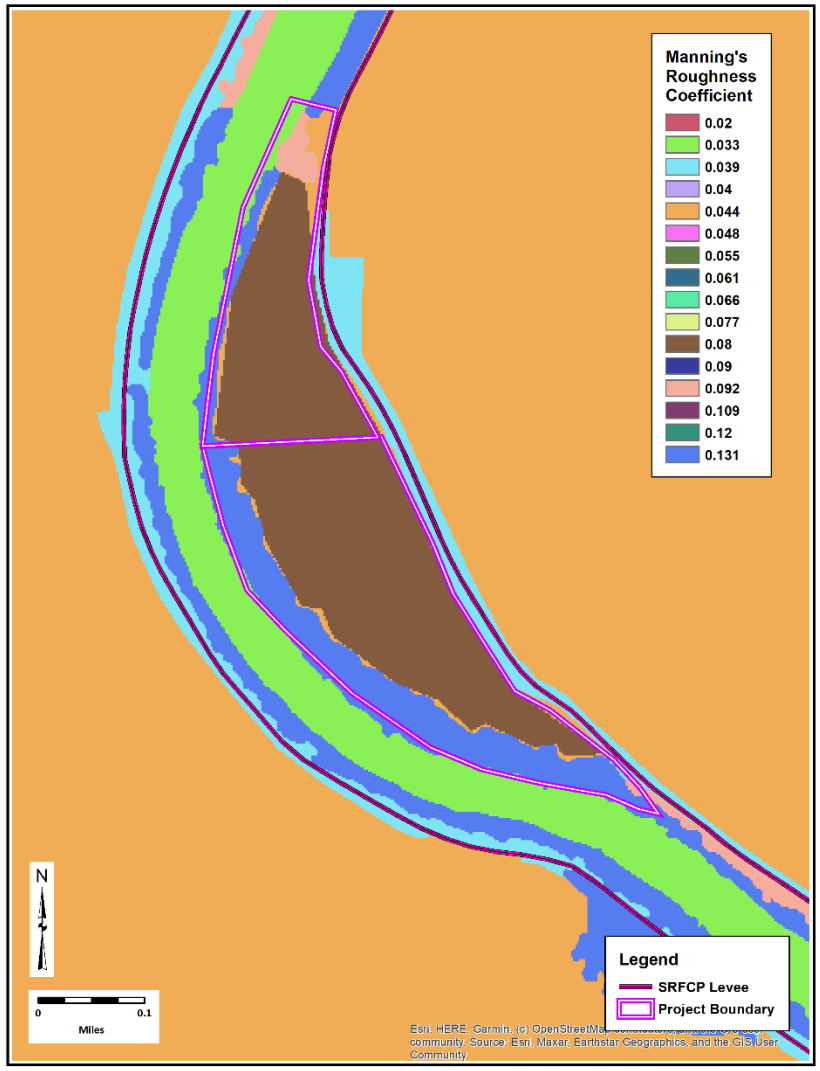


Figure 18. Without-Project Manning's Roughness Coefficients in Project Vicinity

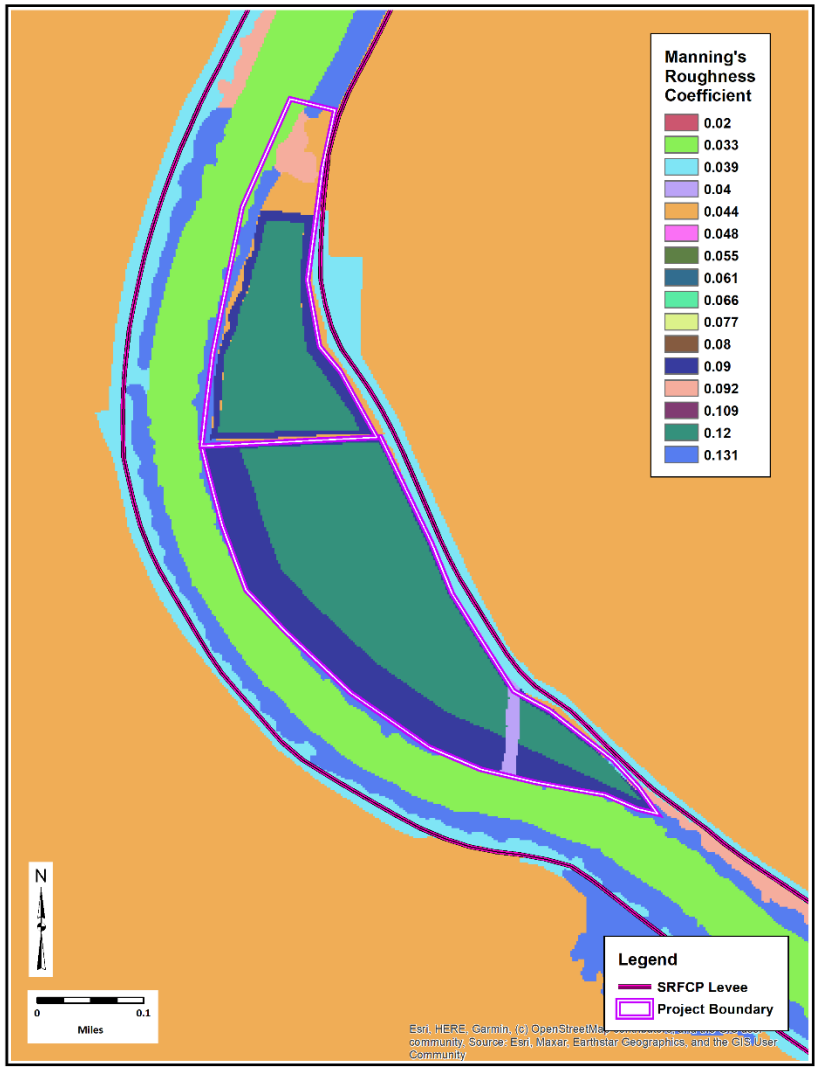


Figure 19. With-Project Manning's Roughness Coefficients in Project Vicinity

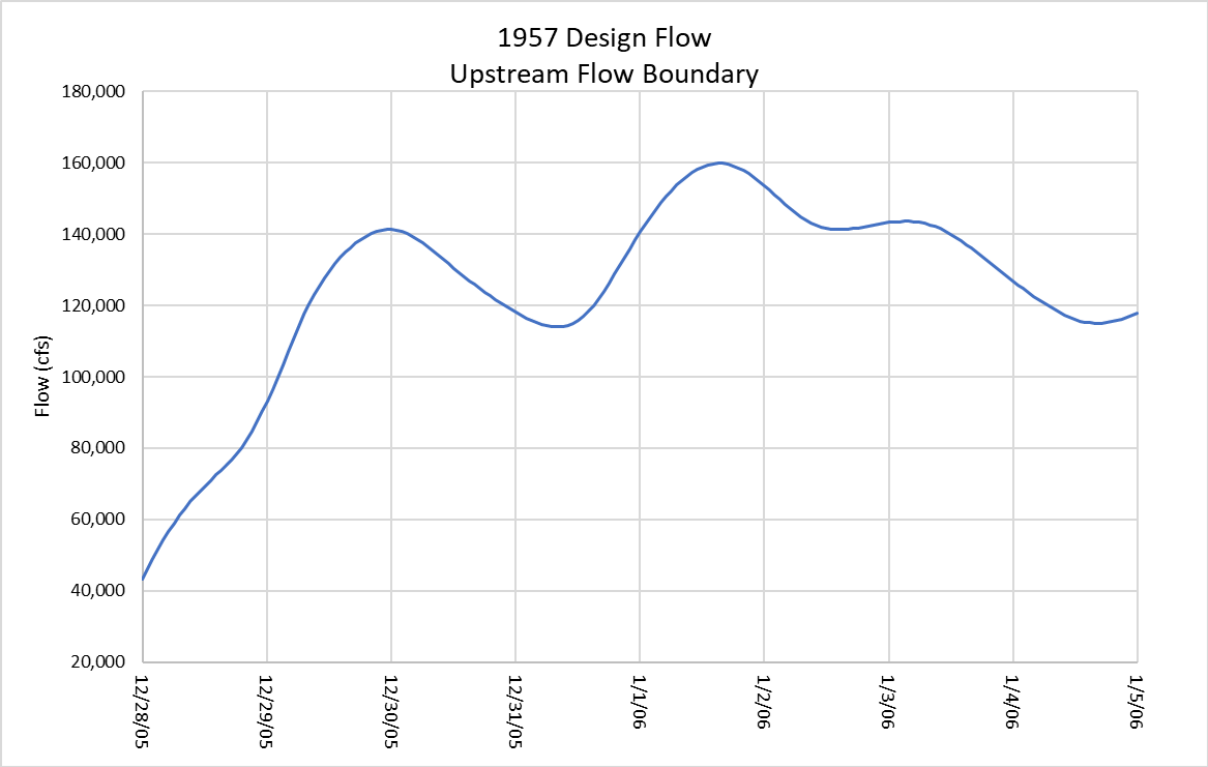


Figure 20. Upstream Boundary Flow on the Sacramento River at Cross-Section 164.35 – January 2006 Calibration Event

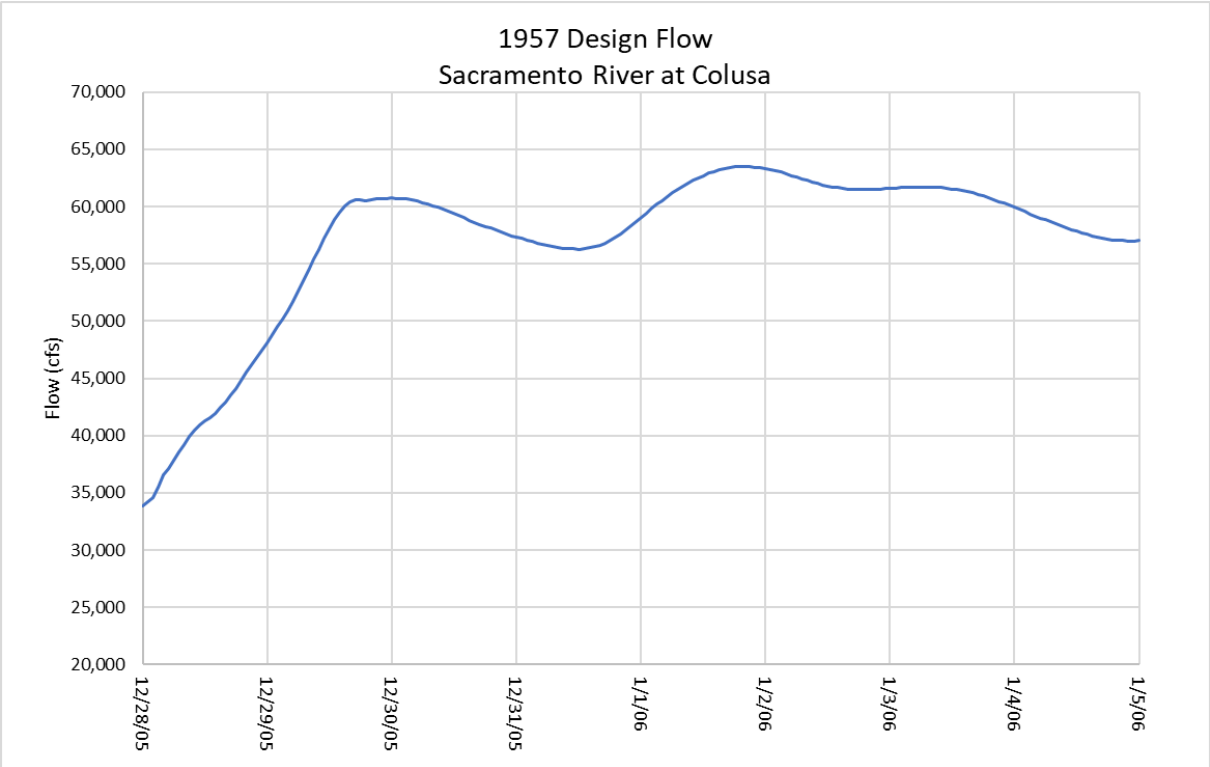


Figure 21. Sacramento River at Colusa Flow– 1957 Design Flow

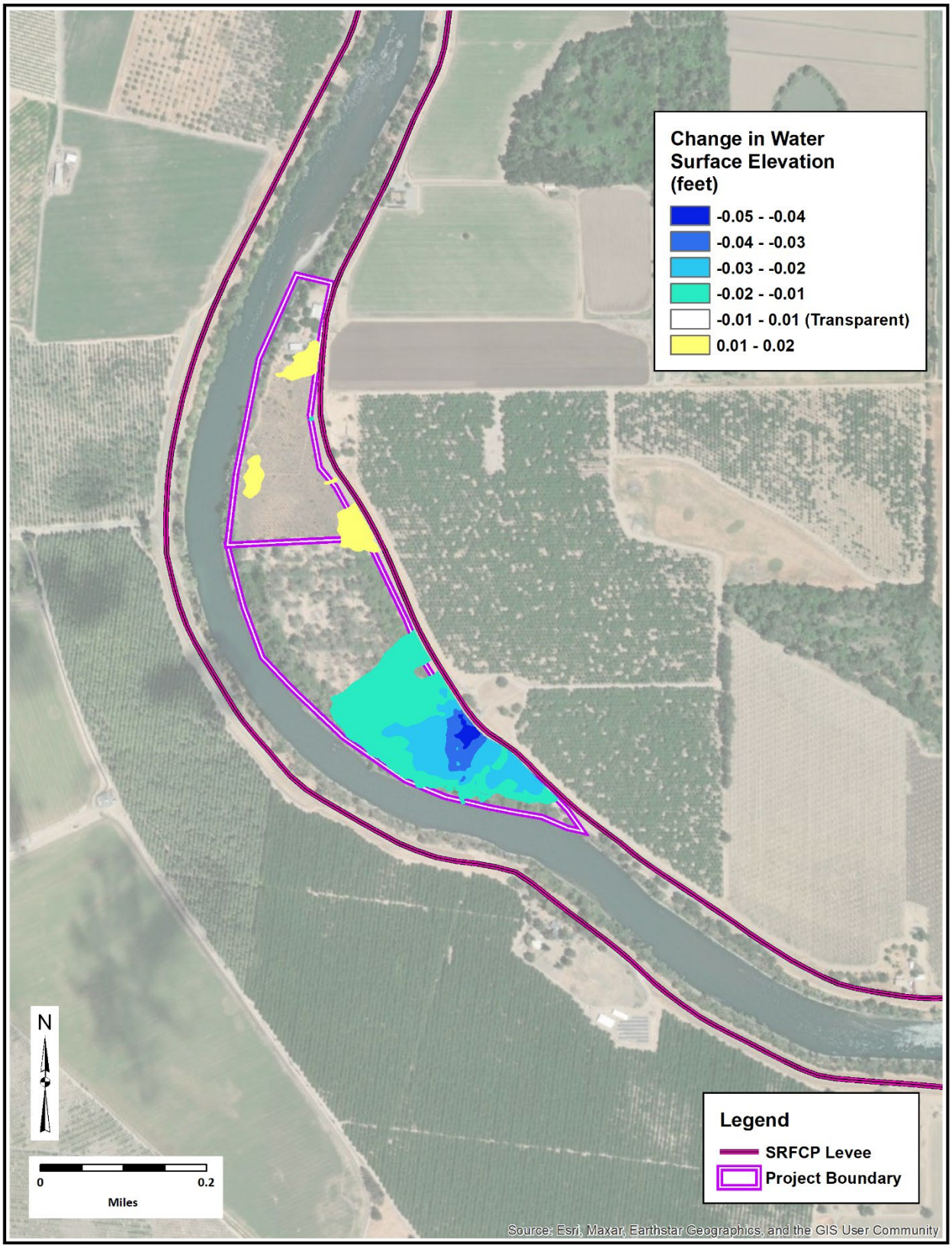


Figure 22. Change in Water Surface Elevation during 1957 Design Flow Conditions

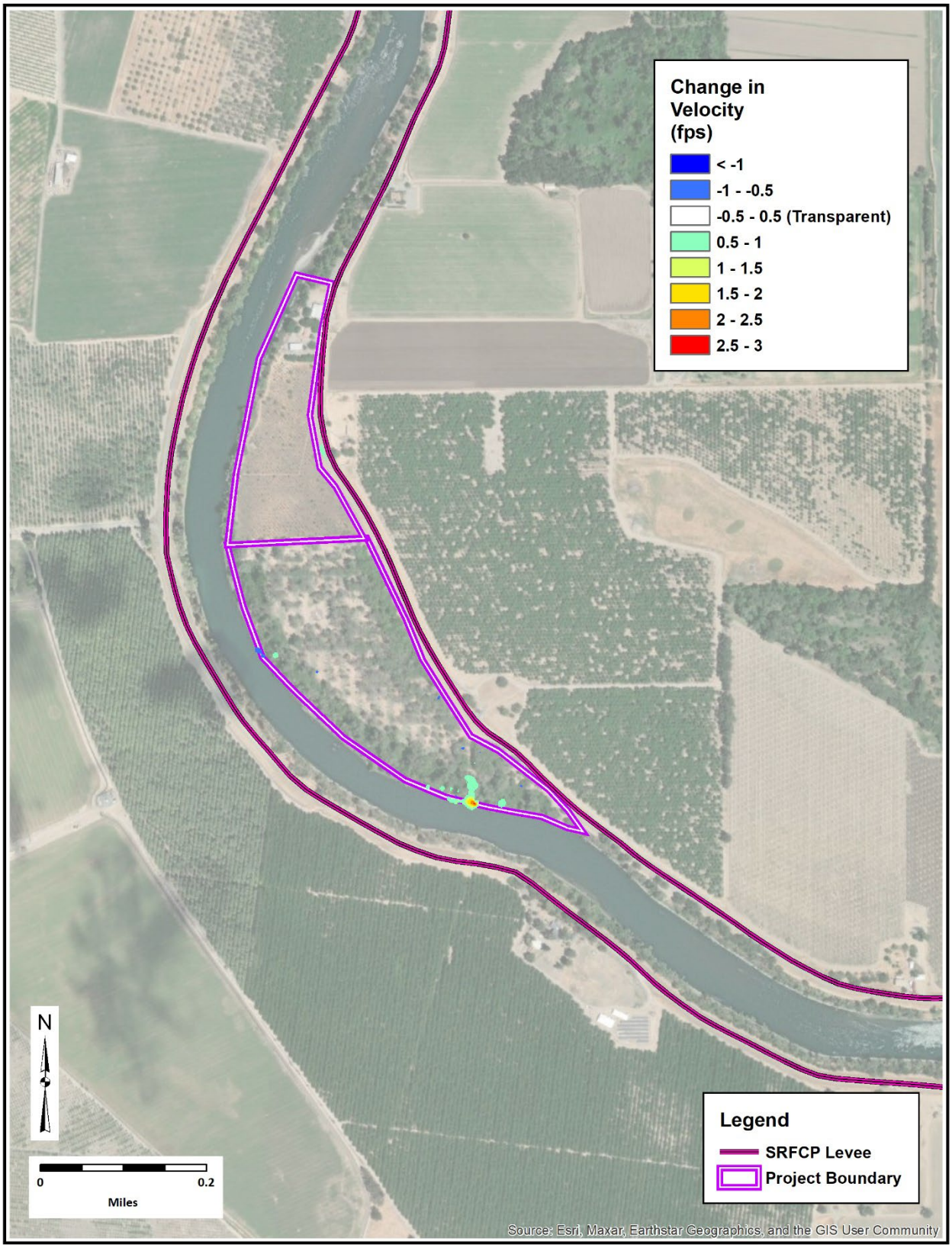


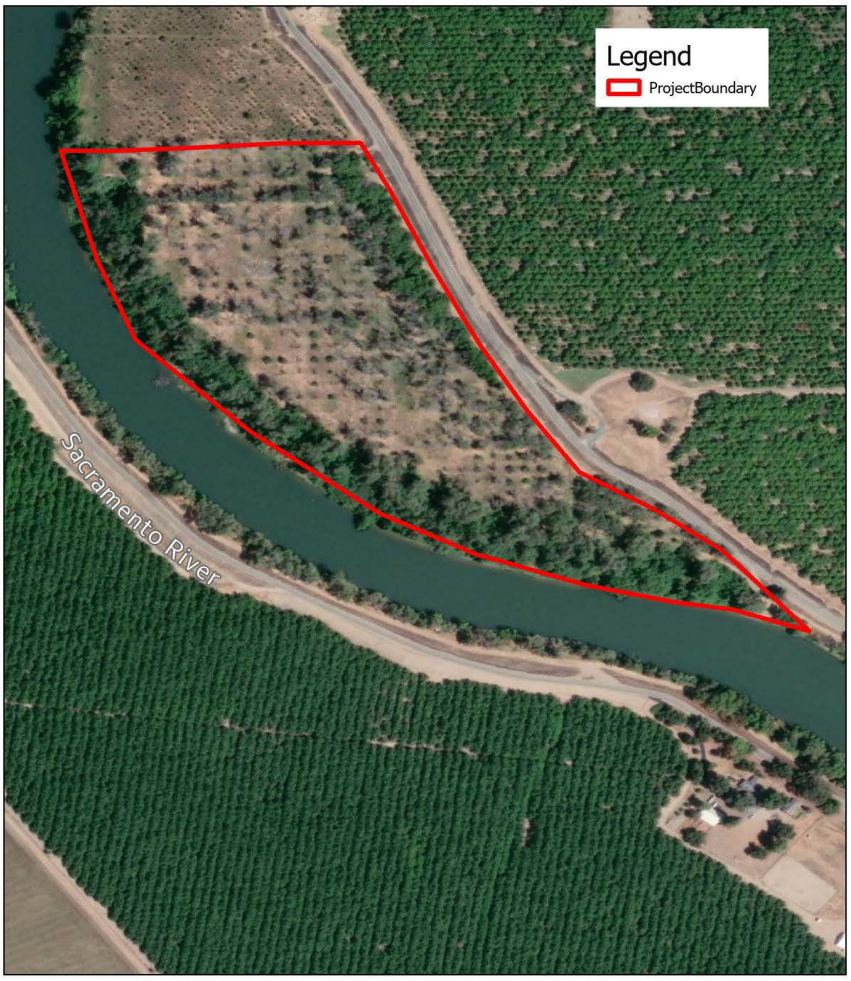
Figure 23. Change in Velocity during 1957 Design Flow Conditions

Appendix 4

Appendix 4

Biological Evaluation Report

for the Rancho Caleta Project



Prepared by: **River Partners**

Date: **August 22, 2024**

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Summary

This report describes the habitats, wildlife, and plants encountered during biological evaluations conducted on the proposed Rancho Caleta project site in Colusa County, California. It also provides recommendations for avoidance and mitigation measures to reduce impacts to biological resources resulting from the implementation of the project.

The Rancho Caleta project is a 30-acre project within the Colusa-Verona reach of the Sacramento River that has been identified for salmon habitat enhancements and riparian restoration. This project plans to increase habitat connectivity for juvenile salmon and riparian-dependent species, contributing to the benefits of existing riparian restoration projects in the area (Figure 1).

The project area is in Colusa County, adjacent to the City of Colusa, California, at River Mile 141L. Figure 2 shows the project boundary. Currently, the site owned by River Partners is a walnut orchard offering limited wildlife habitat; once restored, it will provide critical habitat to riparian wildlife. The restoration project area is 30 acres, of which approximately 27 acres (due to existing vegetation and maintenance roads) are planned for restoration using site grading to improve conditions for juvenile salmonids and large-scale agricultural practices to replace the walnut orchard with native riparian species.

Information in this report was supported by several biological investigations, which are summarized in the biological survey results below. Botanical surveys were conducted in May 2022 and April-May 2023. Blue elderberry shrubs were surveyed in April 2023. Wildlife surveys began in May 2022 and are ongoing during each site visit.

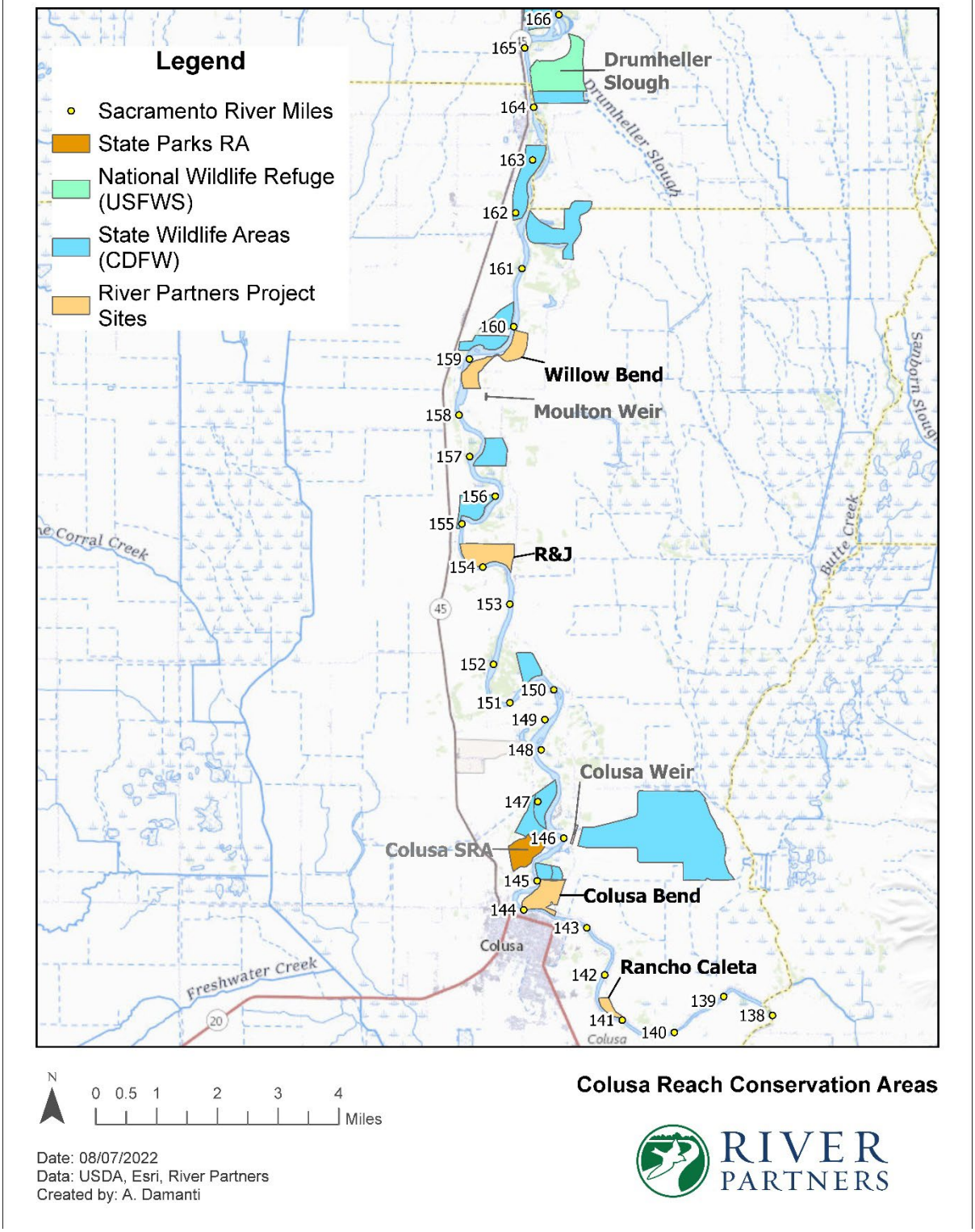


Figure 1. Project Vicinity Map, Colusa County, California



Figure 2. Arial Photography of the Project Area, April 2023

Proposed Project

River Partners will implement comprehensive habitat enhancements on 27 acres of the Rancho Caleta unit that includes salmonid habitat enhancements, riparian restoration, and ongoing monitoring and maintenance, designed to align with the goals of the Central Valley Project Improvement Act (CVPIA). The purpose of the Rancho Caleta Project is to improve fish and wildlife habitat by providing juvenile salmonids access to high-quality rearing habitat on the floodplain; removing any barriers that prevent them from returning to the main channel when the floodwaters recede; creating riparian habitat that benefits wildlife and contributes to the overall connectivity of the riparian habitat in the Colusa-Verona reach of the Sacramento River.

- **Salmonid Habitat Enhancements:** Engineering designs plan for grading approximately 1 acre of the site to encourage river flows to inundate and retain water in historical channels and deep depressions. The project will remove an earthen berm, allowing the site to flood more frequently at approximately 22,000 cfs. In this reach of the Sacramento River, flows are most directly affected by Colusa Weir upstream of the site and the narrow, channelized corridor of river between levees south of the City of Colusa. The alterations are intended to work synergistically with adjacent wildlife management actions and flood management actions within the State of California Flood Control Plan.
- **Riparian Restoration:** After the site is graded for salmonid habitat enhancements, River Partners will restore riparian habitat on 27 acres of Rancho Caleta. This includes actively planting native riparian species. The restoration plans are designed to benefit resident and migratory birds, fish, mammals, and invertebrates.
- **Monitoring and Maintenance**: Monitoring of native wildlife and vegetation will occur before, during, and after construction. A biological monitor will be on-site to monitor biological resources and water quality during any work on the banks of the Sacramento River. Maintenance of the restoration using irrigation and weed control is planned for 3 years following implementation.

Landscape Conditions and Site History

The Rancho Caleta project is located within the mainstem of the Sacramento River at river mile 141L, approximately three miles downstream of the Colusa bridge in the town of Colusa, CA. The site boundary of the Rancho Caleta project lies on the east bank of the Sacramento River and is the private property of River Partners. The property appears geologically stable, with little bankside change or erosion from river meander since 1971 (Figures 3-6).

The western edge of the property contains remnant riparian vegetation resembling Fremont cottonwood forest. It is a primarily woodland habitat containing Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), and arroyo willow (*Salix lasiolepis*). The southern edge of the property resembles more of a valley oak riparian forest and woodland. Most of the

property contains silty loam soil classified as Moonbend Silt Loam by the Natural Resource Conservation Service (NRCS 2022, Figure 8).

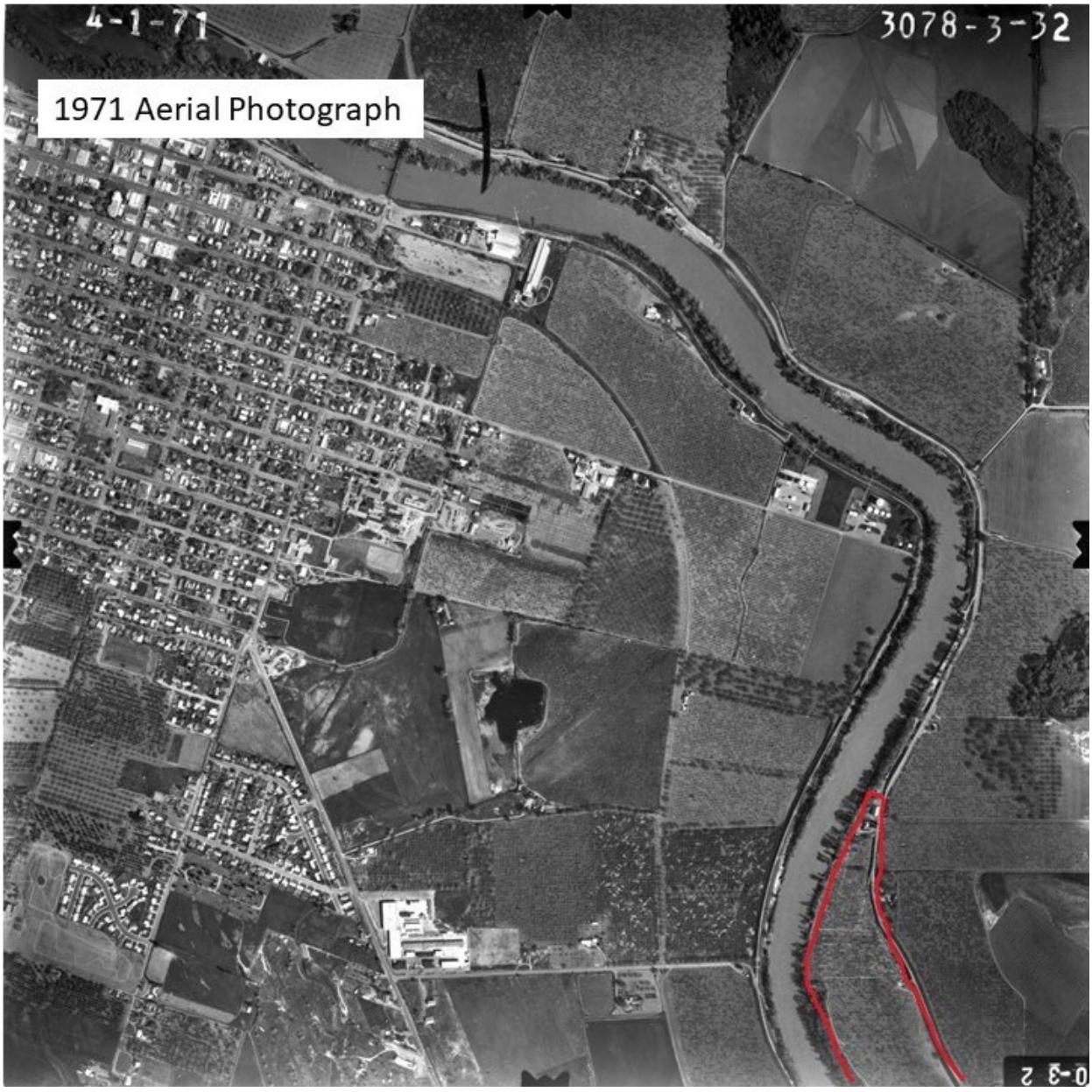


Figure 3. Arial Photography of the Project Area, 1971 (NRCS)



Figure 4. Arial Photography of the Project Area, 1998 (Google Earth)



Figure 5. Arial Photography of the Project Area, 2005 (Google Earth)



Figure 6. Arial Photography of the Project Area, 2013 (Google Earth)

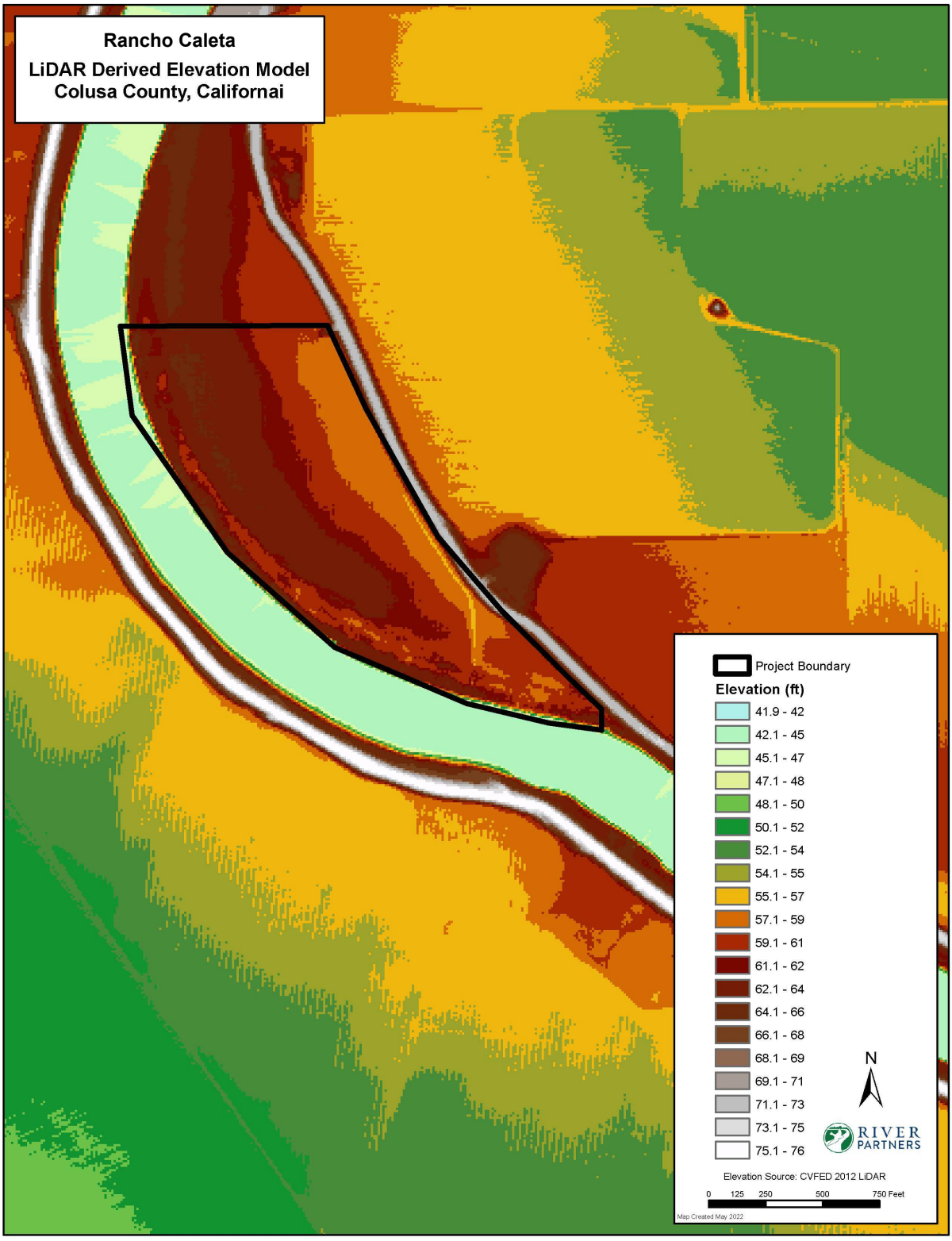


Figure 7. LiDAR Digital Elevation Model (DEM) showing graduated colors in 2-foot increments from 41.9-76' elevation.



Figure 8. Soils map of Project Area (Red Outline)

Wildlife Habitat and Vegetation Communities

The project area includes multiple habitat types, listed in Table 1, that can broadly be divided into those found in the Sacramento River as well as its floodplain and adjacent upland areas (refer to Figure 9-10 on pg. 14-15).

Table 1. Acreage of Habitat Types within the Study Area

CNPS[1] Vegetation Alliance	CWHR[2] Classification	Acres
Upland Mustards or Star-thistle Fields	Annual Grassland	0.74
Orchard Agriculture	Orchard Agriculture	43.09
Riverine	Riverine	0.86
Fremont Cottonwood Forest and Woodland	Valley Foothill Riparian	19.34
[1]California Native Plant Society (CNPS 2023)		
[2]California Wildlife Habitat Relationships (CDFW 2023b)		

Annual Grassland Classification

The annual grassland (CWHR Class) is known to provide foraging habitat for many wildlife species, including the turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and prairie falcon (*Falco mexicanus*). It also provides breeding habitat for the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), western rattlesnake (*Crotalus oreganus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus califomicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), American badger (*Taxidea taxus*), and coyote (*Canis latrans*) (CDFW, 2023b).

Upland Mustards or Star-thistle Fields
0.74 acres

Approximately 0.74 acres of upland mustards or starthistle fields can be found within the project area. Upland mustard alliance, which includes several mustard species along with other non-native or invasive forbs, consists of *Brassica nigra*, *Brassica rapa*, *Carduus pycnocephalus*, *Centaurea melitensis*, *Centaurea solstitialis*, *Cynara cardunculus*, *Euphorbia terracina*, *Hirschfeldia incana*, *Isatis tinctoria* or *Raphanus sativus*. People have planted mustard species as cover crops to reduce runoff and preserve nitrogen, as well as to suppress other weeds due to their ability to form dense colonies that outcompete native and non-native plants. Tall mustards increase fire fuel loads and fire intensity, especially in areas already altered by non-native grasses with which they commonly grow (CNPS 2023).

Brassica nigra, commonly known as black mustard, is an annual plant cultivated for its dark-brown to black seeds, which are commonly used as a spice. It is native to tropical regions of North Africa, temperate regions of Europe, and parts of Asia. *Brassica rapa* is a plant species

growing in various widely cultivated forms including the turnip. *Brassica rapa* subspecies has many common names including field mustard. *Hirschfeldia incana*, known as shortpod mustard, is a summer-blooming perennial that is invasive in grasslands, coastal scrub, and riparian areas in southern California. *Isatis tinctoria*, or dyer's woad, is a short-lived mustard that forms extensive patches in rangelands, agricultural lands, and meadows, particularly in northern mountain ranges. *Raphanus sativus*, cultivated radish is an annual found in various habitats throughout California. *Centaurea solstitialis*, known as yellow star-thistle, is a bushy winter annual that inhabits open hills, grasslands, open woodlands, fields, roadsides, and rangelands. It propagates rapidly by seed. *Centaurea melitensis*, or Maltese star-thistle, is another invasive species found in central and southern California.

Orchard Agriculture Classification

43.09 acres

In California, an orchard is an intentional plantation of trees or shrubs maintained for food production. Orchards comprised of fruit- or nut-producing trees are generally grown for commercial production. Depending on the crop type and pruning methods these trees are small and short with an open understory. The understory in orchards often has herbaceous annuals and perennials during the winter months. In some orchards cover crops or row crops are present year-round and offer nutrient rich biproducts for the orchard. In some cases, the understory is left alone and herbaceous plants such as Bermuda grass, johnsongrass; or annual grasses such as soft chess, annual ryegrass, wildoats and others; or forbs such as wild mustard or fiddleneck, can be found in the area (CDFW 2023b). Within the project area, the orchard agriculture classification also encompasses the urban, non-native, ornamental hardwood classification which was differentiated into one distinct habitat type based on the associated vegetation communities: Hind’s walnut and related stands. This habitat type is described below.

Riverine Classification

0.86 acres

Riverine (CWHR Class) provides resting and escape cover for many species of waterfowl, and foraging habitat for insectivorous and piscivorous bird species. Waterfowl and shorebirds also forage near the shore. Common mammals associated with riverine habitats include northern river otter (*Lontra canadensis*), American mink (*Mustela vison*), common muskrat (*Ondatra zibethicus*), and American beaver (*Castor canadensis*). The project area includes approximately 0.51 acres of riverine habitat (i.e. the Sacramento River). The Sacramento River is designated as essential fish habitat (EFH) for Chinook salmon.

Valley Foothill Riparian Classification

19.34 acres

Valley Foothill Riparian (CWHR Class) is known to provide food, water, migration and dispersal corridors, cover, nesting, and thermal cover for many wildlife species (CDFW, 2023b). Within the project area, the valley foothill riparian classification was differentiated into one distinct

habitat type based on the associated vegetation communities: Fremont cottonwood forest and woodland. This habitat type is described below.

Fremont Cottonwood Forest and Woodland

Approximately 19.34 acres of Fremont cottonwood forest and woodland occur within the project area. Fremont cottonwood is a fast-growing, short-lived, shade-intolerant tree. It is the dominant species of this habitat type and alliance. Co-dominant canopy species can be boxelder, western sycamore (*Platanus racemosa*), and many willow (*Salix* spp.) species. The Fremont cottonwood forest and woodland is found on floodplains, along low gradient rivers, perennial or seasonal intermittent streams, springs, and in valleys with dependable subsurface water supply. In the USACE Wetland Inventory, *Populus fremontii* is a FACW plant (CNPS 2023).

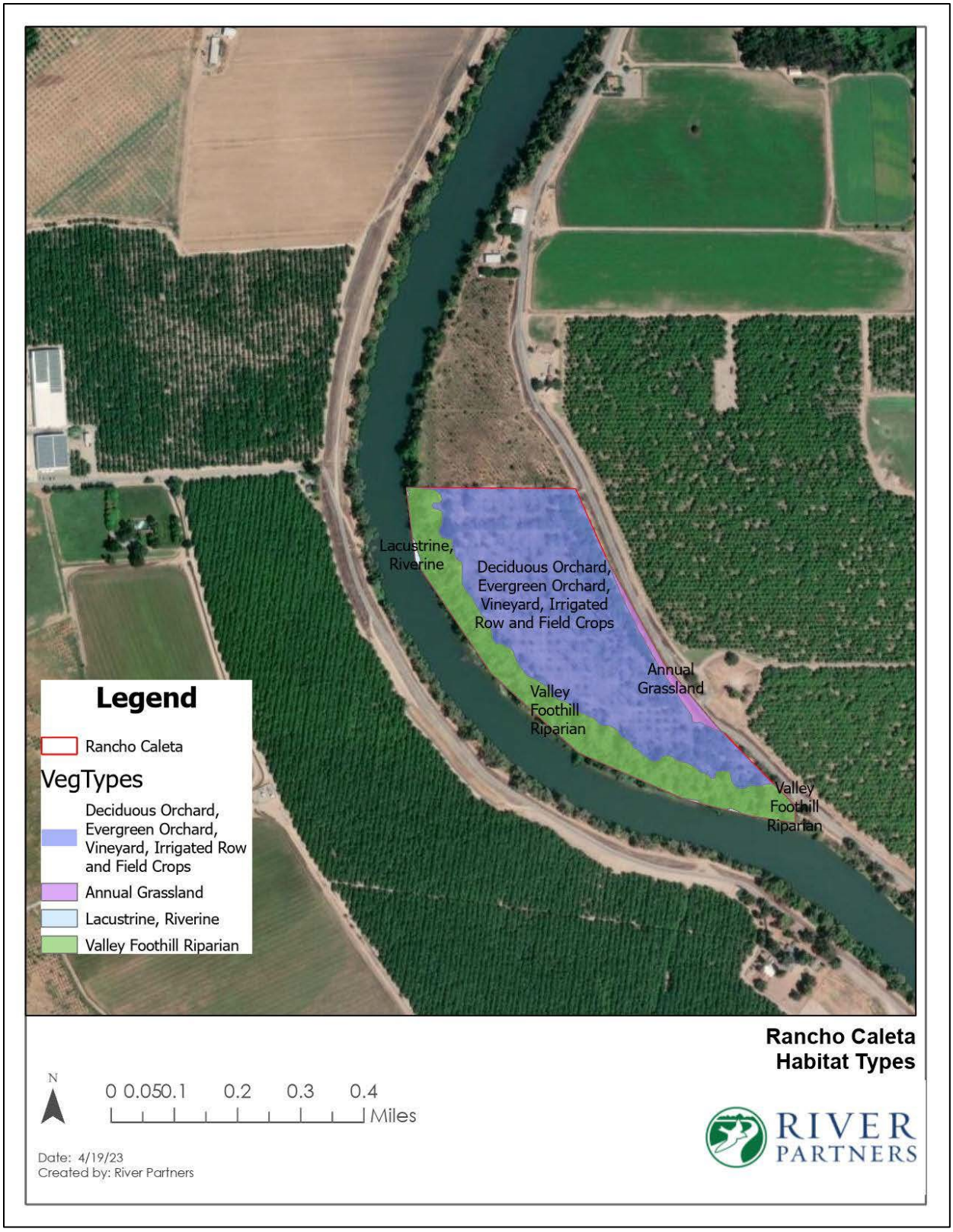


Figure 9. Distribution of CWHR Habitat Types within the Study Area

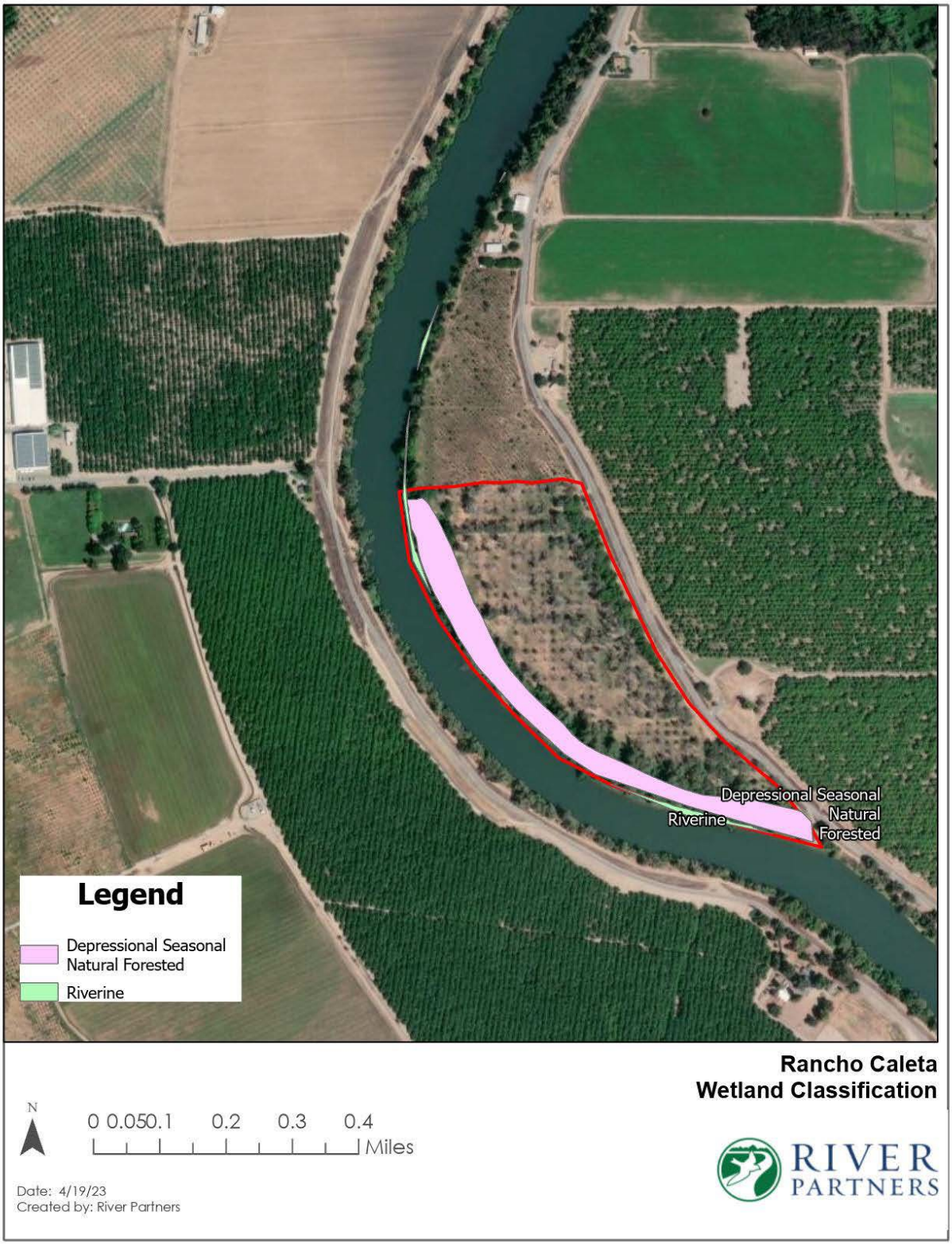


Figure 10. National Wetlands Inventory Mapping Units of Study Area

Biological Survey Results

Botanical Surveys

The proposed restoration project aims to improve salmonid habitat through actions that include sediment excavation, a spoils area, haul routes and staging equipment, and perennial inundation of a newly created drainage swale. Botanical surveys were conducted on May 16, 2022, and May 19, 2023. These surveys searched for rare plants and described vegetation characteristics of the project area. Information from these surveys will be used to mitigate potential impacts to botanical resources on the site by the previously described restoration activities.

40 plant taxa were observed in the project area (Table 2). The vegetation structure and composition observed can be broadly categorized as valley foothill riparian, valley oak woodland, annual grassland, and orchard agriculture/non-native, ornamental hardwood (Figure 7). Valley foothill riparian habitat populates the project area's western edge along the Sacramento River. Vegetation found in this area is thought to be remnant of what naturally occurred in this area prior to agricultural development and the installation of Shasta Dam in 1943. The subcanopy in this area contained boxelder, Oregon ash and blue elderberry. Understory plants present were wild grapes, willows, and poison oak. The herbaceous layer contained non-native grasses and forbs, Dutchman's pipevine, johnsongrass, Italian rye grass, and jimsonweed. Annual grassland habitat existed alongside and intermingled with valley foothill riparian. The project area's most dominant habitat type is orchard agriculture which is approximately 73% of the site.

No rare plants were encountered during surveys; however, early-season rare plants are not readily identifiable during late-season surveys and may not be present so early in the season due to colder weather patterns experienced in early 2023. A mid-spring 2024 rare plant survey may be scheduled to confirm no early-season rare plants are present.

Native riparian trees and shrubs serve an important ecological and hydrological role and will be preserved as much as possible during construction.

Table 2. Plants observed in the Study Area during biological surveys

Group	Family	Species	Common Name
Eudicot	Anacardiaceae	*Toxicodendron diversilobum*	poison oak
Eudicot	Aristolochiaceae	*Aristolochia californica*	California Dutchman's pipevine
Eudicot	Asteraceae	*Artemisia douglasiana*	California mugwort
Eudicot	Asteraceae	***Centaurea solstitialis***	yellow starthistle
Eudicot	Asteraceae	*Erigeron canadensis*	horseweed
Eudicot	Asteraceae	***Silybum marianum***	milk thistle
Eudicot	Boraginaceae	*Amsinckia menziesii*	common fiddleneck
Eudicot	Brassicaceae	***Brassica nigra***	black mustard

Eudicot	Brassicaceae	***Capsella bursa-pastoris***	shepherd's purse
Eudicot	Brassicaceae	***Lepidium latifolium***	perennial pepperweed
Eudicot	Chenopodiaceae	***Chenopodium album***	lamb's quarters
Eudicot	Fabaceae	*Lupinus spp.*	lupine species
Eudicot	Fagaceae	*Quercus lobata*	valley oak
Eudicot	Heliotropiaceae	***Heliotropium europaeum***	European heliotrope
Eudicot	Juglandaceae	***Juglans regia***	English walnut
Eudicot	Malvaceae	***Malva parviflora***	cheeseweed
Eudicot	Moraceae	***Ficus carica***	common fig
Eudicot	Moraceae	***Morus alba***	mulberry
Eudicot	Oleaceae	*Fraxinus latifolia*	Oregon ash
Eudicot	Onagraceae	*Oenothera elata*	evening primrose
Eudicot	Rosaceae	***Rubus armeniacus***	Himalayan blackberry
Eudicot	Rosaceae	*Rubus ursinus*	California blackberry
Eudicot	Salicaceae	*Populus fremonti*	Fremont cottonwood
Eudicot	Salicaceae	*Salix exigua*	sandbar willow
Eudicot	Salicaceae	*Salix gooddingii*	black willow
Eudicot	Salicaceae	*Salix lasiolepis*	arroyo willlow
Eudicot	Sapindaceae	*Acer negundo*	box elder
Eudicot	Simaroubaceae	***Ailanthus altissima***	tree of heaven
Eudicot	Solanaceae	*Datura wrightii*	Jimsonweed
Eudicot	Rubiaceae	*Cephalanthus occidentalis*	buttonbush
Eudicot	Urticaceae	*Urtica dioica*	hoary nettle
Eudicot	Viburnaceae	*Sambucus nigra ssp. caerulea*	blue elderberry
Eudicot	Vitaceae	*Vitis californica*	California wild grape
Eudicot	Zygophyllaceae	***Tribulus terrestris***	puncture vine
Monocot	Poaceae	***Arundo donax***	giant arundo
Monocot	Poaceae	***Bromus catharticus***	rescue brome
Monocot	Poaceae	***Bromus diandrus***	ripgut brome
Monocot	Poaceae	***Cynodon dactylon***	Bermuda grass
Monocot	Poaceae	***Festuca perennis***	Italian rye grass
Monocot	Poaceae	***Sorghum halepense***	Johnson grass

Note: Bold species are non-native

Wildlife Surveys

Wildlife surveys were conducted by River Partners personnel in May 2022 and May 2023. The surveys found a total of 69 species of animals within the project area (Table 3). Surveys are ongoing and the list is a living list of species encountered during each visit.

Table 3. Animals observed in the Study Area during biological surveys.

Species	Common Name	Type
Accipiter cooperii	Cooper's Hawk	Bird
Aix sponsa	wood duck	Bird
Anas platyrhynchos	mallard duck	Bird
Anser albifrons	greater white-fronted goose	Bird
Aphelocoma californica	California scrub jay	Bird
Archiloches alexander	black-chinned hummingbird	Bird
Arden herodias	great blue heron	Bird
Baeolophus inornatus	oak titmouse	Bird
Bombycilla cedrorum	cedar waxwing	Bird
Branta canadensis	Canada goose	Bird
Bubo virginianus	great horned owl	Bird
Buteo jamaicensis	red-tailed hawk	Bird
Buteo lineatus	red-shouldered hawk	Bird
Butorides virescens	green heron	Bird
Callipepla californica	California quail	Bird
Calypte anna	Anna's hummingbird	Bird
Cathartes aura	turkey vulture	Bird
Catharus guttatus	hermit thrush	Bird
Catharus ustulatus	Swainson's thrush	Bird
Charadrius vociferus	killdeer	Bird
Colaptes auratus	northern flicker	Bird
Contopus sordidulus	Western wood-peewee	Bird
Corvus brachyrhynchos	American crow	Bird
Dryobates nuttallii	Nuttall's woodpecker	Bird
Dryobates pubescens	downey woodpecker	Bird
Empidonax difficilis	Pacific-slope flycatcher	Bird
Haemorhous mexicanus	house finch	Bird
Icteria virens	yellow-breasted chat	Bird
Icterus bullockii	Bullock's oriole	Bird
Junco hyemalis	dark-eyed junco	Bird
Megaceryle alcyon	belted kingfisher	Bird
Melanerpes formicivorus	acorn woodpecker	Bird
Meleagris gallopavo	wild turkey	Bird
Melozone crissalis	California towhee	Bird
Mimus polyglottos	Northern mockingbird	Bird
Molothrus ater	brown-headed cowbird	Bird
Myiarchus cinerascens	ash-throated flycatcher	Bird
Pandion haliaetus	osprey	Bird
Passer domesticus	house sparrow	Bird
Passerina amoena	Lazuli bunting	Bird
Phainopepla nitens	phainopepla	Bird
Pheucticus melanocephalus	black-headed grosbeak	Bird
Pipilo maculatus	spotted towhee	Bird
Piranga ludoviciana	Western tanager	Bird
Psaltiparus minimus	bushtit	Bird
Regulus calendula	ruby-crowned kinglet	Bird
Sayornis nigricans	black phoebe	Bird
Setophaga coronata	yellow-rumped warbler	Bird

Sialia mexicana	Western bluebird	Bird
Sitta carolinensis	white-breasted nuthatch	Bird
Spinus psaltria	lesser goldfinch	Bird
Spinus tristis	American Goldfinch	Bird
Sturnus vulgaris	European starling	Bird
Tachycineta bicolor	tree swallow	Bird
Thryomanes bewickii	Bewick's wren	Bird
Troglodytes aedon	house wren	Bird
Turdus migratorius	American robin	Bird
Tyrannus verticalis	Western kingbird	Bird
Zenaida macroura	mourning dove	Bird
Odocoileus hemionus columbianus	Columbian black-tailed deer	Mammal
Canis latrans	coyote	Mammal
Didelphis virginiana	Virginia opossum	Mammal
Mephitis mephitis	striped skunk	Mammal
Odocoileus hemionus	mule deer	Mammal
Otospermophilus beecheyi	California ground squirrel	Mammal
Procyon lotor	raccoon	Mammal
Sciurus griseus	gray squirrel	Mammal
Sylvilagus bachmani	brush rabbit	Mammal
Sceloporus occidentalis	Western fence lizard	Reptile

Special Status Species Assessment

A list of special status plants and animals for the project area was generated from a 10-mile-radius search of 2022 GIS data uploaded from the California Natural Diversity Database (CNDDB, 2022; Table 4). Multiple sources were used to obtain information on rare species' habitat, microhabitat, soil type, and elevation range (CalFlora, 2023; CDFW, 2023a; Jepson Flora Project (eds.), 2023). Although the entire project area was surveyed, special attention and field efforts were concentrated on species and habitats most likely present. Any additional species known to be or observed within the vicinity of the project area, but not noted within the CNDDB query, were also included.

This section discusses 35 special-status species that were found to have some likelihood of occurring within the project area. The likelihood of occurrence for each species was determined based upon the project area's proximity to known occurrences and the availability of suitable habitat within the project area. Minimization and avoidance measures are proposed for species determined to have a moderate or high likelihood of occurrence.

The listing status of each species is given as follows: CESA refers to the California Endangered Species Act listing status; ESA refers to the federal Endangered Species Act listing status; CNPS listing reflects the California Native Plant Society Rare Plant Program Status; CDFW refers to California Department of Fish and Wildlife; SSC refers to Species of Special Concern; FPS refers to Fully Protected Species; WLS refers to Watch List Species.

Table 4. Special-status species known to occur or likely to occur within the project area

Species	Common Name	Listing Status	Likelihood of Occurrence
Birds			
Agelaius tricolor	tricolored blackbird	CESA: Threatened CDFW: SSC	**Moderate:** Potential breeding habitat and nearby population.
Antgone canadensis tabida	Greater sandhill crane	CESA: Threatened CDFW: FP	**Low:** Poor foraging habitat. Flocks occurring nearby were last observed in 1987
Branta hutchinsii leucopareia	Aleutian cackling goose	ESA: Delisted CDFW: WL	**Low:** Poor foraging habitat. Flocks occurring nearby were last observed in 1987
Buteo swainsoni	Swainson's hawk	CESA: Threatened	**Moderate:** Suitable foraging and nesting habitat available nearby. Successful nesting documented nearby.
Coccyzus americanus occidenttalis	Western yellow-billed cuckoo	ESA: Threatened CESA: Endangered	**Low:** Lack of suitable habitat
Haliaeetus leucocephalus	bald eagle	ESA: Delisted CESA: Endangered CDFW: FPS	**High:** Observed near project area, nearby nest sites known, suitable habitat.
Plegadis chihi	white-faced ibis	CDFW: WL	**Moderate:** Seen in area during highwater events.
Pandion haliaetus	osprey	CDFW: WLS	**High:** Observed within project area, nearby nest sites known, suitable habitat
Melospiza melodia pop.1	song sparrow "Modesto" population	CDFW: SSC	**Low:** Lack of suitable habitat.
Riparia riparia	bank swallow	CESA: Threatened	**High:** Past observations within the project area, suitable habitat.
Mammals			
Dipodomys californicus eximius	Marysville California kangaroo rat	CDFW: SSC	**Low:** Last seen in the Sutter Buttes in the 1930s.
Taxidea taxus	American badger	CDFW: SSC	**Moderate:** Suitable habitat in project area and nearby.
Lasiurus blossevillii	western red bat	CDFW: SSC	**High:** Riparian foraging and roosting habitat available, nearby occurrences.
Reptiles			
Emys marmorata	western pond turtle	CDFW: SSC	**High:** Nearby populations and potential suitable habitat.
Thamnophis gigas	giant gartersnake	ESA: Threatened CESA: Threatened	**Moderate:** Suitable habitat nearby.
Amphibians			
Rana boylii	foothill yellow-legged frog	CESA: Endangered CDFW: SSC	**Moderate:** Potential suitable habitat in project area.
Fish			
Acipenser medirostris	green sturgeon - southern DPS	ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is current habitat for this species.

Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Oncorhynchus tshawytscha	Winter-run Chinook salmon	CESA: Endangered ESA: Endangered	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Oncorhynchus tshawytscha	Spring-run Chinook salmon	CESA: Threatened ESA: Threatened	**High:** The project area is within a reach of the Sacramento River that is habitat for this species.
Spirinchus thaleichthys	longfin smelt	CESA: Threatened	**Low:** No recent occurrences.
Invertebrates			
Branchinecta lynchi	vernal pool fairy shrimp	ESA: Threatened	**Low:** No suitable habitat in project area.
Lepidurus packardi	vernal pool tadpole shrimp	ESA: Endangered	**Low:** No suitable habitat in project area.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	ESA: Threatened	**High:** Suitable habitat and nearby occurrences. Few host plants in project area.
Plants			
Amsinckia lunaris	Bent-flowered fiddleneck	CNPS: 1B.2	**Low:** No suitable habitat.
Astragalus tener var. ferrisiae	Ferris' milk-vetch	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Atriplex cordulata var. cordulata	Heartscale	CNPS: 1B.2	**Low**: Lack of suitable habitat.
Atriplex depressa	Brittlescale	CNPS: 1B.2	**Low:** Lack of suitable habitat
Atriplex persistens	Vernal pool smallscale	CNPS: 1B.2	**Low:** Lack of suitable habitat.
Chloropyron palmatum	palmate-bracted bird's-beak	ESA: Endangered CESA: Endangered CNPS: 1B.1	**Low:** Lack of suitable habitat
Extriplex joaquinana	San Joaquin spearscale	CNPS: 1B.2	**Low:** Lack of suitable habitat
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	CNPS: 1B.2	**Low:** Lack of suitable habitat
Lasthenia glabrata ssp. Coulteri	Coulter's goldfields	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Layia septentrionalis	Colusa layia	CNPS: 1B.1	**Low:** Lack of suitable habitat.
Puccinellia simplex	California alkali grass	CNPS: 1B.2	**Low:** Lack of suitable habitat.

Birds

Agelaius tricolor **(tricolored blackbird)**

Listing Status – CESA: Threatened, CDFW: SSC

The project site is within the species current range. Breeding colonies of tricolored blackbirds are generally found in the San Joaquin and southern Sacramento Valley in freshwater marshes with tall emergent vegetation. Several colonies are within 10 miles of the site in marshes and wetlands with large patches of tule, cattail, and of blackberry (CNDDB, 2022). These patches of tall emergent vegetation combined with surrounding willow thicket could provide suitable

breeding habitat for tricolored blackbird breeders. The availability of potential breeding habitat, and nearby occurrences indicate that this species has a moderate likelihood of occurring within the project area. The following measure is proposed to reduce project impacts to the tricolored blackbird:

- General Protection Measures for Birds
- Conduct Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

***Antigone canadensis tabida* (greater sandhill crane)**
Listing Status – CESA: Threatened, CDFW: FP
The greater sandhill crane, now reduced greatly in numbers, can be found frequenting annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands where it winters in the Sacramento and San Joaquin valleys from Tehama Co. south to Kings Co. (CDFW 2023b). For foraging, the greater sandhill crane prefers open shortgrass plains, grain fields, and open wetlands and they nest in remote portions of wetlands typically on large mounds of wetland plants, in shallow water. The project area is within the species winter range with an occurrence of one individual reported within 6 miles, in the Sutter Buttes, in October of 1924 (CNDDB 2022). The project area does not provide appropriate forage and roosting cover, this species has a low likelihood of occurring here.

***Branta hutchinsii leucopareia* (Aleutian cackling goose)**
Listing Status – ESA: Delisted, CDFW: WL
Aleutian cackling goose is a subspecies of cackling goose that reproduces in the extreme western regions of Alaska out into the Aleution Islands but is known as a winter migrant in California. While overwintering in California, Aleutian cackling goose prefers habitat in moist grasslands, croplands, pastures, and meadows where it feeds mainly on green shoots and seeds of cultivated grains and wild grasses and forbs. This species has a low likelihood of occurring in the project area as it is considered poor habitat for this species. Five flocks of Aleutian cackling geese were last recorded 4 miles northeast of the project area in January 1987 (CNDDB 2022).

***Buteo swainsoni* (Swainson's hawk)**
Listing Status – CESA: Threatened
Swainson's hawk utilize open habitats for foraging such as grasslands, agricultural fields, and pastures. Scattered trees near foraging areas are utilized for nesting sites. Potentially suitable foraging and nesting habitat is available in areas adjacent to the project area. There have been multiple observations from 1997-2006 within 10 miles of the project area. In 2003, a pair was observed nesting about a mile southeast of the project area with two confirmed fledglings (CNDDB 2022). This species is considered to have a moderate likelihood of occurring within the project area. The following measures are proposed to reduce project impacts to Swainson's hawk:

- Specific Protection Measures for Swainson's Hawk
- General Protection Measures for Birds

- Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species
- Pre-Construction Surveys for Nesting Raptors

***Coccyzus americanus occidentalis* (western yellow-billed cuckoo)**
Listing Status – ESA: Threatened, CESA: Endangered
Western yellow-billed cuckoo is a central valley summer migrant primarily found breeding along the Sacramento River from Red Bluff to Colusa (Laymon 1998). Suitable nesting habitat for this species features a cottonwood canopy in mixed riparian/willow scrub near point bars. There have been a few observations of the western yellow-billed cuckoo within 10 miles of the project reported as far back as 1974. In July of 2012, at least one individual was detected (heard) during solicitation surveys about 8 miles north of the Project Area (CNDDB 2022). Due to the lack of dense cover and appropriate habitat, western yellow-billed cuckoo has a low likelihood of occurring in the project area.

***Haliaeetus leucocephalus* (bald eagle)**
Listing Status – ESA: Delisted, CESA: Endangered, CDFW: FP
The bald eagle is a large bird of prey found in North America. The species is an opportunistic feeder, subsisting mainly on fish. During the breeding season, bald eagles occur in wetlands, seacoasts, rivers, lakes, or other large bodies of water with abundant fish. Two adults were seen and heard at a nest that appeared to be one or two years old eight miles north of the project area in 2014 (CNDDB, 2022).The proximity to active nests, and the availability of large trees and snags within project site and immediate vicinity indicate that this species is highly likely to occur within the site. A qualified biologist shall conduct a pre-construction survey no less than 14 days prior to initiating ground disturbance activities. If an active bald eagle nest is found within 0.5 mile of the Study Area, the following avoidance and mitigation measures are proposed for implementation:

- General Protection Measures for Birds
- Specific Protection Measures for the Bald Eagle

***Melospiza melodia* pop. 1 (song sparrow "Modesto" population)**
Listing Status – CDFW: SSC
The Modesto song sparrow is endemic to California, where it resides only in the north-central portion of the Central Valley (Gardali 2008). Highest densities occur in the Butte Sink area of the Sacramento Valley (approximately five miles east of the Project Area) and in the Sacramento-San Joaquin River Delta. This species uses low, dense emergent vegetation, usually near water, or in other moist areas for nesting, foraging and protective cover (CDFW 2023a). There have been no observations of the Modesto Song Sparrow recorded by CNDDB as of 2022 within 10 miles of the project area since 1923. This species has a low likelihood of occurring in the project area due to the absence of suitable habitat.

***Pandion haliaetus* (osprey)**

Listing Status – CDFW: WL

Osprey have a worldwide distribution. They are migratory throughout most of their range, wintering in Central and South America. In California, Osprey arrive at nesting grounds in mid-March to early April. They feed primarily on fish but also take mammals, birds, reptiles, amphibians, and invertebrates. Large trees, snags, and dead-topped trees in open forest habitats are utilized for cover and nesting. Two adults and a nest was observed in a cottonwood snag five miles north of the project in 2004 (CNDDB, 2022). Osprey was not observed during biological surveys. The numerous large trees and snags in proximity to the Sacramento River indicate that suitable habitat is present. This species is considered to have a high likelihood of occurring within the project area. The following measure is proposed to reduce project impacts to osprey:

- General Protection Measures for Birds
- Conduct Pre-Construction Surveys for Nesting Raptors

***Plegadis chihi* (white-faced ibis)**

Listing Status – CDFW: WL

White-faced Ibis can be found in much of the southwestern United States during migration and breeding season. In California, this species is a migrant and often a resident of the central valley wetlands and rice fields in Colusa, Glenn, Butte and Sutter Counties (CDFW 2023a). White-faced Ibis forage in shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded pastures and croplands. Nesting habitat requires extensive marshes to build nests of dead tules or cattails, amidst tall marsh plants, sometimes on mounds of vegetation. In January and March 2023, the Project Area experienced inundation on two occasions. During these periods, White-faced Ibis were observed foraging in the ponded water left behind by flood waters that had inundated the Project Area. This species has a moderate likelihood of occurring within the project area. The following measures are proposed to reduce project impacts to white-faced Ibis:

- General Protection Measures for Birds
- Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

***Riparia riparia* (bank swallow)**

Listing Status – CESA: Threatened

Bank swallow's nest in colonies in recently eroded vertical cliffs or banks with friable soils. Foraging is often in open areas over fields, marshes, ponds, and open water. Three colonies have been documented on the Sacramento River within nine miles of the Study Area (BANS-TAC, 2023; CNDDB, 2022)(CNDDB 2022, BANS-TAC 2016). This species was not detected during biological surveys, although suitable foraging habitat is available over the river surrounding the site. There is no suitable breeding habitat onsite, although eroding vertical banks south of the site contain suitable breeding habitat and a colony of 30 nest holes were documented less than a mile south of the project site in 1984 (CNDDB, 2022). The availability of foraging habitat, and

nearby colonies indicate that this species has a moderate likelihood of occurring within the Study Area. The following measure is proposed to reduce project impacts to the bank swallow:

- General Protection Measures for Birds
- Conduct Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

Mammals

***Dipodomys californicus eximius* (Marysville California kangaroo rat)**

Listing Status – CDFW: SSC

The California kangaroo rat inhabits open areas, generally below 400 m elevation from San Francisco bay to the Oregon border. It can usually be found in annual grassland habitat and mixed chaparral where it feeds on the seeds of grasses, forbs, and shrubs. This species excavates burrows in loose, sandy soils at the bases of shrubs or edges of rocks. Sands or silts are required for dust bathing. The Marysville California kangaroo rat subspecies locality is stated as, Marysville Buttes at 300 feet altitude, 3 miles northwest of Sutter, Sutter County, California (Kelt 1988). According to CNDDB (2022) the Marysville California kangaroo rat was last observed in 1930, in the Sutter Buttes, six miles east of the project area. This species has a low likelihood of occurring within the Project Area.

***Taxidea taxus* (American badger)**

Listing Status – CDFW: SSC

The American badger is an uncommon, permanent resident found throughout most of the state. They are most abundant in drier open shrub land, forest and herbaceous habitats. Badgers dig burrows for cover and frequently reuse old burrows. They are carnivorous and feed on rats, mice, chipmunks, and especially favor ground squirrels and pocket gophers. Badgers have been documented to hunt with coyotes and are often more successful working as a team. One individual was observed dead on the shoulder of the road eight miles southwest of the project area in 2016 (CNDDB, 2022). Suitable habitat for this species does occur within the project area, indicating that this species has a moderate likelihood of occurring.

***Lasiurus blossevillii* (western red bat)**

Listing Status – CDFW: SSC

Western red bats are locally common in some parts of California between Shasta County to the Mexican border and west of the Sierra Nevada / Cascade crests. Winter range includes western lowlands. Migration occurs between winter and summer ranges. Roosts are primarily in trees often in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected above, open below, and located above dark groundcover. Foraging is typically along edges or habitat mosaics near roost trees and open areas. This species was observed about a mile north of the project in four separate locations (CNDDB 2022). The availability of suitable roosts and foraging habitat indicates that this species has a high likelihood of occurring within

the Project Area. The following measures are proposed to reduce project impacts to Western red bats:

- Protective Measures During Removal of Trees that Provide Suitable Bat Roosting Habitat

Reptiles

***Emys marmorata* (western pond turtle)**
Listing Status – CDFW: SSC
Western pond turtles inhabit a wide range of waterbodies. Nest sites are typically on gentle slopes in compact soil from 10 to 1,300 feet from aquatic habitats. Overwintering sites are typically in upland habitat beyond the riparian zone, however aquatic environments such as mud bottoms, beneath undercut banks or logs, or in areas of emergent vegetation may be used for overwintering sites. This species may be inactive in the winter or active throughout the year depending on environmental conditions. Only one adult Western pond turtle individual have been documented crossing the highway three miles northwest of the project area in 2017 (CNDDB 2022). Suitable aquatic habitat is available around the project area vicinity. This species is considered to have a moderate likelihood of occurring within the project area. The following measures are proposed to reduce project impacts to western pond turtle:

- Specific Protection Measures for Western Pond Turtle

***Thamnophis gigas* (giant gartersnake)**
Listing Status – ESA: Threatened, CESA: Threatened
Suitable habitat for the giant garter snake includes stagnant or slow-moving waterbodies with abundant emergent vegetation. Many known populations within 10 miles of the project area, in the Sacramento Valley, are associated with dense networks of canals and wetlands in areas dominated by rice agriculture. Suitable aquatic habitat is not present within the project area or surrounding area. This species is considered to have a low likelihood of occurring within the project area.

Amphibians

***Rana boylii* (foothill yellow-legged frog)**
Listing Status – CESA: Endangered, CDFW: SSC
The foothill yellow- legged frog is a small sized frog found in the foothills of the Sierra Nevada and the Cascade and Coast Ranges of Oregon and California. These frogs are found in or near rocky streams in a variety of habitats. Adults prey on aquatic and terrestrial invertebrates, while tadpoles are thought to graze on algae and diatoms along rocky stream bottoms. Within Northern California, the foothill yellow-legged frog is likely inactive or hibernating during the winter. Breeding and egg laying are usually following spring flooding, and usually commences from mid-March to May, depending on local water condition. Egg clusters are attached to gravel or rocks in moving water near stream margins. A single specimen was collected 10 miles east of the project area in the Sutter Buttes in 1951 (CNDDB, 2022). Limited habitat and lack of

occurrences along the Sacramento River indicates that the foothill yellow-legged frog has a low likelihood of occurring within the project area.

Fish

***Acipenser medirostris* (green sturgeon – Southern DPS)**

Listing Status – ESA: Threatened

The project area is within a reach of the Sacramento River that is habitat for green sturgeon. Green sturgeons are found in the Sacramento and San Joaquin rivers and Delta. They spawn primarily in a small segment of the upper mainstem of the Sacramento River from the Highway 162 bridge to Keswick Dam. Green sturgeon are anadromous and spend much of their life in ocean waters, entering freshwater systems to spawn when reaching reproductive maturity (approximately 15 years old). Spawning takes place over gravel and cobble bottoms in cool, deep, swift flowing river reaches. Temperature has a major impact on green sturgeon growth and development, particularly in eggs and larvae. Larval detections have been identified in a reach of the river surrounding the project area as recent as 2020 (CNDDB, 2022). The vicinity surrounding the project area contains characteristics of suitable habitat for this species and the recent detections suggest that green sturgeon has a high likelihood of occurrence within the project area. The following measures are proposed to reduce project impacts to green sturgeon:

- Minimization and Avoidance Measures for Fish

***Oncorhynchus mykiss irideus* (steelhead – Central Valley DPS)**

Listing Status – ESA: Threatened

The project area is within a reach of the Sacramento River that is habitat for steelhead. The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat for this species. This species is considered to have a high likelihood of occurring within the project area. The post-construction of the drainage swale is expected to provide a net benefit to the species and to the Central Valley DPS. The following measures are proposed to reduce project-related impacts to steelhead:

- Minimization and Avoidance Measures for Fish
- Specific Protection Measures for *Oncorhynchus* species

Oncorhynchus tshawytscha (Chinook salmon: Winter-run)

Listing Status-CESA: Endangered, ESA: Endangered

The project area is within a reach of the Sacramento River that is habitat for the winter-run Chinook salmon. Sacramento River winter-run Chinook Salmon spawn in the upper mainstem Sacramento River from mid-April through August, peaking in June and July. Since spawning occurs during the warmest time of the year, adult spawners require stream reaches with plentiful cold, clean water that will protect embryos and juveniles from the warm ambient summer conditions. This species is highly likely to occur within the project area during migration. The post-construction of the drainage swale is expected to provide a net benefit to

the species. The following measures are proposed to reduce project-related impacts to Chinook salmon*:*

- Minimization and Avoidance Measures for Fish
- Specific Protection Measures for *Oncorhynchus* species

Oncorhynchus tshawytscha (Chinook salmon: Spring-run)
Listing Status-CESA: Threatened, ESA: Threatened
The project is within a reach of the Sacramento River that is habitat for the Spring-run Chinook salmon. Spring-run Chinook Salmon enter the Sacramento River from late March through September. Adults hold in cool water habitats through the summer, then spawn in the fall from mid-August through early October. This species is considered to have a high likelihood of occurring within the project area. The post-construction of the drainage swale is expected to provide a net benefit to the species. The following measures are proposed to reduce project-related impacts to Chinook salmon*:*

- Minimization and Avoidance Measures for Fish
- Specific Protection Measures for *Oncorhynchus* species

***Spirinchus thaleichthys* (longfin smelt)**
Listing Status – CESA: Threatened
Longfin smelt is a small (<6 inches), anadromous fish found along the Pacific coast of the United States from Alaska to California. In California, longfin smelt is historically found in the San Francisco Estuary and the Sacramento/San Joaquin Delta. Longfin smelt spawning is believed occur November through May and eggs are thought to be release in freshwater over sandy, or gravel substrates, rocks and aquatic plants (Olswang 2018). The US Fish and Wildlife Service (USFWS) shows longfin smelt range extending from the delta into the Sacramento River ending approximately at river mile 70, just north of the city of Sacramento. In 1986, USFWS caught four longfin smelt beach seining at Colusa-Sacramento River SRA, approximately two and half miles northwest of the project area (CNDDB 2022). Notes of this occurrence indicate that this is the northmost detection of longfin smelt on the Sacramento River. Due to the lack of recent detections, this species is considered to have a low likelihood of occurring within the project area.

Invertebrates

***Branchinecta lynchi* (vernal pool fairy shrimp)**
Listing Status – ESA: Threatened
Vernal pool fairy shrimp occur mostly in vernal pools although it also inhabits a variety of natural and artificial seasonal wetland habitats, such as alkali pools, ephemeral drainages, stock ponds, roadside ditches, vernal swales, and rock outcrop pools. Whatever the habitat, the wetlands in which this species is found are small (<200 square meters) and shallow (mean 5 cm), however this species occasionally inhabits large (44,534 square meters) and very deep

(122 cm) habitats (Cordeiro and Rogers 2010). No vernal pools, vernal swales or similar ephemeral aquatic habitats were found within the project area. Due to a lack of suitable habitat, this species is considered to have a low likelihood of occurring within the project area.

***Lepidurus packardi* (vernal pool tadpole shrimp)**

Listing Status – ESA: Endangered

Vernal pool tadpole shrimp inhabit a variety of natural, and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities. Wetland habitats vary in size from very small (2 square meters) to very large (356,253 square meters) and exhibit extremes in depth (2-15 cm) and volume (23-9,262,573 cubic meters (Cordeiro 2008). No vernal pools, vernal swales or similar ephemeral aquatic habitats were found within the project area. Due to a lack of suitable habitat, this species is considered to have a low likelihood of occurring within the project area.

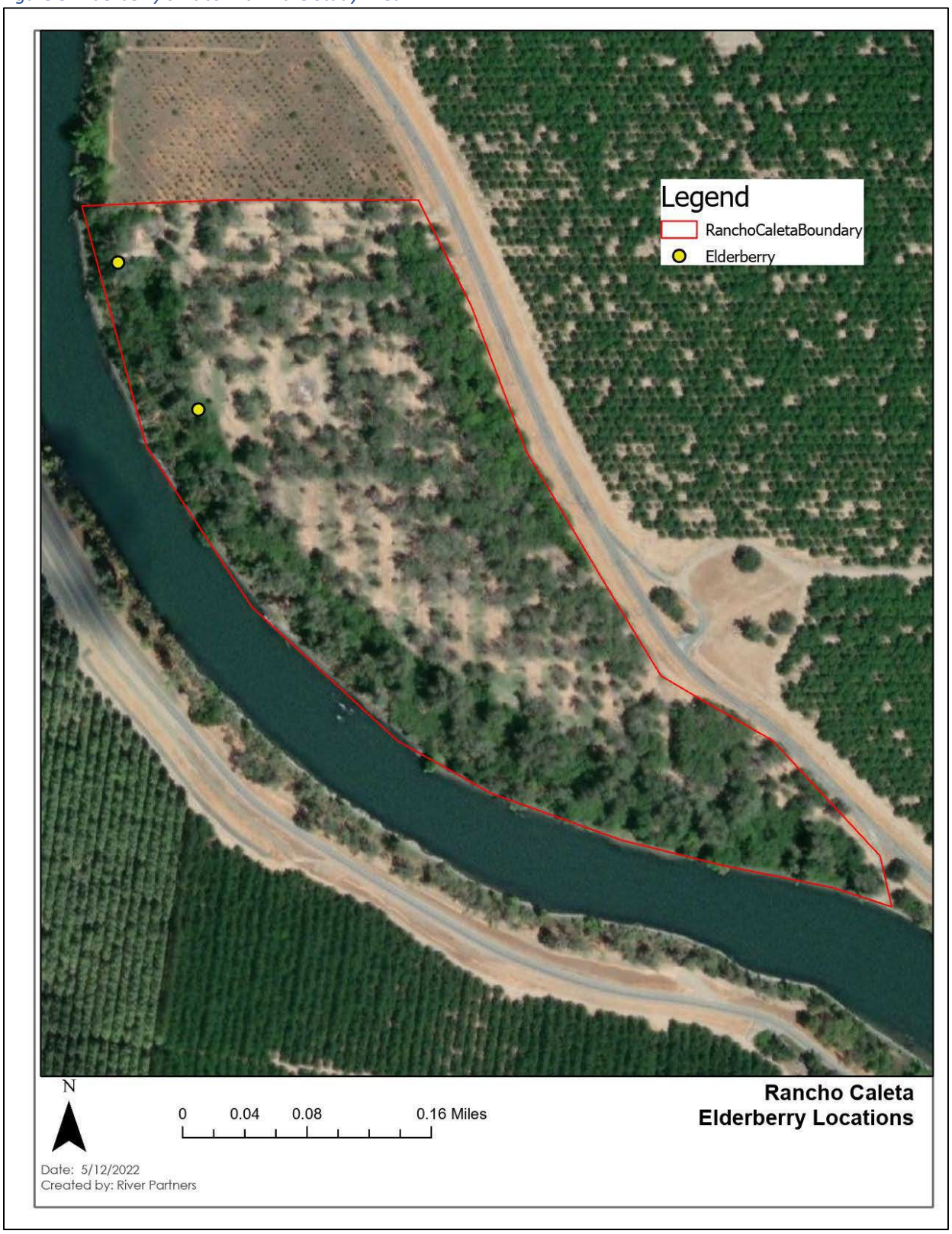
***Desmocerus californicus dimorphus* (valley elderberry longhorn beetle)**

Listing Status – ESA: Threatened

The valley elderberry longhorn beetle (VELB) requires elderberry shrubs (*Sambucus* sp.) for larval development. Two blue elderberry shrubs (*Sambucus nigra* ssp. *cerulea*) were located within the Study Area (Figure 8) and did not show signs of VELB presence. An observation of exit holes on stems was documented three miles east of the project area in 2011 (CNDDB, 2022). All elderberry shrubs within the site are considered potential habitat for VELB, with riparian areas having a higher likelihood of occupancy. Due to the presence of its host plant, this species is considered to have a high likelihood of occurring within the Study Area. To reduce project impacts to the valley elderberry longhorn beetle, the following measures (USBR, 2016; USFWS, 2017) are proposed:

- Specific Protection Measures for Valley Elderberry Longhorn Beetle

Figure 8. Elderberry shrubs within the Study Area.



Plants

***Amsinckia lunaris* (bent-flowered fiddleneck)**

Listing Status – CNPS: 1B.2

Bent-flowered fiddleneck occurs in open, sometimes moist, wooded slopes within foothill/cismontane woodland, coastal bluff scrub, and valley grassland communities at elevations of three to 500 m. One occurrence of this species was recorded approximately six and half miles northeast of the project area (CNDDB 2022). The project area does not contain suitable habitat for this species and is considered to have a low likelihood of occurrence.

***Astragalus tener* var. *ferrisiae* (Ferris' milk-vetch)**

Listing Status – CNPS: 1B.1

Ferris' milk-vetch occurs in vernally moist meadows and alkaline flats in valley and foothill grasslands. No vernal meadows were found on the project area. This species is considered to have a low likelihood of occurrence. An observation three miles west of Colusa found no Ferris' milk-vetch .

***Atriplex cordulata* var. *cordulata* (heartscale)**

Listing Status – CNPS: 1B.2

Heartscale occurs in saline and alkaline soils supporting shadscale scrub, valley grassland and wetland-riparian plant communities. This species has been documented to occur two miles south of the project area along highway 20, location unknown. The only source of information was from a 2002 collection. The project area does not contain suitable habitat for heartscale and is considered to have a low likelihood of occurrence.

***Atriplex depressa* (brittlescale)**

Listing Status – CNPS: 1B.2

Brittlescale is endemic to the Central Valley of California where it occurs on alkaline or clay soils, within playas or vernal pools, alkaline grasslands, or shadscale scrub. Very few occurrences are recorded five miles southwest of the project area (CNDDB 2022). This species is considered to have a low likelihood of occurring in the project area.

***Atriplex persistens* (vernal pool smallscale)**

Listing Status – CNPS: 1B.2

Vernal pool smallscale is endemic to California where it occurs in alkaline or saline vernal playas, or alkali sinks. Soils are saline alluvium and seasonally inundated; they lose water mostly through evaporation. This species was found in dry vernal pools five miles south west of the project area (CNDDB 2022) and is considered to have a low likelihood of occurrence within the project area.

***Chloropyron palmatum* (Palmate-bracted bird's-beak)**
Listing Status – ESA: Endangered, CESA: Endangered, CNPS: 1B.1
Palmate-bracted bird's beak is a California endemic plant where it occurs in alkaline soils of valley lowlands. Recent documented occurrences of this species have been recorded at Colusa National Wildlife Refuge (CNDDB 2022), two miles southwest of project area. This species is considered to have a low likelihood of occurrence due to lack of suitable habitat within the project area.

***Extriplex joaquinana* (San Joaquin spearscale)**
Listing Status – CNPS: 1B.2
San Joaquin spearscale is endemic to California where it occurs in the Sacramento and San Joaquin Valleys on alkali plains. There are no alkali habitats that occur in the project area. The only source of occurrence is from a 1917 collection found 3 miles southwest of the project area. Due to lack of suitable habitat, this species is considered to have a low likelihood of occurring within the project area.

***Hibiscus lasiocarpos* var*. occidentalis* (woolly rose-mallow)**
Listing Status – CNPS: 1B.2
Woolly rose-mallow is native to much of the southeastern United States, as well as parts of California and northern Mexico. This species is often found in freshwater marshes and wetlands, along wet banks of channels and roadside ditches. Soils tend to have a high organic content and are poorly aerated. There are many occurrences recorded along Butte Creek and the Butte Sink area to the east of the project area (CNDDB 2022). This species is considered to have a low likelihood of occurrence due to lack of suitable habitat with the project area.

***Lasthenia glabrata* ssp*. coulteri* (Coulter's goldfields)**
Listing Status – CNPS: 1B.1
Coulter's goldfields is endemic to California, where it is a resident of vernal pools and other moist, saline areas in the Central Valley and along the southern coastline. Two specimens were annotated in 1917 as potentially a hybrid and had reservations about the species. No recent reports of this species occurring in the vicinity of the project area and is considered to have a low likelihood of occurring within the project area.

***Layia septentrionalis* (Colusa layia or tidytips)**
Listing Status – CNPS: 1B.1
Colusa layia or Colusa tidytips is an annual herb native to California. It is endemic to California, where it is known only from the Coast Ranges north of the San Francisco Bay Area and the

Sutter Buttes in the Central Valley. The only occurrences of this species was from 1891 and 1930 collections nine miles east of the project area in the Sutter Buttes (CNDDB, 2022). As it is only found in the Sutter Buttes or on the Coast Range north of San Francisco it was determined to have a low likelihood of occurrence within the project area.

***Puccinellia simplex* (California alkali grass)**
Listing Status – CNPS: 1B.2
California alkali grass is native to California, where it grows in mineral springs and other moist habitat with saline soils in the Central Valley, Mojave Desert, and other areas. The only source of this species five miles southwest of the project site is from a collection in 1988. Due to lack of suitable habitat, this species is considered to have a low likelihood of occurring within the project area.

Proposed Mitigation Measures for Biological Resources

Prevent Introduction of Invasive Species

The Contractor shall implement the following best management practices, to the extent feasible, to prevent the introduction of invasive species:

- Equipment would be inspected prior to arrival at the construction area, including the physical removal of plant seed and parts from equipment, and freezing equipment and saturation of equipment in chemical solution(s) to avoid the spread of invasive species such as zebra and quagga mussels, New Zealand mudsnails and chytrid fungus.
- If straw bales or other vegetative materials are used for erosion control, they shall be certified weed free.
- All re-vegetation materials (e.g., mulches, seed mixtures) shall be certified weed free and come from locally adapted native plant materials to the extent practicable.

General Protection Measures for Birds

To reduce the potential for impacts to bird species resulting from project implementation, the following avoidance and mitigation measures are proposed:

- Nationwide Standard Conservation Measures shall be employed (USFWS, 2015).
- In order to protect potential nesting habitat, only the minimum number of trees required to satisfy the proposed project design shall be removed or trimmed during project implementation. Removal or trimming shall not occur between March 1 and August 31, the general nesting season for songbirds and raptors in the project area. Trees larger than 10” in diameter shall not be removed unless retaining such trees shall prevent project implementation or are a safety hazard as determined by the project manager. If such trees are identified by the contractor, approval of such removal shall be obtained from the project manager which shall be based upon guidance provided by appropriate State/federal regulatory agency personnel.

- If construction activity inadvertently results in taking of individual birds or their nests, appropriate mitigation shall be determined by the Project Manager in coordination with CDFW.
- Vehicle speed limits shall not exceed 15 MPH to avoid striking birds.

Conduct Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

For migratory birds, a qualified biologist shall conduct a pre-construction survey no more than one week prior to commencement of construction or restoration activities scheduled between March 1 and August 31. The pre-construction survey shall be used to determine if active nests of these species are present in or within 250 feet of where construction activities take place. If an active nest is found, a qualified biologist in consultation with CDFW and/or USFWS shall determine the extent of a No-Treatment Buffer Zone to be established around the nest. If no active nests are identified, no further mitigation is necessary.

Specific Protection Measures for Bald Eagle

The following measures were adopted from the National Bald Eagle Management Guidelines (USFWS, 2007):

- Construction activities located within 0.5 mile of a known bald eagle nest shall occur between September 1 and December 31.
- If construction activities are to occur outside of this period, a 660-foot buffer around the nest would be maintained for a single construction activity visible from the nest and within one mile of the nest.
- If established, the construction buffer shall remain in place until after the nesting season, or until the biologist determines that the young have fledged during subsequent surveys.

Specific Protection Measures for Swainson's Hawk

A qualified biologist shall conduct a pre-construction survey of accessible areas within a 0.25-mile radius of the Project area between March 1 and September 15; the required survey radius may be reduced (on a case-by-case basis) if approved in advance by CDFW, but in no case will be less than 500 feet. At least one survey shall be conducted no more than one week prior to the initiation of construction activities. If no active nests are located, no further measures are necessary to avoid impacts to active Swainson's hawk nests. If active nests are identified, the following measures shall be implemented:

- A no-disturbance buffer zone shall be established around the nest site. The width of the buffer zone shall be determined by a qualified biologist in coordination with CDFW. Determination of the required width of the buffer zone shall consider the distance of the nest site from construction activities, the line of sight from the nest site to construction activities, the existing level of disturbance, and other factors established with CDFW on a case-by-case basis.

- A qualified biologist shall monitor active nests within 500 feet (or the width of the buffer zone) of construction activities. The first monitoring event shall coincide with the initial implementation of construction activities and monitoring shall continue a minimum of once per week until the young have fledged. If the biologist determines that construction activities are disturbing the birds and nest failure is possible, CDFW shall be immediately notified. Measures to avoid nest failure shall be implemented in coordination with CDFW and may include halting some or all construction activities until the young have fledged. For monitored nest sites, a monitoring report shall be submitted to CDFG within 2 weeks after termination of monitoring activities.

Conduct Pre-Construction Surveys for Nesting Raptors

A qualified biologist shall conduct pre-construction surveys in all suitable upland and riparian habitats for common raptors. Surveys shall occur no more than one week prior to commencement of construction or restoration activities scheduled between February 1 and August 31. In addition to areas where project construction will occur, these surveys shall be conducted along proposed access roads and within construction staging areas. Surveys shall include examination of nests for raptor activity, visual searches for whitewash, listening for calls and any other evidence of nesting raptors.

Protective Measures During Removal of Trees that Provide Suitable Bat Roosting Habitat

All removal of trees that provide suitable bat roosting (such as trees with deep bark crevices, snags, or holes) shall be conducted between August 15 and October 30, or earlier than October 30 if evening temperatures fall below 45 degrees Fahrenheit and/or more than a half inch of rainfall occurs within 24 hours. These dates correspond to the time period when bats would not be caring for non-volant young and have not yet entered torpor. A qualified biologist shall monitor removal/trimming of trees that provide suitable bat roosting habitat. Tree removal/trimming shall occur over two consecutive days. On the first day in the afternoon, limbs and branches shall be removed using chainsaws only. Limbs with cavities, crevices, or deep bark fissures shall be avoided, and only branches or limbs without those features shall be removed. On the second day, the entire tree shall be removed. Prior to tree removal/trimming, each tree shall be shaken gently and several minutes shall pass before felling trees or limbs to allow bats time to arouse and leave the tree. The biologist shall search downed vegetation for dead or injured bat species and report any dead or injured special-status bat species to CDFW.

Specific Protection Measures for Western Pond Turtle

If a western pond turtle is observed in the Study Area during construction activities, the Contractor shall temporarily halt construction until it is determined that the turtle will not be harmed or until the turtle has moved to a safe location outside of the construction limits. The Contractor shall inform the Project Manager of such occurrences. If construction is to occur during the nesting season (late June - July), a pre-construction survey for turtles and nest sites shall be conducted by a qualified biologist. This survey shall be conducted within 660 feet of the Study Area no more than two days prior to the start of construction or restoration activities in

suitable habitat. If a pond turtle nest is found, the biologist shall flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, in consultation with CDFW, a no-disturbance buffer zone may be established around the nest until the young have left the nest. If weather conditions prevent implementation of construction for more than two days after completion of turtle surveys, resurvey for this species shall be completed.

Minimization and Avoidance Measures for Fish

To reduce the potential for impacts to fish species during project implementation, the following measures shall be employed.

- Work windows shall be restricted to October 1 to March 1 for any channel with flowing water.
- Work in areas separated from the main channel by gravel berms that are naturally present or artificially created may occur outside this window, so long as other environmental work is in compliance with related work windows.
- Heavy equipment operation practices that minimize the potential for injury or death of listed aquatic species' vulnerable life stages shall include alerting fish to equipment operation in the channel before gravel is placed in watered areas (e.g., slow, deliberate equipment operation and tapping water surface prior to entering in place or newly developed slough channels).
- Work within watered areas shall only occur for up to 12 hours per day to allow a 12-hour window of time for fish to migrate through without noise disturbance.
- In-river work with heavy equipment shall be completed during timing windows designed to have the lowest potential to adversely affect salmonids and sturgeon. Where feasible (i.e., in most side channel areas), the work area shall be separated from the river by gravel berms or other methods to prevent fish from entering the work area.
- Any work with the potential to affect listed salmonids shall require consultation with CDFW and/or National Marine Fisheries Service (NMFS). Such work shall also be implemented according to the requirements of all appropriate permits or other authorizations.

Specific Protection Measures for *Oncorhynchus* Species

Within one week prior to construction, the designated qualified biologist shall coordinate with CDFW to determine if salmonids are spawning in the Sacramento River at that time. If so, the qualified biologist shall obtain real-time aerial or boat redd survey data from CDFW, if available. A qualified biologist shall perform pre-construction surveys the day prior to construction; if redds from listed species are present within 200 feet downstream of the Project area the designated qualified biologist shall contact NMFS with an impact minimization plan to be approved by NMFS personnel prior to final approval of project implementation.

Specific Protection Measures for Valley Elderberry Longhorn Beetle

The following protection measures (USBR, 2016; USFWS, 2017) shall be implemented to protect valley elderberry longhorn beetles (VELB) and their host plant, the elderberry shrub, if elderberry shrubs occur on or within 50 meters (165 feet) of the Study Area:

- During project implementation, no elderberry shrubs shall be removed.
- For activities that have the potential to damage or kill an elderberry shrub (e.g., trenching, paving, spoiling), an avoidance area shall be established at least 6 meters (20 feet) from the elderberry shrub's dripline.
- As feasible, all project-related activities that could occur within 50 meters (165 feet) of an elderberry shrub shall be conducted outside of the flight season of the VELB (March - July).
- To avoid and minimize adverse effects to VELB during trimming operations, all elderberry shrub trimming activities shall occur between November and February. Such trimming shall avoid the removal of any branches or stems that are ≥ 1 inch in diameter. Measures to address regular and/or large-scale maintenance (trimming) shall be established as required in consultation with USFWS.
- Herbicides shall not be used within the drip-line of any elderberry shrub. Insecticides shall not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals shall be applied using a backpack sprayer or similar direct application method.
- Temporary stockpiling of excavated material shall occur only in approved construction material staging areas created more than 20 feet from elderberry shrub drip-lines. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate area.
- Mechanical weed removal within the dripline of the elderberry shrub shall be limited to the season when adult VELBs are not active (August - February) and will avoid damaging the elderberry shrub.
- Construction personnel shall ensure implementation of dust control measures, including watering in the vicinity of any elderberry shrubs located within 100 feet of construction activities, and watering dirt roads at least twice a day when roads are used by gravel trucks and other project-related vehicles during dry periods.

General Measures to Protect Special-Status Species

The following measures shall be implemented and enforced during all project construction activities to avoid or minimize adverse effects on candidate, sensitive, and special-status species.

Fencing

All sensitive areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible.

Construction monitoring

A qualified biologist shall monitor the construction area at appropriate intervals to assure Contractor implementation and adherence with all established resource impact

avoidance/minimization measures. The amount and duration of monitoring shall depend upon project specifics and shall be based upon consultation with CDFW, USFWS, and permitting entity's personnel.

Worker awareness training

Before any construction begins, a qualified biologist shall conduct a mandatory training session for all construction crew personnel. The training shall include a discussion of the sensitive biological resources, including the valley elderberry longhorn beetle and its elderberry host plant, within the Study Area and the potential presence of special-status species. Special-status species habitat protection measures (including Best Management Practices, Mitigation Measures, permit requirements, and other site-specific requirements established by the project manager or agency personnel) shall also be discussed along with the extent of project boundaries to ensure such species are not impacted by project activities. The training and any supporting materials shall include a discussion of penalties for noncompliance. Upon completion of training, construction personnel shall sign a form stating that they have attended the training and understand all the conservation measures. Training shall be conducted in English and other languages, as appropriate. Proof of this instruction (signed forms) shall be kept on file with the contractor and the project manager, who shall provide a copy (as requested) to USFWS and permitting entities, along with a copy of the training materials.

Delineation of project boundary

Project boundaries shall be clearly marked on final project design drawings with work confined within those boundaries. Prior to construction, the project contractor and project manager shall meet on site to agree upon and flag boundaries of sensitive areas, particularly those within riparian areas.

Relocation of special-status species

If a special-status species enters a work area, the project contractor shall contact the project manager for further guidance. In such instances the project manager shall contact appropriate State and/or federal regulatory agencies for guidance. If a federal or state- listed species or any other special- status species enters the work area, the species shall not be captured or handled without permission from the appropriate agency (State listed – CDFW; Federally listed – USFWS) as conveyed to the project contractor by the project manager. Construction activities shall cease until it is determined that the species shall not be harmed or that it has left the construction area on its own.

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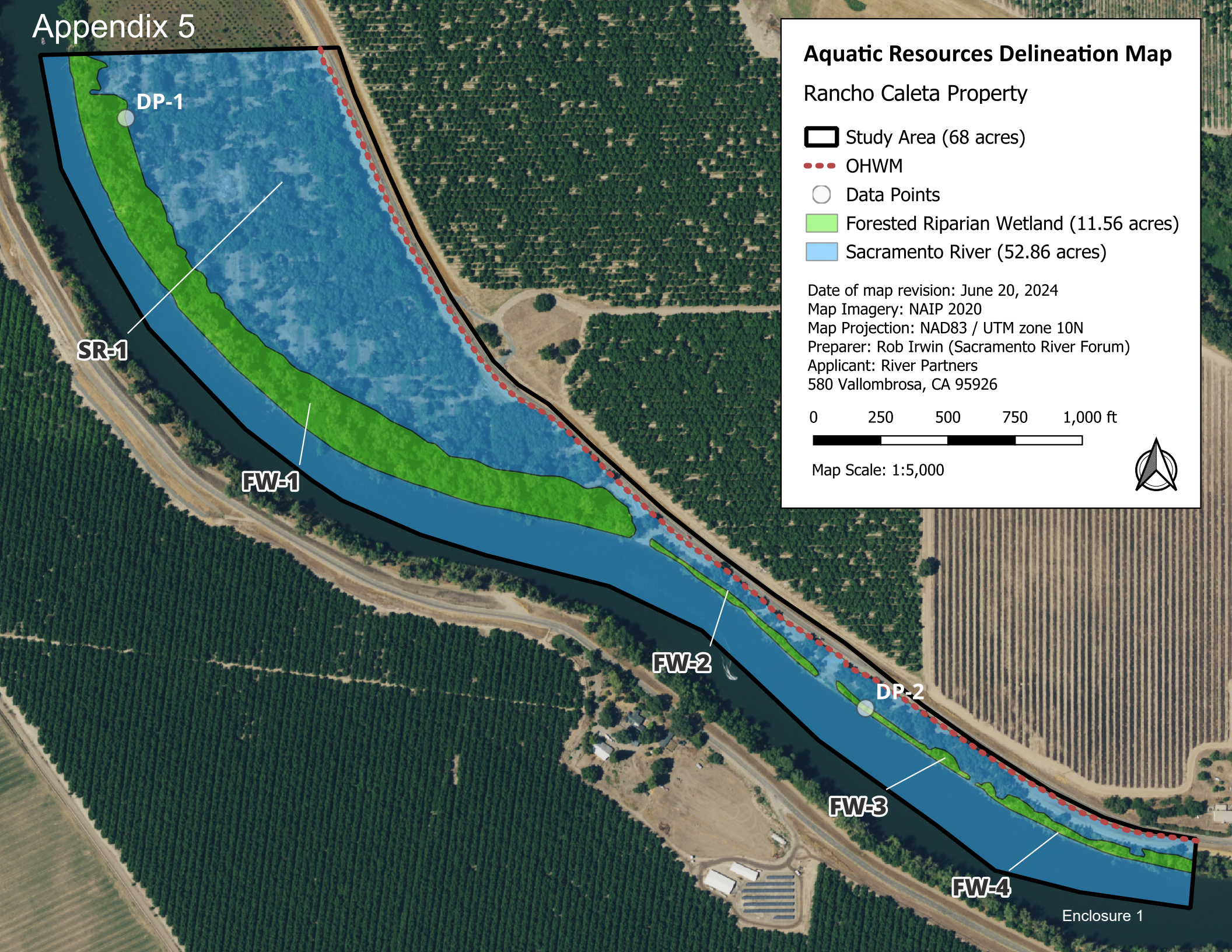
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Appendix 5

Appendix 5



Aquatic Resources Delineation Map

Rancho Caleta Property

- Study Area (68 acres)
- OHWM
- Data Points
- Forested Riparian Wetland (11.56 acres)
- Sacramento River (52.86 acres)

Date of map revision: June 20, 2024
Map Imagery: NAIP 2020
Map Projection: NAD83 / UTM zone 10N
Preparer: Rob Irwin (Sacramento River Forum)
Applicant: River Partners
580 Vallombrosa, CA 95926

0 250 500 750 1,000 ft

Map Scale: 1:5,000

Enclosure 1

REQUEST FOR AQUATIC RESOURCES DELINEATION VERIFICATION

OR JURISDICTIONAL DETERMINATION

A separate jurisdictional determination (JD) is not necessary to process a permit. An Approved Jurisdictional Determination (AJD) is required to definitively determine the extent of waters of the U.S. and is generally used to disclaim jurisdiction over aquatic resources that are not waters of the U.S., in cases where the review area contains no aquatic resources, and in cases when the recipient wishes to challenge the water of the U.S. determination on appeal. Either an Aquatic Resources Delineation Verification or a Preliminary Jurisdictional Determination (PJD) may be used when the recipient wishes to assume that aquatic resources are waters of the U.S. for the purposes of permitting. In some circumstances an AJD may require more information, a greater level of effort, and more time to produce. If you are unsure which product to request, please speak with your project manager or call the Sacramento District's general information line at (916) 557-5250.

I am requesting the product indicated below from the U.S. Army Corps of Engineers, Sacramento District, for the review area located at:

Street Address: _____ City: _____ County: _____
State: _____ Zip: _____ Section: _____ Township: _____ Range: _____
Latitude (decimal degrees):_____ Longitude (decimal degrees): _____
The approximate size of the review area for the JD is _____ acres. **(Please attach location map)**

Choose one:
- ◯ I own the review area
- ◯ I hold an easement or development rights over the review area
- ◯ I lease the review area
- ◯ I plan to purchase the review area
- ◯ I am an agent/consultant acting on behalf of the requestor
- ◯ Other: _____

Choose one product:
- ◯ I am requesting an Aquatic Resources Delineation Verification
- ◯ I am requesting an Approved JD
- ◯ I am requesting a Preliminary JD
- ◯ I am requesting additional information to inform my decision about which product to request

Reason for request: (check all that apply)
- ☐ I need information concerning aquatic resources within the review area for planning purposes.
- ☐ I intend to construct/develop a project or perform activities in this review area which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities in this review area which would be designed to avoid those aquatic resources determined to be waters of the U.S.
- ☐ I intend to construct/develop a project or perform activities in this review area which may require authorization from the Corps; this request is accompanied by my permit application.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district's list of navigable waters under Section 10 of the Rivers and Harbors Act of 1899 and/or is subject to the ebb and flow of the tide.
- ☐ My lender, insurer, investors, local unit of government, etc. has indicated that an aquatic resources delineation verification is inadequate and is requiring a jurisdictional determination.
- ☐ I intend to contest jurisdiction over particular aquatic resources and request the Corps confirm that these aquatic resources are or are not waters of the U.S.
- ☐ I believe that the review area may be comprised entirely of dry land.
- ☐ Other: _____

Attached Information:
- ☐ Maps depicting the general location and aquatic resources within the review area consistent with Map and Drawing Standards for the South Pacific Division Regulatory Program (Public Notice February 2016, http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/Article/651327/updated-map-and-drawing-standards/)
- ☐ Aquatic Resources Delineation Report, if available, consistent with the Sacramento District's Minimum Standards for Acceptance (Public Notice January 2016, http://1.usa.gov/1V68IYa)

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the review area. Your signature shall be an affirmation that you possess the requisite property rights for this request on the subject property.

*Signature: _____ Date: _____
Name: _____ Company name: _____
Address: _____
_____
Telephone: _____ Email: _____

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

July 1, 2024

Regulatory Division (SPK-2024-00413)

River Partners
Attn: Ms. Jennifer Rotnem
580 Vallombrosa Avenue
Chico, California 95926- 4038
jrotnem@riverpartners.org

Dear Ms. Rotnem:

We are responding to your June 24, 2024, request for verification of an Aquatic Resource delineation for the Rancho Caleta Property site. The approximately 68-acre project site is located on the Sacramento River, Latitude 39.19196°, Longitude -121.98429°, within Colusa County, California.

Based on available information, we concur with your aquatic resource delineation for the site, which consists of approximately 11.56 acres of Forested Riparian Wetlands, and 52.86 acres of the Sacramento River, as depicted on the enclosed June 20, 2024, *Aquatic Resource Delineation Map Rancho Caleta Property* drawing prepared by Sacramento River Forum (Enclosure 1). This letter verifies that the location and boundaries of wetlands were delineated consistent with the wetland definition at 33 CFR §328.3(c)(16), the 1987 *Corps of Engineers Wetlands Delineation Manual* (Wetlands Research Program Technical Report Y-87-1) and the applicable regional supplements; and the location and boundaries of non-tidal waters conform with the ordinary high water mark definition at 33 CFR §328.3(c)(7), Regulatory Guidance Letter 05-05, and any applicable regional guide.

This verification letter does not constitute a jurisdictional determination (JD). A JD is not required to process an application for a Department of the Army permit. If you do not require a JD for the site, your permit application may be processed sooner. You may request a JD for this site at any time prior to starting work in aquatic resources, including after a permit decision is made. To request a JD for this site, complete the attached *Request for Aquatic Resources Delineation or Jurisdictional Determination Form* (Enclosure 2) and return it to this office at the address listed below.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries for the particular site identified in this request. This delineation may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants,

or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

Please refer to identification number SPK-2024-00413 in any correspondence concerning this project. If you have any questions, please contact Gabriel Leggieri by email at gabriel.j.leggieri@usace.army.mil, or telephone at 916-557-5120.

Sincerely,

Maya Bickner
Project Manager
CA North Section

Enclosures

cc: (w/encls)
Mr. Rob Irwin, Sacramento River Forum, rob@riverforum.org
Ms. Stephanie Tadlock, Central Valley Regional Water Quality Control Board, Stephanie.Tadlock@waterboards.ca.gov