

**United States Department of Interior
United States Fish and Wildlife Service
Llano Seco Riparian Sanctuary Unit Restoration and
Pumping Plant/Fish Screen Facility Protection Project
Final Environmental Impact Statement/Environmental Impact
Report**

Record of Decision

Introduction

We, the United States Department of Interior, United States Fish and Wildlife Service (Service) have prepared this Record of Decision (ROD) for the Llano Seco Riparian Sanctuary Unit Restoration and Pumping Plant/Fish Screen Facility Protection Project (Riparian Sanctuary project) located in Glenn and Butte Counties, California. The Service will be responsible for implementing the restoration plan and any mitigation measures specific to the restoration plan. In addition, we will need to issue an authorization for construction of revetment on the Sacramento River National Wildlife Refuge (NWR). Therefore, we acted as the lead federal agency for the Riparian Sanctuary project. The California Department of Fish and Wildlife (CDFW) served as the lead state agency for the project. Other agencies may use the Final EIS/EIR to support their discretionary decisions such as granting permits or issuing a Biological Opinion. This ROD documents our decision to support the implementation of the preferred alternative described in the Final EIS/EIR and below, which incorporates the beneficial features of both the low berm and no berm options of traditional riprap.

This ROD includes a statement of the decisions made, the basis for the decisions, a description of the alternatives considered, a description of the environmentally preferable alternative, an overview of the measures to minimize environmental impacts, and a summary of public involvement in the decision-making process. We used the Final EIS/EIR (U.S. Fish and Wildlife Service and California Department of Fish and Wildlife 2013), incorporated by reference per 40 U.S. 1502.21, to prepare this ROD.

Project Background

The proposed action evaluated in the Draft EIS/EIR consists of a combination of measures to restore riparian habitat at the Llano Seco Riparian Sanctuary Unit (Riparian Sanctuary) of the Sacramento River NWR and to protect the alignment of the Sacramento River at the water diversion for the Princeton-Codora-Glenn and Provident Irrigation Districts (PCGID-PID) pumping plant and fish screen facility at River Mile (RM) 178.

Habitat restoration is needed because the Riparian Sanctuary is currently dominated by non-native plants and provides poor habitat value for wildlife; bank protection measures are needed to protect the water diversion for the PCGID-PID pumping plant and fish screen facility over the long term. The proposed restoration plan includes removing non-native and invasive plants, cleaning up flood debris, and planting native species at varying frequencies and densities. Bank protection measures that were considered include installation of spur dikes or traditional riprap with or without a low berm, as well as the possible removal of existing revetment

along the Sacramento River upstream of the pumping plant and fish screen facility and the Riparian Sanctuary.

The project area discussed in the Draft EIS/EIR encompasses approximately 400 acres in the northern portion of the Riparian Sanctuary, a peninsula north of the Riparian Sanctuary, and the banks of the Sacramento River adjacent to and just upstream of the Riparian Sanctuary (between RM 178 and RM 180) (Figure 1-1). The 950-acre Riparian Sanctuary is located 15 miles southwest of Chico on the east bank of the Sacramento River between RM 176.5 and RM 178 in the southwest corner of Butte County. The peninsula across from the Riparian Sanctuary contains federal (Llano Seco Island 2 refuge unit), state, and private lands and is in Butte and Glenn counties. The Riparian Sanctuary and Llano Seco Island 2 are part of the Sacramento River NWR, a refuge managed by the Service as part of the Sacramento NWR Complex.

Purpose of and Need for the Action

The purpose of the Riparian Sanctuary project is to restore habitat at the Riparian Sanctuary and to protect the PCGID-PID pumping plant and fish screen facility. The project is needed to provide habitat for endangered species and migratory birds, improve overall riparian health along the Sacramento River, and protect the fish screen and intake facility to maintain their functions. The efficiency of the fish screen at the pumping plant is being threatened by bank erosion on the Riparian Sanctuary and the migration of the Sacramento River. Habitat restoration is also needed at the Riparian Sanctuary to achieve Service management goals and objectives for the Sacramento River NWR identified in the Comprehensive Conservation Plan for the refuge, specifically Objective 1.1, Strategy 1.1.4, and Objective 1.2, Strategies 1.2.1 and 1.2.3.

Decision (Selected Action)

We will support implementation of the Traditional Riprap with Upstream Rock Removal and Site-Specific Plantings alternative as described and modified in the Final EIS/EIR (Preferred Alternative). This alternative is a hybrid of the two options for Alternative 4 described in the Draft EIS/EIR. A summary of the Preferred Alternative follows, and additional detail is available in Chapter 1 (Introduction) of the Final EIS/EIR.

Description of Preferred Alternative

The Service and CDFW, in coordination with PCGID-PID, River Partners, and the design engineers, developed a preferred alternative based on the features of Alternative 4. The Preferred Alternative includes installation of traditional riprap on the northwest bank of the Riparian Sanctuary, including a low berm along the gravel bar and a toe trench just off the gravel bar; removal of upstream rock; and site-specific plantings across 400 acres of the Riparian Sanctuary (Figure 1). The upstream rock removal and site-specific plantings would be the same as described for Alternative 4 in the Draft EIS/EIR. Site-specific plantings would include:

- a range of tree densities from low to high, with higher densities along the Sacramento River on the west side of the Riparian Sanctuary and on the east side of the Riparian Sanctuary and lower densities along a flood conveyance channel through the center of the Riparian Sanctuary, and a mixture of native plant species; and
- the following plant communities: approximately 116 acres of Great Valley grassland, 134 acres of elderberry and valley oak savanna, and 149 acres of valley oak woodland and mixed riparian forest.

The Preferred Alternative also includes the installation of traditional riprap on the Northwest Bank of the Riparian Sanctuary using both the no berm and low berm options. In the area where channel width would be affected, traditional riprap without a berm would be constructed in order to reduce the footprint. In the area of the gravel bar traditional riprap with a low berm would be constructed and planted with native trees, sedges, and grasses along with large woody debris to provide immediate fish habitat. By combining these two options with the traditional riprap instead of strictly using either a no berm or low berm, the Preferred Alternative would result in less excavation and would have a smaller footprint, resulting in less riprap placement in the Sacramento River. It would incorporate the key benefit of the low berm option by providing a planting surface for native vegetation.

The bank protection would extend approximately 1,990 feet along the Sacramento River bank and up to 100 feet out from the bank, primarily on the existing gravel bar. The low berm would extend about 1,480 feet along gravel bar. The low berm would have slopes of 2:1 to 10:1 for plantings and anchoring woody debris. The woody debris would be anchored in groups of three to five trees about 20 to 25 feet apart, extending about 600 feet along the lower slope of the bank protection (in or near the water level, depending on the water surface elevation). Soil fill and most of the soil-filled quarry stone would be placed above the summer mean water surface (elevation of 86 feet); quarry stone and some backfill would be placed below the water surface after excavating up to 60 feet of the riverbed beyond the gravel bar. A scour hole on the east side of the gravel bar would be filled in with soil fill, and the outer edge of the fill (contoured to match the bank on both sides of the scour hole) would be reinforced, requiring placement of quarry stone at a 2:1 slope and extending out about 60 feet into the river (below the summer mean water). Some excavation of the riverbed would be necessary (about 40 feet out from the edge of the soil fill), and the excavated area would be reinforced with quarry stone and backfilled below the water level. Soil-filled quarry stone and soil cover would be installed at a 2:1 slope above the summer mean water elevation and the quarry stone to reinforce the soil fill. Similar protection would be installed at the downstream end of the low berm, although minimal soil fill would be needed and most of the quarry stone would be along the existing bank.

Installation of the bank protection would result in an estimated 20,810 cubic yards of excavated material and would require the placement of an estimated 19,610 cubic yards of fill, 5,920 cubic yards of backfill, 1,800 cubic yards of soil cover, 19,360 tons of quarry stone, and 8,190 tons of soil-filled quarry stone. An estimated 10,781 cubic yards of rock along 2,220 feet of the upstream bank (on the north side of the peninsula) would be removed to an elevation of about 80 feet (just below the summer mean water surface). A portion of this rock (approximately 3,765 cubic yards) would be replaced along 200 feet of the Drainage District property, where the predicted cut-off channel would form, to protect the private property on the peninsula from further erosion. Placement of this rock spur would also require excavation of about 4,460 cubic yards of material and placement of about 1,810 cubic yards of soil cover after the rock is placed.

Basis for the Decision

The basis for the decision to select the Preferred Alternative, as described above, was the review and consideration of the environmental consequences identified in the Draft EIS/EIR, public comments received throughout the process, and other relevant factors. We have determined that the selection of this alternative is appropriate based on the following findings.

The Preferred Alternative described in the Final EIS/EIR includes installation of traditional riprap using both the low berm and no berm options at key locations along the Northwest Bank of the Riparian Sanctuary. By

installing traditional riprap with a combination of both a low berm and no berm, the Preferred Alternative would reduce the overall excavation and footprint resulting in the placement of less riprap in the Sacramento River compared to Alternative 4 described in the Draft EIS/EIR. The Preferred Alternative is therefore considered to be the environmentally superior alternative. The Preferred Alternative would incorporate the key benefit of the low berm option by providing a planting surface for native vegetation. It would further address the goal of providing for restoration of 400 acres of floodplain across the Riparian Sanctuary through use of site-specific plantings and would allow for hydraulic relief during high flows, which would not adversely restrict the flood flow capacity of the river channel through the project area.

The Preferred Alternative would result in slightly different impacts than those described for the traditional riprap options of Alternative 4 in the Draft EIS/EIR. The impacts under the Preferred Alternative would be less intense than the most intense impacts of Alternative 4. Mitigation measures identified in the Draft EIS/EIR for impacts relating to the traditional riprap would be implemented for the Preferred Alternative and would adequately reduce impacts to less-than-significant levels. All impacts relating to the site-specific restoration plan and rock removal on the upstream peninsula, including the formation of a cut-off channel, would be the same as described in the Draft EIS/EIR; all of these impacts would be less than significant or reduced to less-than-significant levels with mitigation. The Preferred Alternative would not result in any significant and unavoidable impacts.

The Preferred Alternative is consistent with the policies set forth in Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands. This alternative would preserve the natural and beneficial values served by floodplains and would reverse the destruction and loss of riparian habitat caused by erosion and bank cutting at the Riparian Sanctuary through bank protection measures and restoring riparian function.

Alternatives Considered

In coordination with CDFW, we considered the comments provided during scoping; the extensive engineering, hydraulic and riparian restoration feasibility studies (summarized in Chapter 2.1 of the Draft EIS/EIR); and the key environmental impacts of the Riparian Sanctuary project to develop a preliminary list of alternatives for evaluation in the Draft EIS/EIR. The alternatives were derived from the *Draft Design Alternatives Report* (Ayres Associates 2010b) and the *Riparian Restoration Feasibility Study for the Riparian Sanctuary* (River Partners 2005). The following alternatives were analyzed by the Draft EIS/EIR:

- Alternative 1: No Action Alternative
- Alternative 2: Spur Dikes and Site-Specific Plantings
- Alternative 3: Traditional Riprap (Low Berm and No Berm Options) and Site-Specific Plantings
- Alternative 4: Traditional Riprap (Low Berm and No Berm Options) with Upstream Rock Removal and Site-Specific Plantings

These alternatives were screened for their ability to meet the purpose and need; for technical, logistical, and financial feasibility; and for their ability to avoid or substantially reduce one or more significant impacts of the Riparian Sanctuary project. The action alternatives were determined to meet the purpose and need, be feasible, and result in a range of environmental impacts and thus constitute a reasonable range of alternatives for NEPA evaluation. The No Action Alternative was evaluated as required by NEPA.

Following public comment on the Draft EIS/EIR, we again reviewed the alternatives to determine whether any modifications were appropriate. As result of this analysis, the modification to Alternative 4 was developed as described above for the Preferred Alternative.

Prior to analysis in the Draft EIS/EIR, the following seven additional alternatives were eliminated from further consideration for the reasons cited in each:

- **Monitor Bank Retreat.** This alternative involved a monitoring program and implementation of bank protection measures at a later time, if needed. Monitoring bank retreat would create a risk for the pumping plant and fish screen facility and might not allow for quick implementation of measures to protect the plant, potentially resulting in very high costs for emergency measures.
- **Install Below-Channel Dike Field.** This alternative involved installation of eight rock dikes within the gravel bar instead of in the channel, as described for Alternative 2. A below-channel dike field would likely result in a greater amount of sediment buildup in front of the pumping plant and fish screen facility than current conditions or the other alternatives, requiring frequent removal of sediment from the intakes. It would also likely provide protection of the facility for only approximately 25 years, requiring additional measures over the long term.
- **Install Extended Traditional Riprap Revetment.** This alternative involved traditional riprap as described under Alternative 3, but it would extend downstream to a point past the pumping plant intakes. Extending the riprap revetment beyond the facility would incur higher costs than the alternatives being considered and has not been demonstrated to be more effective.
- **Allow River Bend Cut Off.** This alternative only involved removal of the existing revetment along the northern side of the upstream peninsula to allow the scour holes behind the revetment to cause the river to be cut off at the bend. The river bend cut off was predicted to allow the river to maintain adequate flow velocities in front of the pumping plant and fish screen facility, but without additional measures to protect the downstream reach (at the Riparian Sanctuary), the river could eventually meander to the east away from the facility, making this alternative ineffective.
- **Install Flexible/Moveable Intakes for Pumping Plant.** This alternative involved constructing structural additions (e.g., portable screens, intakes) on the existing facility to allow it to operate with the changes in the river. The effectiveness of flexible or moveable intakes is not known and cannot be demonstrated. Such structures would also likely incur very high costs and could reduce the capacity of the intakes and result in pump downtime as the intakes are moved.
- **Move Pumping Plant.** This alternative included options for abandoning the existing pumping plant and fish screen facility and implementing one of the following options: building a new facility at another location, using an infiltration gallery, installing groundwater wells (e.g., Ranney collectors), or using a distributed pumping system. Plant relocation or use of an infiltration gallery would be extremely expensive. A change in use to ground water would be difficult to obtain, and high costs would be incurred for design, permitting, and construction of wells necessary to serve current PCGID-PID customers. Use of more pumps at the current location would likely exacerbate the existing problems associated with river meander and would not provide a reliable solution.
- **Fully Restore Riparian Sanctuary.** This alternative involved planting dense, diverse riparian vegetation across the site (up to 212 plants per acre). Full planting would maximize wildlife benefits, but it would not meet flood control objectives at the Riparian Sanctuary. The full plantings would restrict flood flows across the site.

Environmentally Preferable Alternative

In accordance with the Council of Environmental Quality, the environmentally preferable alternative is defined as “the alternative that will promote the national environmental policy as expressed in Section 101 of the NEPA” (42 USC section 4331). Section 101 states that all agencies of the Federal Government shall:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment that supports diversity, and variety of individual choice;
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Preferred Alternative best meets the national environmental policy by restoring maximum feasible acreage of riparian habitat at the Riparian Sanctuary, thereby adding habitat for various threatened and endangered species and migratory birds, and providing for diversity of habitat in other portions of the project area. This alternative also furthers the goals of the National Wildlife Refuge System and the Sacramento River NWR in particular by restoring riparian habitat that will further enhance species numbers and diversity in the Sacramento River riparian corridor. Habitat restoration will achieve Service management goals and objectives for the Sacramento River NWR identified in the Comprehensive Conservation Plan for the refuge, specifically Objective 1.1, Strategy 1.1.4, and Objective 1.2, Strategies 1.2.1 and 1.2.3. The Preferred Alternative provides for protection of the PCGID-PID pumping plant and fish screen facility, which is threatened by bank erosion on the Riparian Sanctuary and the migration of the Sacramento River. This alternative meets the national environmental policy goals 1-6 better than the action alternatives evaluated in the Draft EIS/EIR or the No Action Alternative.

Measures to Minimize Environmental Harm

We have reviewed the measures identified in the Final EIS/EIR to avoid and mitigate environmental impacts that could result from implementation of the Preferred Alternative. All measures to avoid or minimize impacts of the Preferred Alternative have been incorporated into the project as described in the Final EIS/EIR and are incorporated into this ROD by reference. We will require any work that we authorize on the Sacramento River NWR to comply with the applicable mitigation measures described in the Final EIS/EIR and the mitigation and monitoring program contained in Appendix A to the Final EIS/EIR. Measures to minimize or avoid environmental impacts include but are not limited to:

Mitigation Measure GS-1: Implement construction measures to reduce soil erosion.

The construction contractor will be responsible for implementing measures during all phases of construction to reduce the potential for soil erosion and indirect effects on water quality, air quality, and other resources. PCGID-PID and the Service will be responsible for ensuring that the contractor implements the measures

during installation of bank protection measures and restoration activities, respectively. These measures may include, but are not limited to, the following:

- Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by the Service (for federal lands) or Department of Water Resources (State lands).
- All vehicular construction traffic will be confined to designated access routes and staging areas, as determined at the onset of construction.
- Disturbance will be limited to the minimum necessary to complete all construction and restoration activities.
- To the fullest extent possible, soil disturbance activities will not be conducted during significantly wet or windy weather.
- Erosion and sediment control measures will be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated. If work activities take place during the rainy season, erosion control structures must be in place and operational at the end of each work day.
- All stockpiles will be covered at the end of the work day during periods of wet or windy weather.
- Revegetation and restoration activities would be implemented during and after construction to help stabilize soils following disturbance.

Mitigation Measure WR-1: Implement measures to minimize increased turbidity levels in the Sacramento River during construction.

The construction contractor will be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP), which will identify 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. PCGID-PID will be responsible for ensuring implementation of these measures and compliance with Basin Plan objectives during installation of bank protection measures. The SWPPP will include, 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 silts, 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.
- An effective arrangement of silt curtains will be installed downstream of the proposed location of the bank protection measures to limit the downstream transport of disturbed sediments and maintain compliance with Basin Plan water quality objectives for turbidity. In-water construction will move in an upstream direction to allow the silt curtains to sequester any mobilized materials from upstream activities. Silt curtains have been shown to be effective measures of mitigating turbidity levels in dredging operations, but curtains are less effective in water deeper than 21 feet and velocities greater than 1.6 feet per second (Francingues and Palermo 2005). Silt curtains should be installed to sequester as much disturbed sediment as possible given the current hydrologic conditions of the river (e.g., channel depth and velocities) and the performance capabilities of the silt curtains. Silt curtains will be kept in normal working order and allow fish that may enter the curtained area adequate room to exit the area freely. Curtains will also be installed such that they do not prohibit the free

movement of fish in the Sacramento River or inhibit or restrict boat traffic. Silt curtains will be left in place until the completion of all in-water work.

- 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 to 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 work day. In cases where repairs cannot be made immediately for safety reasons, the repairs should be completed as soon as the work can safely be performed.
- Disturbed areas will be revegetated with either native grass planting (hydroseeding) or willow cuttings immediately following construction.

The Service will also be responsible for ensuring that implementation of erosion control and water quality protection measures during restoration activities, including using erosion and sediment control structures, minimizing bare soil, implementing activities during dry periods as feasible, and revegetating disturbed areas, as listed above.

Mitigation Measure WR-2: Implement measures during construction and restoration activities to prevent accidental discharge of potentially 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, and the Service will be responsible for ensuring all herbicide use in the project area complies with the herbicide-related measures listed below. Construction measures include:

- 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.

Herbicide application measures include:

- 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 application of herbicides will strictly adhere to the manufacture's instructions, the Service's Pesticide Use Proposal process, and the Sacramento River NWR Complex Integrated Pest Management Plan (Appendix F to U.S. Fish and Wildlife Service 2009).
- 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.
- The cleaning and disposal of herbicide containers will be completed in accordance with federal, state, and local laws, regulations, and guidance.

Mitigation Measure FR-1: Implement measures to minimize the injury or mortality of rearing and migratory juvenile anadromous and resident fishes.

The construction contractor retained by PCGID-PID for installation of the bank protection measures will be required to minimize in-water activities and to operate equipment slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. The contractor will be instructed that, before submerging an excavator bucket or laying riprap below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of the equipment to scare fish away from the work area. To avoid impacts to mobile life stages of salmonids that may be present in the water column, the first layers of clean materials that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area. These measures will avoid or minimize potential injury to and mortality of fish during in-water activities.

Mitigation Measure VW-2: Compensate for the loss of jurisdictional wetlands in the riparian restoration designs.

The Service will be responsible for ensuring that the riparian restoration plan for the site-specific plantings at the Riparian Sanctuary incorporates measures to protect riparian wetlands in place, where feasible, and to restore similar quality riparian wetlands on-site if avoidance is not feasible. On-site mitigation is encouraged by the Corps and CDFW, and the restoration activities would restore riparian habitat on 400 acres of the Riparian Sanctuary. A wetlands mitigation and monitoring plan would need to be prepared and submitted to the Corps and CDFW for review and approval as part of their permitting processes; the riparian restoration plan prepared by River Partners may be submitted in place of a separate wetlands plan if the information required by the agencies is included in it. The plan will need to discuss the restoration plans to compensate for the loss of riparian wetlands and identify monitoring parameters and performance criteria for each parameter to ensure the success of the restored wetlands. The riparian restoration or wetlands plan will include the following measures:

- The total acreage of impacts to jurisdictional wetlands will be calculated based on the final design of the bank protection measure and the delineation of waters of the United States, once verified by the Corps. This acreage will be used to determine the total acreage of replacement wetlands needed.
- All replacement wetlands will be restored on-site, which may include areas at the Riparian Sanctuary, particularly along the river, or on Llano Seco Island 2 (Service-managed lands). Riparian wetlands lost will be replaced to provide similar function (e.g., planted within the OHWM to provide instream cover for fish and other aquatic wildlife).
- Jurisdictional wetlands affected by the bank protection measures will be replaced at a 1:1 ratio of acres permanently lost to acres of on-site replacement wetlands. This ratio is subject to the final recommendations made by the Corps and CDFW. It is based on the assumption that the overall restoration design provides a substantial benefit by restoring approximately 400 acres of mixed density riparian habitat.
- Planted species will consist of the same species as those removed (e.g., red willow, narrow leaved willow). Stems will be planted at three (3) stems per planting to help ensure successful establishment of at least one vigorous plant for each plant removed.
- Impacts to herbaceous cover in the jurisdictional wetlands will be offset by reseeding any unvegetated and disturbed areas with a suitable seed mixture after construction; by using plugs of rushes, sedges, or other native vegetation taken by hand from plants in adjacent riparian wetland habitat; or from CDFW-approved nursery sources.
- The restored wetlands will be monitored according to performance criteria identified in the plan and per the conditions of the Corps permit. Typical performance criteria may include ensuring species diversity is equal to or greater than that for selected reference areas (e.g., existing riparian woodlands located in or adjacent to the project area) and that density (stems per acre) of woody riparian species is equal to or greater than that for selected reference areas (e.g., existing riparian woodlands located in or adjacent to the project area).
- Construction fencing will be erected along the outer edges of the construction zone where needed to prevent accidental entry into existing riparian habitat.
- Equipment and materials will be stockpiled or stored outside of existing or restored riparian habitat.

Mitigation Measure VW-4a: Protect preserved elderberry shrubs during construction.

The construction contractor retained by PCGID-PID or the Service will be required to implement protection measures around elderberry shrubs that are to be preserved in the project area during construction activities. These measures will be verified and refined, as necessary, by the Service during ESA consultation and may include the following:

- The locations of elderberry shrubs to be preserved will be clearly identified on construction plans.
- Plywood boxes will be constructed around all preserved elderberry shrubs in areas where bank protection measures would be installed. A biological monitor will be present during construction of the plywood boxes to ensure that all elderberry shrubs intended for preservation are identified and adequately protected prior to vegetation clearing or any ground disturbing activities.
- Exclusionary fencing will be installed 20 feet from the dripline of elderberry shrubs that are not protected by plywood boxes and that will be preserved elsewhere in the project area during construction and restoration activities. This buffer may be modified at the discretion of the Service for site-specific plantings near existing elderberry shrubs.
- Signs and fencing will be erected in accordance with the Service's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999).
- A qualified biologist will conduct worker environmental awareness training to ensure that construction workers are able to identify and appropriately avoid elderberry shrubs.

Mitigation Measure VW-4b: Implement a mitigation plan for elderberry shrubs that must be removed.

The Service (Sacramento River NWR) prepared a mitigation plan to identify measures to replace or replant elderberry shrubs that must be removed during construction. This plan will be incorporated into the riparian restoration plan. This plan was reviewed and approved by the Service as part of the ESA consultation process. The measures identified in the mitigation plan include, but are not limited to, the following:

- The locations of elderberry shrubs to be removed or transplanted will be clearly identified on construction plans.
- As part of the restoration design, elderberry stems removed will be mitigated in accordance with the Service's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999). A qualified biologist will record the number of stems to be removed so that the design can incorporate appropriate replacement ratios of elderberries and associated riparian plants.
- All transplant and replacement shrubs will be planted within the restoration area of the Riparian Sanctuary and will be incorporated into the restoration design.

Mitigation Measure VW-5: Conduct pre-construction surveys for nesting bank swallows and install netting along the bank.

All construction and restoration activities that involve ground disturbance and use of equipment near the banks of the Sacramento River between RM 177 and RM 178.2 will be scheduled outside of the nesting period for bank swallows (i.e., schedule these activities between August 1 and March 31), to the extent possible. If these activities must take place during the nesting period, PCGID-PID, the Service, or the construction contractors retained by PCGID-PID and the Service will be responsible for retaining a qualified

biologist to conduct a pre-construction survey in potential bank swallow habitat along the banks of the Sacramento River adjacent to the Riparian Sanctuary at about RM 178.2 (for bank protection measures) and at about RM 177 (for restoration activities) prior to bank swallows arriving in the area (see River Partners 2011 for map of potential habitat locations). The survey will be conducted in February of the same year that construction is scheduled for the bank protection measure and site preparation is scheduled for restoration activities; multiple surveys may be necessary if these activities are scheduled in different years. The biologist will assess the suitability of the habitat for nesting bank swallows and determine if bank swallows could occupy the habitat during the nesting period. If the habitat is determined to be unsuitable for bank swallow nesting, no additional construction measures are necessary. However, if the habitat has become suitable, the contractor will be responsible for installing netting along the bank prior to bank swallows arriving in the area (i.e., during the first week of March) and under the supervision of a qualified biologist. The netting will consist of a plastic net or poultry wire with a mesh size of about 3/4 to 1 inch. The netting will remain in place until construction activities commence for the bank protection measure, and it can be removed once construction of the bank protection starts. For restoration activities, the netting will remain in place until the end of the nesting period. A qualified biologist will monitor the netting weekly between the time it is installed and construction commences and conduct a survey the day prior to the start of construction to ensure no bank swallows have occupied the habitat.

Mitigation Measure VW-6: Conduct pre-construction surveys for nesting special-status bird species, raptors, special-status mammals, and special-status reptiles.

PCGID-PID or the construction contractor retained by PCGID-PID or the Service will be responsible for retaining a qualified biologist to conduct pre-construction surveys prior to any activities scheduled during the nesting season (February 15 through September 15) and implementing measures to avoid activities near active nest sites. Surveys will be repeated each year if activities would commence in subsequent years during the nesting period. The following specific measures will be implemented:

- All construction activities (e.g., construction of spur dikes, site-specific planting preparation), including pruning and trimming of vegetation, will be supervised by a qualified biologist.
- For Swainson's hawk, a qualified biologist will conduct a pre-construction survey of accessible areas within a 0.5-mile radius of the area where activities would be implemented on the Riparian Sanctuary and upstream peninsula 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 will be conducted no more than 1 week prior to the initiation of the 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 will be implemented:
 - A no-disturbance buffer zone will be established around the nest site. The width of the buffer zone will be determined by a qualified biologist in coordination with CDFW. Determination of the required width of the buffer zone will 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 will monitor active nests within 500 feet (or the width of the buffer zone) of construction activities. The first monitoring event will coincide with the initial implementation of construction activities and monitoring will continue a minimum of once a week until the young have fledged. If the biologist determines that construction activities are

disturbing the birds and nest failure is possible, CDFW will be immediately notified. Measures to avoid nest failure will 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 will be submitted to CDFW within 2 weeks after termination of monitoring activities.

- For special-status migratory birds, a qualified biologist will conduct a pre-construction survey no more than 2 weeks prior to commencement of construction or restoration activities scheduled between March 1 and August 31. The pre-construction survey will be used to determine if active nests of these species are present in or within 250 feet of where construction activities would take place. If an active nest is found, a qualified biologist in consultation with CDFW will determine the extent of a construction-free buffer zone to be established around the nest. If no active nests are identified, no further mitigation is necessary.
- For common raptors, a qualified biologist will conduct a pre-construction survey in all suitable upland and riparian habitat no more than 2 weeks prior to commencement of construction or restoration activities scheduled between February 15 and August 31. If an active nest is found, a qualified biologist, in consultation with CDFW, will determine a construction-free buffer zone to be established around the nest until the young have fledged. In consultation with CDFW, a plan will be developed to monitor whether construction activity is disturbing the reproductive process and to determine when the young have fledged. If no active nests are identified, no further mitigation is necessary.
- If a western pond turtle is observed in the project area during construction activities, the contractor will temporarily halt construction until the turtle has moved itself to a safe location outside of the construction limits. If construction is to occur during the nesting season (late June–July), a pre-construction survey will be conducted by a qualified biologist to locate any western pond turtles or their nests. This survey will be conducted within 660 feet of the northwestern portion of the Riparian Sanctuary no more than 2 days prior to the start of construction or restoration activities in suitable habitat. If a pond turtle nest is found, the biologist will 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.

Mitigation Measure CR-1a: Provide an archaeological monitor during all activities at the Riparian Sanctuary near site CA-BUT-2658.

The Service will be responsible for retaining a qualified professional archaeologist to monitor all activities near site CA-BUT-2658 during all phases of the project. Daily monitoring of the site will take place during the initial restoration activities, especially during preparation and planting activities. Periodic monitoring will take place during maintenance and monitoring activities, such as mowing and herbicide application, over the long term to ensure resources at the site are adequately protected and no alterations to the site take place. A representative from the Mechoopda Tribe may monitor any activities that could disturb the site, including maintenance activities, in order to help prevent any unnecessary disturbance or impacts to the resources, and a cultural resource member of the tribe will be present during restoration activities in order to collect and re-bury any culturally significant materials that are brought to the surface during this activity. Monitoring will help reduce accidental damage due to project activities and prevent movement of individual artifacts from the site through casual or purposeful collection.

Mitigation Measure CR-1b: Allow only native grass restoration and minimal maintenance within the boundaries of site CA-BUT-2658.

The Service will modify the restoration plans to only include native grass restoration within the boundaries of site CA-BUT-2658 and to restrict maintenance activities at the site. If the effects of native grass seeding and maintenance can be shown to have no effect on site CA-BUT-2658, the restoration plans will allow for limited application of native grasses on the site. In consultation with the Mechoopda Tribe, the following activities will be allowed for site preparation and application of seeds: prescribed burn, herbicide application, and use of a no-till drill for seed application. Other treatment methods, such as hand pulling of invasive species, will be allowed at the discretion of the Service archaeologist. The following activities will not be allowed: disking for site preparation, mechanical mowing for maintenance over the long term, and other ground disturbance that might damage resources at the site. The site will be fenced or marked off during restoration activities, and an archaeological monitor will be present during seeding and maintenance activities. Any fencing or other boundary markings will be removed at completion of the restoration plantings.

Mitigation Measure CR-2a: Implement treatment measures and record previously undiscovered resources.

The construction contractor will comply with relevant measures in the Sacramento River NWR CCP and Cultural Resources Overview and Management Plan if potential cultural resources are discovered during construction or restoration activities. If a discovery is made, the Service archaeologist will be notified immediately, and the resource will be examined by a qualified professional archaeologist to determine if it is a cultural resource. Any cultural resources discovered during construction will be recorded according to accepted contemporary standards and evaluated to determine their eligibility for listing in the National Register and CRHR. Impacts on the resources, if any, will be evaluated, and specific treatment measures will be identified in consultation with the State Historic Preservation Officer and the Service to determine the appropriate course of action if eligible resources would be adversely affected. Specific measures may be implemented to reduce adverse impacts, such as data recovery and curation of recovered materials or protection in place by avoiding the resource.

Mitigation Measure CR-2b: Implement treatment measures for human remains.

The construction contractor will comply with appropriate measures in the Sacramento River NWR CCP and Cultural Resources Overview and Management Plan if human remains are discovered during construction or restoration activities. Regarding human remains, “any individual who has knowingly and inadvertently discovered human remains on Federal lands must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the responsible Federal agency official” (White 2003: 125). In addition, all activity in the area must stop. The appropriate steps are laid out in the Cultural Resource Overview and Management Plan for the Sacramento River Conservation Area (White 2003: 124-127). If a discovery is made, the Service archaeologist and County coroner will be notified immediately, and the Service will notify local Native American tribes and the Native American Heritage Commission, as appropriate. Discoveries on federal lands are subject to the Native American Graves Protection and Repatriation Act. The ancestry of the remains will be determined if feasible and with minimal disturbance of the remains. All human remains and associated burial artifacts encountered will be protected and assessed in a respectful and dignified manner. If removal is necessary, it will be undertaken with a Native American representative present (if appropriate), and the remains will be treated according to the provisions set forth in

Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code.

Mitigation Measure AQ-1: Implement a fugitive dust and emissions reduction plan.

The construction contractor will be responsible for preparing and implementing a fugitive dust and emissions reduction plan to limit fugitive dust, particulate matter, and GHG emissions. The plan will identify measures to be implemented during construction activities and will be reviewed and approved by the local air districts, the Service, and PCGID-PID. The Service and PCGID-PID will be responsible for ensuring the contractor implements the measures during construction activities. Applicable measures will also be implemented during longer term maintenance activities, as appropriate. Measures identified in the plan may include, but are not limited to, the following from the Butte County Air Quality Handbook (Butte County Air Quality Management District 2008):

- A water truck will be on-site at all times. Water will be applied to disturbed areas a minimum of two times per day or more as necessary, and all visibly dry disturbed areas and unpaved roads will be watered to minimize dust emission.
- Soil pile surfaces will be moistened if dust is being emitted from the pile(s). Adequately secured tarps, plastic, or other material may be required to further reduce dust emissions.
- Water will be applied by means of truck(s), hoses, and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emission.
- Unpaved roads may be graveled to reduce dust emissions at the discretion of the Service.
- Haul roads will be sprayed down at the end of the work shift to form a thin crust. This application of water will be in addition to the minimum rate of application.
- Haul vehicles transporting soil into or out of the property will be covered pursuant to California Vehicle Code Section 23114.
- On-site vehicles will be limited to a speed that minimizes dust emissions on unpaved roads.
- Vehicles entering or exiting the construction area will travel at a speed that minimizes dust emissions.
- Construction workers will park in designated parking area(s) to help reduce dust emissions.
- A publicly visible sign with the telephone number and person to contact regarding dust complaints will be posted in a publicly accessible area near the project area (such as along SR 45). This person will respond to complaints and take corrective action within 24 hours. The telephone number of the Butte and Glenn County air districts will also be visible.
- Unnecessary vehicle idling will be limited to 5 minutes.
- All construction equipment will be maintained in proper tune according to manufacturer's specifications.
- Contractors will commit to using the best available emissions control technology. The use of diesel construction equipment meeting ARB's 1996 or newer certification standard for off-road heavy-duty diesel engines and having Tier 4 engines will be maximized to the extent feasible. Equipment may be electrified if feasible, and gasoline-powered equipment should be substituted for diesel-powered equipment where feasible, unless alternatively fueled construction equipment can be used. If the use of all equipment with Tier 4 engine standards is not feasible, the contractor should commit to using ARB and EPA-verified particulate traps, oxidation catalysts, and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants during construction.

- Onroad heavy-duty haul trucks shall be model year 2000, or newer, or shall meet equivalent model year emissions standards.
- All construction equipment shall be electrified, when feasible, and gasoline-powered equipment shall be substituted for diesel-powered equipment, where feasible, unless alternatively fueled construction equipment can be used.
- A construction traffic and parking management plan will be developed and implemented to maintain traffic flow and minimize vehicle trips.

Additional measures to reduce GHG emissions include:

- To the extent feasible, reuse and/or recycle a minimum of 50 percent of construction and demolition waste including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard.
- To the extent feasible, water-efficient irrigation systems shall be used for the riparian restoration area.

Other Statutory Compliance Requirements

Cultural Resources – Section 106 compliance is complete. In a letter dated August 27, 2012, the Service relayed a determination of no adverse effects to the California State Historic Preservation Officer (SHPO). We requested their review of our determination and concurrence with our findings; however, we did not receive a response from the SHPO. Under regulation, if the SHPO does not reply within 30 days, we can conclude that the SHPO has no objection.

Endangered Species Act – We completed formal intra-Service section 7 consultation for the federally threatened valley elderberry longhorn beetle and received a Biological Opinion dated April 29, 2013. The Biological Opinion concluded that the proposed project would not jeopardize the continued existence of the valley elderberry longhorn beetle. The National Marine Fisheries Service (NMFS) reviewed the proposed project and its effect on federally listed species under their jurisdiction. They issued a Biological Opinion on August 23, 2013, and concluded that the proposed project was not likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of any critical habitat for these listed species. In their Biological Opinion the NMFS also included their essential fish habitat conservation recommendations for Pacific salmon as required by the Magnuson-Stevens Fishery Conservation and Management Act. Certain terms and conditions of the incidental take statement and the ESA conservation recommendations of the BO are adopted as the essential fish habitat conservation recommendations.

Clean Water Act and Rivers and Harbors Act – The preferred alternative would result in the placement of fill within the ordinary high water mark of the river and would have permanent impacts to 2.6 acres of jurisdictional wetlands. This work will require a permit under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act. In addition, section 401 water quality certification from the Central Valley Regional Water Quality Control Board will be needed. We have submitted the permit applications for section 404 and 401. The permit application for the section 404 permit is expected to be used to issue the section 10 permit.

Public Involvement

A Notice of Intent (NOI) to prepare a joint EIS/EIR for the Riparian Sanctuary project was published in the Federal Register on April 12, 2011 (Volume 76, Number 70). The CDFW submitted a Notice of Preparation (NOP) to the State Clearinghouse on April 28, 2011. The NOI and NOP announced the scoping period, which extended from April 12 to May 27, 2011, and provided information on a public workshop, which was held on May 10, 2011, at the Ord Bend Community Hall near the project area. Additional information on the scoping process is available in Chapter 1 and Appendix A of the Draft EIS/EIR.

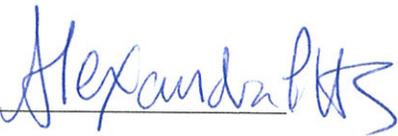
The Draft EIS/EIR was circulated to local, state, and federal agencies and to interested organizations and individuals for a 45-day public review period, beginning on May 4 and ending on June 25, 2012. Agencies and interested parties were mailed a letter announcing availability of the Draft EIS/EIR, where the Draft EIS/EIR and supporting documents could be obtained or reviewed, the dates of the comment period, and the deadline for receiving written comments. In coordination with CDFW we held a public meeting on May 30, 2012, at the Ord Bend Community Hall near the project area, to solicit public comments on the document and respond to questions. Notices on the availability of the Draft EIS/EIR for review and on the public meeting were published in the Federal Register on May 4, 2012; the Willows Journal and Orland Press Register on May 26, 2012; and the Chico Enterprise on May 28, 29, and 30, 2012. The Notice of Completion of a Draft EIS/EIR was submitted to the State Clearinghouse with the required number of copies on May 4, 2012.

The Final EIS/EIR was distributed to those who commented on the Draft EIS/EIR and others who expressed interest in receiving copies of the document on March 6, 2013. It was also filed with the State Clearinghouse and made available to the public for review at the Service, CDFW, and PCGID-PID offices and local libraries, as listed in the Draft EIS/EIR. A notice of the availability of the Final EIS/EIR was published in the Federal Register on March 15, 2013.

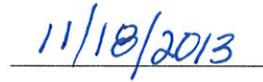
We will make the ROD publicly available on the following websites: www.fws.gov/refuge/sacramento_river/ and <http://www.riverpartners.org/where-we-work/sanctuary/documents.html>. We will also issue a press release and publish a notice in local newspapers notifying the public that a ROD is available.

Implementation

As stated in the March 15, 2013 Notice of Availability for the Final EIS/EIR, implementation of this decision has not occurred sooner than 30 days from the date of the Notice. We will support implementation of the Preferred Alternative for the Riparian Sanctuary project. We will implement the restoration plan of the project, and we will provide authorization for PCGID-PID to implement the bank protection measure on Service-managed land. We will not authorize access by PCGID-PID across Service-managed land or use of the land for the bank protection measure until all required authorizations, including Section 401 certification under the Clean Water Act, a permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, an encroachment permit from the Central Valley Flood Protection Board, a Section 408 permit from the Corps, a Streambed Alteration permit from the CDFW, and a license agreement with the adjacent private landowner for access across their lands, have been issued.



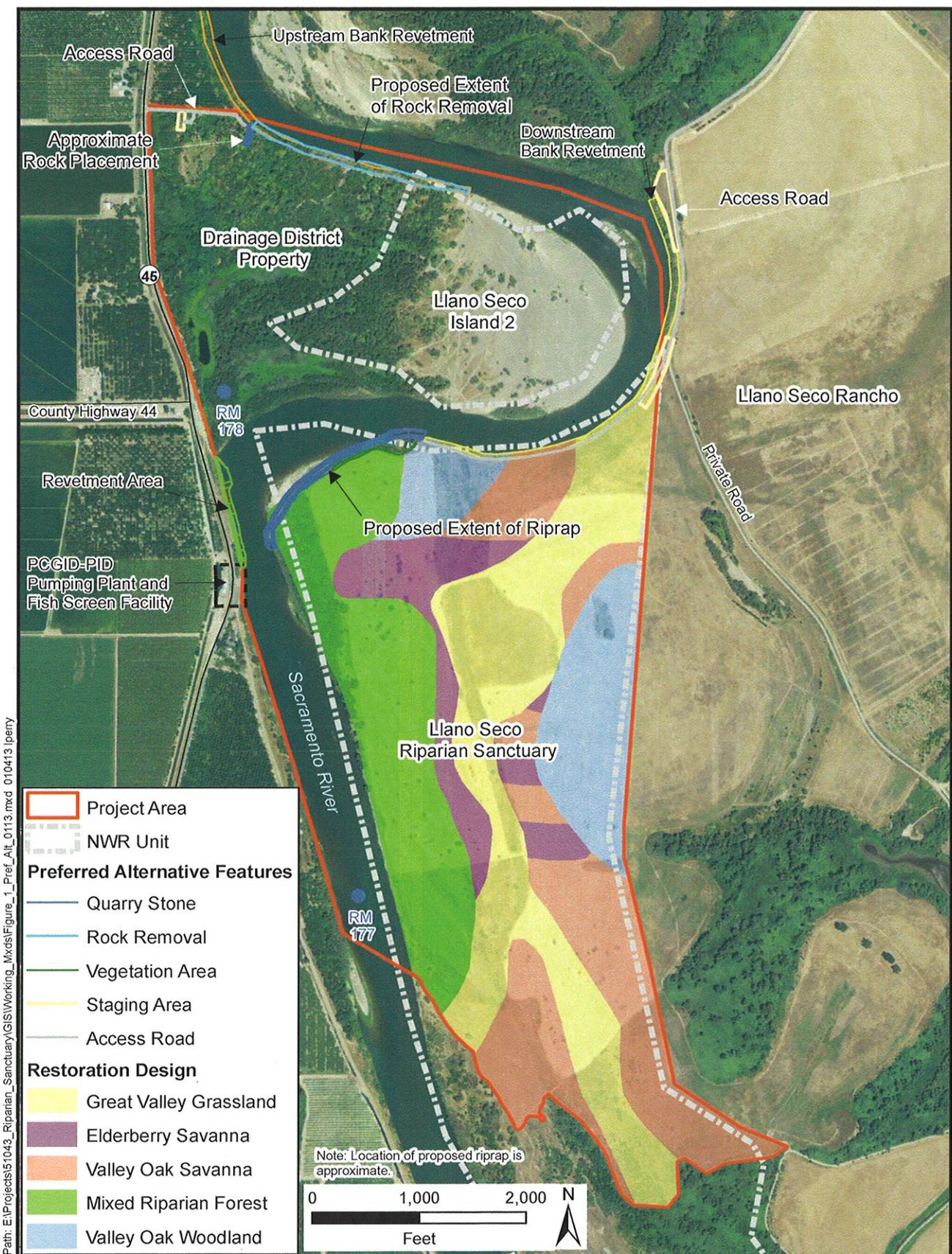
Regional Director
Pacific Southwest Region
Sacramento, California



Date

References

- Francingues, N.R. and M.R. Palermo. 2005. Silt curtains as a dredging project management practice. DOER Technical Notes Collection (ERDC TN-DOER-E21). U.S. Army Engineer Research and Development Center, Vicksburg, MS. Available at: <<http://el.erd.c.usace.army.mil/dots/doer/doer.html>>. Accessed September 2011.
- U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. 2013. Llano Seco Riparian Sanctuary Unit Restoration and Pumping Plant/Fish Screen Facility Protection Project Final Environmental Impact Statement/Environmental Impact Report. March.



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Figure 1-1. Preferred Alternative