Initial Study/Proposed Mitigated Negative Declaration

Merced River Robinson Reach Maintenance Project

January 2022

Prepared by: California Department of Water Resources
South Central Region Office
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Date: January 14, 2022

To: Responsible and Trustee Agencies, Interested Parties, and Organizations

Subject: **Notice of Availability and Intent to Consider Adoption of a Proposed Mitigated Negative Declaration for the Merced River Robinson Reach Maintenance Project**

The California Department of Water Resources (DWR) has directed the preparation of an initial study (IS) and intends to adopt the proposed mitigated negative declaration (MND) for the Merced River Robinson Reach Maintenance Project (proposed project) in compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines.

Project Title: Merced River Robinson Reach Maintenance Project

Lead Agency: DWR, South Central Region Office

Project Location: The proposed project is located five miles southwest of the town of Snelling off State Route 59 in Merced County on the Merced River. The site is approximately 11.5 miles north of the City of Merced. The project area is located within the Winton and Yosemite Lake United States Geological Survey 7.5-minute quadrangles.

Project Description: The proposed project is maintenance of the Merced River Salmon Habitat Enhancement Project (MRSHEP) completed in 2002. DWR proposes to design, permit, and implement the following improvements to restore salmon spawning and rearing habitat in the floodplain and channel of the Robinson Reach of the Merced River:

- Stabilize seven hundred feet of eroded bank.
- Improve the capacity of 1,600 feet of channel by excavating deposited sediment and relocating a tree in the channel.
- Install a nine-hundred-foot shallow floodplain ditch to route low flows into the main river channel.
- Augment spawning habitat in two riffles in the downstream end of the reach.

Environmental Review Process: DWR has directed the preparation of an IS/MND on the proposed project in accordance with the requirements of CEQA and the State CEQA Guidelines. The IS/MND describes the proposed project and provides an assessment of the proposed project's potential significant adverse impacts on the physical environment. It concludes that the proposed project would not have any significant adverse effects on the environment after adoption and implementation of mitigation measures.

Public Review Period: The IS/MND is being circulated for public review and comment for a period of 30 days starting on **January 20, 2022**. Written comments must be submitted and received at the following address, by fax, or by email no later than close of business (5:00 p.m.) on **February 22, 2022**.

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To Review or Obtain a Copy of the Environmental Document: Copies of the IS/MND may be reviewed at the following locations:

1. DWR's website: https://water.ca.gov/
2. CEQAnet

Proposed Mitigated Negative Declaration

PROJECT: Merced River Robinson Reach Maintenance Project

CEQA LEAD AGENCY: California Department of Water Resources, South Central Region Office

PROJECT LOCATION: The project area is located on the Merced River, approximately five miles southwest of the town of Snelling; approximately two miles upstream and including the State Route 59 bridge; Merced County, California. The project site includes 7,000 feet of the Merced River Salmon Habitat Enhancement Project Phase III- Robinson Reach (MRSHEP-Robinson) constructed in 2001 and 2002.

PROJECT DESCRIPTION: See Chapters 1 and 2 of the IS document.

FINDINGS: An IS/MND has been prepared to assess the proposed project's potential effects on the physical environment and the significance of those effects. Based on the analysis conducted in the IS, it has been determined that implementing the proposed project would not have any significant adverse effects on the environment after adoption and implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no impact on agriculture and forestry resources, land use and planning, mineral resources, population and housing, and wildfire.

2. The proposed project would have a less-than-significant impact on aesthetics, cultural resources (including Tribal Cultural Resources), greenhouse gas emissions, energy, public services, transportation, recreation, and utilities and service systems.

3. The proposed project would have a less-than-significant impact, with mitigation measures adopted and implemented, on air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, and noise.

4. The proposed project would not have any mandatory findings of significance as the project would not have the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.

5. The proposed project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.

6. The proposed project would not have possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

7. The environmental effects of the proposed project would not cause substantial adverse effects on human beings, either directly or indirectly.

8. The proposed project incorporates all mitigation measures listed below and described in the IS.

MITIGATION MEASURES: The following mitigation measures will be implemented by DWR as part of the project to avoid, minimize, rectify, reduce or eliminate, or compensate for potentially significant environmental impacts. Implementation of these mitigation measures would reduce the potentially significant environmental impacts of the proposed project to less-than-significant levels:

Mitigation Measure AQ: Reduce and Minimize Impacts to Air Quality.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) requires that all construction projects comply with Regulation VIII Control Measures. It also requires compliance with additional measures if the construction site is large or in close proximity to sensitive receptors. The following measures will be implemented during project construction (San Joaquin Valley Air Pollution Control District 2002):

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water, chemical stabilizer/suppressant, and covered with a tarp or other suitable cover or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized for dust emissions using water or chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled for fugitive dust emissions by presoaking or water application.

- When materials are transported off-site, all material will be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container will be maintained.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)*

- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, the piles will be effectively stabilized for fugitive dust emissions using enough water or chemical stabilizer/suppressant.

- Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

- Suspend excavation and grading activity when winds exceed 20 miles per hour (mph).

- Construction equipment will be maintained according to manufacturer's specifications. Construction vehicle idling time will be limited.

- To minimize dust emissions on unpaved roads and all project entry points and to increase fuel efficiency of vehicles and reduce emissions, vehicles driven in the construction area will be limited to 15 mph.

- On-road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals.

Mitigation Measure BIO-1: Avoid or Minimize Impacts to Biological Resources.

- Prior to the start of construction activities, all construction personnel will participate in mandatory worker environmental awareness training conducted by a qualified biologist. Construction personnel shall be informed about the identification, potential presence, life history, habitat requirements, legal protections, avoidance and minimization measures, and applicable mitigation measures for all special-status species identified in this document as having potential to be adversely affected by this project. Construction personnel will also be informed of the procedures to follow should a special-status species be encountered within the project area during construction.

DWR will implement general plant and wildlife protection measures during construction that will include, but may not be limited to, the following:

- All work would take place within one-half hour of both sunrise and sunset each day. These work times may be extended into the evening or weekend during key points of the construction phase, as needed.

- Clearly delineate the project area limits by using fencing, flagging, or other means prior to the start of construction activities.

- Avoid wildlife entrapment by completely covering, or providing escape ramps for, all excavated steep-walled holes or trenches more than two-feet deep at the end of each workday.

- Inspect the work area and any equipment or material left on-site overnight for special-status wildlife species prior to the start of construction activities each day.

- Observe posted speed limit signs on local roads and observe a 15-mile-per-hour speed limit along existing and temporary access routes.

- Dispose of food-related garbage in wildlife-proof containers and remove the garbage from the construction area daily during construction activities.

- Retain a qualified biological monitor to be present or on-call during construction activities with the potential to affect sensitive biological resources. The biological monitor will be on-site during initial ground-disturbing activities, dewatering, in-water work, and vegetation removal. The biological monitor will ensure that any construction or exclusion fencing is maintained. The biological monitor shall have the authority to stop work if a special-status wildlife species is encountered within the project area during construction, and the appropriate regulatory agencies shall be notified. Construction activities shall cease until it is determined that the species will not be harmed or that it has left the construction area on its own.

Mitigation Measure BIO-2: Avoid or Minimize Impacts to Special-Status Fish Species, Critical Habitat and Essential Fish Habitat.

- In-channel work will occur no earlier than July 1 and no later than September 30 to avoid impacts to spawning California Central Valley (CCV) steelhead, Central Valley (CV) fall-run Chinook salmon, Pacific lamprey, river lamprey, Kern brook lamprey, Central California roach, Sacramento splittail, hardhead, and riffle sculpin. DWR will complete all in-channel construction activities during low-flow conditions, typically July 1 – September 30.

- The alluvial material used for gravel augmentation will include spawning-sized gravels sourced from the Merced River channel. Cobble used in the construction of the eroding bank will be sourced from the Merced River Ranch, which is locally sourced from the Merced River floodplain.

- Impacts to habitat conditions (i.e., decrease in floodplain connectivity, removal of riparian vegetation, decrease in the quality of rearing habitat, etc.) will be analyzed in consultation with National Marine Fisheries Service (NMFS) as part of the biological assessment to be prepared pursuant to Section 7 of the Federal Endangered Species Act (ESA), due to the potential to impact anadromous salmonids.

- Riparian vegetation disturbance will be avoided or minimized to the extent feasible. Riparian vegetation would be replanted in consultation with the California Department of Fish and Wildlife (CDFW), resource agencies, and permit requirements.

- To prevent or minimize the potential for fish mortality during the dewatering of the channel excavation portion of the Merced River, a fish rescue and dewatering plan will be developed in consultation with NMFS, the U.S. Fish and Wildlife Service (USFWS), and CDFW. The fish rescue and dewatering plan will include dewatering rate methods for capturing, handling, and relocating special-status fish species. A qualified biologist will be on-site during all dewatering activities.

- Heavy equipment will utilize vegetable-based fluids and lubricants during construction activities both within the dewatered and wetted channels.

- To prevent the spread of New Zealand mudsnails, construction specifications shall include construction equipment to be stream cleaned immediately following construction activities of the project and before being used in other water bodies.

Mitigation Measure BIO-3: Avoid or Minimize Impacts to Special-Status and Rare Plants.

- Preconstruction surveys will be completed for special-status and rare plant species. If any special-status plant species are observed during pre-construction botanical surveys, they will be flagged and avoided to the extent manageable. Locations of special-status plant populations will be clearly identified in the field by staking, flagging, or fencing a no-disturbance buffer around them before the commencement of activities that may cause disturbance. No activity shall occur within the buffer area, and worker awareness training and biological monitoring will be conducted to ensure that avoidance measures are being implemented. If avoidance is not manageable, additional mitigation measures shall be approved by the appropriate regulatory agencies before the project can proceed.

- USFWS and/or CDFW will be consulted to determine appropriate compensation measures for the loss of special-status plants, as appropriate.

- Appropriate mitigation measures may include the creation of off-site populations through seed collection or transplanting, preservation and enhancement of existing populations, restoration or creation of suitable habitat, or the purchase of credits at an approved mitigation bank. If off-site compensation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan. The plan will include information on responsible parties for long-term management, holders of conservations easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable populations.

Mitigation Measure BIO-4: Avoid or Minimize Impacts to Valley Elderberry Longhorn Beetle (VELB).

- Temporary dirt access roads and disturbed areas within 100 feet of elderberry shrubs will be watered, as needed, to minimize dust emissions.

- Prior to conducting all project-related activities, a qualified biologist will identify any elderberry shrubs within and near the footprint and a no-disturbance buffer shall be established. The qualified biologist will survey potentially affected shrubs for VELB exit holes in stems greater than 1 inch in diameter.

- If elderberry shrubs with stems greater than 1 inch in diameter are removed during construction activities, mitigation or compensation for these shrubs will be determined in consultation with USFWS, CDFW, and regulatory agencies.

- If elderberry shrubs are found on or adjacent to the site, a 20-foot wide avoidance buffer (measured from the dripline of the plant) will be established around all elderberry shrubs with stems greater than 1-inch diameter at ground level and will be clearly identified in the field by staking, flagging, or fencing. No construction activities involving mechanized equipment will occur within the buffer areas. Human access may be permitted in the buffer if it does not cause disturbance to the shrubs. Elderberry shrubs cannot be used as an anchor for any in-channel project equipment. Project workers shall receive training before installing any such equipment to identify and avoid elderberry shrubs.

Mitigation Measures BIO-5: Avoid or Minimize Impacts to Western Pond Turtle (WPT).

- Pre-construction surveys for WPT shall be conducted by a qualified biologist 14 days before, as well as 24 hours before the start of ground-disturbing activities where suitable habitat exists (e.g., along riparian areas and freshwater emergent wetlands).

- If WPT or their nests are observed during pre-construction surveys, a qualified biologist shall be on-site to monitor construction in suitable WPT habitat. WPT found within the construction area will be allowed to leave on its own volition, or it will be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat immediately downstream from the project site.

- If WPT nests are identified in the work area during pre-construction surveys, a 300-foot no-disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.

Mitigation Measure BIO-6: Avoid or Minimize Impacts to Nesting Birds.

- Since project activities will be completed during nesting season (February 1– September 1), surveys using the Swainson's Hawk Technical Advisory Committee 2000 guidelines (SHTAC 2000), or current guidance, will be completed during the nesting season prior to construction, to identify any active nests within 0.5 mile of the project area. If nests within 0.5 mile are identified as Swainson's hawk, bald eagle, or white-tailed kite, an Incidental Take Permit will be obtained as required for permits.

- If removal of riparian vegetation and trimming or removal of trees during nesting season (February 1– September 1) cannot be fully avoided, a qualified biologist will conduct preconstruction surveys within two weeks of the initiation of project activities or following any construction breaks of two weeks or more.

- If nesting Swainson's hawk, bald eagle, or white-tailed kites do not occur within 0.5 mile, and nesting birds and raptors do not occur within 250 feet and 500

feet of proposed project area, respectively, no further action is required if construction begins within two weeks.

- If active nests are identified during preconstruction surveys, qualified biologists will determine if the project construction activities could result in substantial adverse effects to the nesting bird species. The following minimization and avoidance measures may be implemented based on the qualified biologist determinations and regulatory agency consultations.

- If project construction activities are determined to not result in substantial adverse effects to active nests, activities may occur without restriction. However, a qualified biologist will monitor the nest regularly to ensure no substantial adverse effects are occurring. If a qualified biologist observes changes in courtship, mating, feeding, and rearing behaviors as a result of project construction activities, no-disturbance and avoidance buffers will be implemented in consultation with CDFW and until the qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

- Factors to be considered for determining buffer size will include the following: the presence of natural buffers provided by vegetation or topography, nest height, locations of foraging territory, and baseline levels of noise and human activity. If any of these no-disturbance buffers are not feasible during project activities, DWR will consult with regulatory agencies to determine appropriate compensation measures for impacts.

- If potential Swainson's hawk, bald eagle, and white-tailed kite nest trees are removed during construction activities, DWR will develop a plan to replace known nest trees in consultation with CDFW and USFWS.

Mitigation Measure BIO-7: Avoid or Minimize Impacts to Special-Status Mammals.

- If suitable roosting habitat for special-status bats will be affected by project construction (e.g., removal of buildings, modification of bridges), surveys for roosting bats on the project site will be conducted by a qualified biologist. The type of survey will depend on the condition of the potential roosting habitat and may include visual surveys or use of acoustic detectors. Visual surveys may consist of a daytime pedestrian survey for evidence of bat use (e.g., guano) and/or an evening emergence survey for the presence or absence of bats. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required.

- If an active roost is present, a 100-foot no-disturbance buffer will be implemented when feasible. DWR will consult CDFW to determine if smaller buffers would be sufficient to avoid adverse effects to roosting bat colonies.

- If roosts are determined to be present and must be removed, the bats will be excluded from the roosting site before the tree is removed. A mitigation

program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with CDFW before implementation. Exclusion methods may include the use of one-way doors at roost entrances (bats may leave, but not reenter) or sealing roost entrances when a site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).

- The loss of each roost will be replaced, in consultation with CDFW, and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site. Roost replacement will be implemented before bats are excluded from the original roost sites. Once the replacement roosts are constructed, and it is confirmed that bats are not present in the original roost sites, the roosts may be removed.

- No less than two weeks and no more than 30 days before the beginning of ground disturbance and/or construction activities, DWR will conduct a survey to determine if American badger den sites are present at the site. If active dens are within 50 feet of the project work area, DWR will implement a 50-foot no-disturbance buffer. DWR will consult with CDFW if the buffer cannot be maintained.

Mitigation Measure BIO-8: **Avoid or Minimize Impacts to Riparian Habitat and Other Sensitive Natural Communities.**

- DWR conducted several project biological impact assessment surveys to identify areas that would be least impacted by project activities. Project element designs are being altered to minimize impacts to riparian habitat and other sensitive natural communities.

- DWR will develop and implement a revegetation and monitoring plan in coordination with CDFW, USFWS, and NMFS.

Mitigation Measure BIO-9: **Avoid or Minimize Impacts Caused by the Spread of Invasive Plants.**

- To reduce the spread of invasive plants, imported erosion control materials will be weed-free certified.

- To limit or reduce the spread of invasive species within the project area, excavated fill contaminated with invasive plants will be prevented from being used in other areas.

- Construction equipment will be washed thoroughly before entering and exiting the project area. Equipment will also be inspected daily to ensure it is free of plant parts, soil, mud, or other debris that may transport weed seeds.

- The revegetation plan will include the use of locally-sourced native plant species.

Mitigation Measure BIO 10: Obtain Permit and Compensate for any Loss of Wetlands and Other Waters of the United States/Waters of the State.

- In coordination with the U.S. Army Corps of Engineers (USACE), the acreage of effects on waters of the United States and waters of the State will be determined for the proposed project.

- The proposed project will adhere to a "no-net-loss" basis for the acreage of wetlands and other waters of the United States and waters of the State that will be removed and/or degraded. Wetland habitat will be restored, enhanced, and/or replaced at acreages, types, and locations and by methods agreed on by USACE, USFWS, and the Central Valley Regional Water Quality Control Board (CVRWQCB), as appropriate, depending on agency jurisdiction.

- Section 404 and Section 401 permits will be obtained, and all permit terms complied with. The acreage, location, and methods for compensation will be determined during the Section 401 and Section 404 permitting processes.

Mitigation Measure CULT-1: Implement Procedures for Inadvertent Discovery of Cultural Material.

- If potential historical or unique archaeological resources are discovered during construction, all work would temporarily cease in the immediate area until the findings can be assessed by a qualified archaeologist and an appropriate course of action can be determined. Work may continue on other parts of the proposed project while evaluation and mitigation take place (CEQA Guidelines §15064.5 [f]). If the find is determined to be a historical or unique archaeological resource, time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation must be available.

Mitigation Measure CULT-2: **Implement Procedures for Inadvertent Discovery of Human Remains.**

- If human remains are found, such remains would be subject to the provisions of the California Public Resources Health and Safety Code Section 7050.5. The requirements and procedures would be implemented, including immediately stopping work in the vicinity of the find and notifying the County Coroner. A DWR archaeologist would also need to be contacted immediately. The process for notification of the California Native American Heritage Commission (NAHC) and consultation with the individual(s) identified by the NAHC as the "most likely descendent" is set forth in Section 5097.98 of the California Public Resources Code. Work in the vicinity of the find can restart after the remains have been investigated and appropriate recommendations have been made for their treatment and disposition.

Mitigation Measure GEO: Prepare and Implement a Stormwater Pollution Prevention Plan that Minimizes the Potential Contamination of Surface Waters and Complies with Applicable Federal Regulations During Construction Activities.

- Construction activities may be subject to construction-related stormwater permit requirements of the Federal Clean Water Act's National Pollution Discharge Elimination System (NPDES) program. Any required permits through the CVRWQCB will be obtained by DWR or the contractor before any ground-disturbing construction activity. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared that identifies Best Management Practices (BMPs) to prevent or minimize the introduction of contaminants into surface waters. BMPs for the proposed project could include, but would not be limited to the following: silt fencing, straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and a stabilized construction entrance. The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts on runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means.

The following BMPs shall be implemented during construction:

- Implement practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water.

- Straw waddles will be used to prevent any accidental fallback into the surface waters, if necessary.

- Implement wildlife-friendly practices to reduce erosion of exposed soil, including stabilization for soil stockpiles, watering for dust control, establishment of perimeter silt fences, and/or placement of fiber rolls.

- Implement practices to maintain water quality, including silt fences, stabilized construction entrances, and storm-drain inlet protection.

- Where feasible, limit construction to dry periods.

- The performance standard for this mitigation measure is use of the best available technology that is economically achievable.

- Construction methods will incorporate appropriate erosion-prevention actions. This may include, but will not be limited to, reducing slope steepness as much as possible, re-vegetating slopes as appropriate, and directing surface drainage away from the tops of slopes. Actions shall be taken to compact fill soils uniformly.

The construction-related impact would be less-than-significant after mitigation because DWR would comply with permit requirements and implement BMPs that are specifically designed to control erosion and sedimentation from construction activities.

Mitigation Measure GHG: Reduce and Minimize Impacts Related to Greenhouse Gas (GHG) Emissions.

Pre-construction and Final Design BMPs

Pre-construction and Final Design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the proposed project. The following BMPs will be evaluated to determine which would be appropriate for the proposed project and those BMPs would be implemented:

- Evaluate project characteristics, including location, project workflow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.

- Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

- Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

- Limit deliveries of materials and equipment to the site to off-peak traffic congestion hours.

Construction BMPs

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all construction BMPs unless a variance is granted by the Division of Engineering Manager, Division of Operation and Maintenance Manager, or Division of Flood Management Manager (as applicable) and approved by the DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions or characteristics make implementation of the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the Greenhouse Gas Emissions Reduction Plan (GGERP).

- Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by California Code of Regulations, Title 13, Section 2485, the State's airborne toxics control measure). Provide clear

signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

- Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.

- Implement a tire inflation program on the job site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction.

- Develop a project-specific ride-share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

- Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

- For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay2 certified truck will be used to the maximum extent feasible.

- Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

Mitigation Measure: HAZ-1a: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination During Construction Activities.

In addition to compliance with all applicable federal, State, and local regulations, DWR will implement the measures described below to further reduce the risk of accidental spills and protect the environment.

- **Prepare and Implement a Spill Prevention Control and Countermeasures Plan (SPCCP).** A written SPCCP will be prepared and implemented as needed. The SPCCP and all material necessary for its implementation will be accessible

on-site prior to initiation of project construction and throughout the construction period. The SPCCP will include a plan for the emergency cleanup of any spills of fuel or other material. Employees/construction workers will be provided the necessary information from the SPCCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work will stop immediately and CDFW, CVRWQCB, USFWS, and NMFS will be notified within 24 hours.

- **Dispose of All Construction-related Debris and Materials at an Approved Disposal Site.** All debris, litter, unused materials, sediment, rubbish, vegetation, or other material removed from the construction areas that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site.

- **Use Safer Alternative Products to Protect Streams and Other Waters.** Every reasonable precaution will be exercised to protect streams and other waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) will be used where feasible.

- **Prevent Any Contaminated Construction By-products from Entering Flowing Waters, and Collect and Transport Such By-products to an Authorized Disposal Area.** Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials will not be allowed to enter flowing waters and will be collected and transported to an authorized upland disposal area.

- **Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters of the State or and/or Waters of the United States.** Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, will be prevented from contaminating the soil and/or entering waters of the State and/or waters of the United States.

- **Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks and Remove and Repair Equipment/Vehicles with Leaks.** Construction vehicles and equipment will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment will be checked daily for leaks. If leaks are found, the equipment will be removed from the site and will not be used until the leaks are repaired.

- **Refuel and Service Equipment at Designated Refueling and Staging Areas.** Equipment will be refueled and serviced at designated refueling and staging sites located outside the floodplain. All refueling, maintenance, and staging of equipment and vehicles will be conducted in a location where a spill will not drain directly toward aquatic habitat. Appropriate containment materials

will be installed to collect any discharge, and adequate materials for spill cleanup will be maintained on-site throughout the construction period.

- **Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.** All heavy equipment, vehicles, and supplies will be stored at the designated staging areas at the end of each work period.

- **Install an Impermeable Membrane Between the Ground and Any Hazardous Material in Construction Storage Areas.** Storage areas for construction material that contains hazardous or potentially toxic materials will have an impermeable membrane between the ground and the hazardous material and will be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water.

- **Use Water Trucks to Control Fugitive Dust During Construction.** Water (e.g., water trucks, portable pumps with hoses) will be used to control fugitive dust during temporary access road construction.

- **Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms for Placement in Any Waters.** All materials placed in streams, rivers, or other waters will be nontoxic and will not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.

Mitigation Measure HAZ-1b: Coordinate with Landowners and Farm Managers.

- The impacts from aerial spraying will be reduced by coordinating with landowners and farm managers to avoid scheduling conflicts between restoration and construction workers and scheduled farm work, including aerial spraying. Coordination will minimize conflicts between farm operations and restoration activities and prevent construction workers exposure to aerial herbicide/pesticide spray or drift.

Mitigation Measures Hydro: **Avoid and Minimize Impacts to Water Quality.**

- To minimize or avoid substantial adverse effects on special-status fish species caused by in-water construction turbidity increases, DWR will implement a turbidity monitoring plan following the water quality turbidity objectives of the Basin Plan for the San Joaquin River Basin.

- Turbidity curtains may be installed in the water around fill areas or downstream of fill areas to reduce turbidity. If turbidity curtains are used, they will be inspected and adjusted to meet the Basin Plan water quality turbidity objectives.

Mitigation Measure NOI: Implement Measures During Any Weekend and Night-time Construction to Reduce Temporary and Short-term Noise Levels from Construction-related Equipment Near Sensitive Receptors.

DWR will ensure that the following noise-reduction protocol measures are implemented during any construction activities that occur on weekends or between the hours of 6 p.m. and 7 a.m. to reduce temporary and short-term construction-related noise impacts near sensitive receptors:

- Construction equipment will be used as far away as practical from noise-sensitive uses.

- Construction equipment will be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded.

- Construction site and haul road speed limits will be established and enforced.

- The use of bells, whistles, alarms, and horns will be restricted to safety and warning purposes only.

- Construction equipment will not idle for extended periods of time when not being used during construction activities.

Adoption of Mitigated Negative Declaration and Approval of Proposed Project

Certification by Those Responsible for Preparation of This Document:
The California Department of Water Resources (DWR), as lead agency, was responsible for preparation of this Proposed Mitigated Negative Declaration and the incorporated Initial Study. I believe this document meets the requirements of the California Environmental Quality Act and provides an accurate description of the Merced River Robinson Reach Maintenance Project (proposed project), and that DWR has the means and commitment to implement the mitigation measures to assure that the proposed project would not cause any significant impacts on the environment. In accordance with Section 21082.1 of the California Environmental Quality Act, DWR staff, including myself, have independently reviewed and analyzed the Initial Study and Proposed Mitigated Negative Declaration for the proposed project and find that the Initial Study and Proposed Mitigated Negative Declaration reflect the independent judgment of DWR staff. Furthermore, I have reviewed and considered all comments received during the public comment period for the document.

I hereby adopt this mitigated negative declaration:

_____ _____
Kevin Faulkenberry, P.E., Region Manager Date
California Department of Water Resources

*(*To be signed on completion of the public review process and consideration of all public comments and the whole of the administrative record.)*

Approval of the Proposed Project by the Lead Agency:
In compliance with Section 21082.1 of the California Environmental Quality Act, the California Department of Water Resources (DWR) has independently reviewed and analyzed the Initial Study and Proposed Mitigated Negative Declaration for the proposed project and finds that they reflect the independent judgment of DWR staff. The lead agency finds that the project design features would be implemented as stated in the Mitigated Negative Declaration.

I hereby approve this project:

_____ _____
Kevin Faulkenberry, P.E., Region Manager Date
California Department of Water Resources

*(*To be signed on completion of the public review process and consideration of all public comments and the whole of the administrative record.)*

CEQA Guidelines Appendix G: Environmental Checklist Form

1. Project title:	Merced River Robinson Reach Maintenance Project
2. Lead agency names and addresses:	California Department of Water Resources South Central Region Office 3374 E. Shields Avenue Fresno, California 93726
3. Contact persons and phone numbers:	Karen Dulik Environmental Program Manager California Department of Water Resources South Central Region Office Karen.Dulik@water.ca.gov (559) 230-3361
4. Project location:	The project area is located on the Merced River, approximately five miles southwest of the town of Snelling; approximately two miles upstream of and including the State Route 59 bridge; Merced County, California. The project site includes 7,000 feet of the Merced River Salmon Habitat Enhancement Project Phase III- Robinson Reach (MRSHEP-Robinson) constructed in 2001 and 2002. The proposed project is located within the United States Geological Survey (USGS) 7.5-minute Winton and Yosemite Lake quadrangles
5. Project sponsors' names and addresses:	See lead agency name and address above
6. General plan designation:	Rural Agricultural
7. Zoning:	Agricultural Use
8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)	See Chapter 2 of this Initial Study
9. Surrounding land uses and setting: Briefly describe the project's surroundings:	Surrounding land uses include agriculture and open space. The entire project area lies within a CDFW Conservation Easement.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)	The proposed project may require permits or approvals from the following: U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, California Office of Historic Preservation, Central Valley Flood Protection

	Board, State Water Resources Control Board or Central Valley Regional Water Quality Control Board, State Lands Commission.
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.	Consultation with California Native American Tribes has been initiated by the Department of Water Resources

CEQA Guidelines Appendix G: Environmental Checklist Form

The environmental factors checked below include impacts that are "Less-than-significant with Mitigation Incorporated." There are no environmental factors that have an impact that is identified as a "Potentially Significant Impact" as all potential significant impacts can be reduced to less-than-significant with the incorporation of mitigation measures.

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

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial study:

☐ 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.

Kevin Faulkenberry — 1/13/2022

Signature — Date

Signature — Date

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List of Abbreviations and Acronyms

AAQA	Ambient Air Quality Analysis
AB	Assembly Bill
ASR	Archaeological Survey Report
BMPs	best management practices
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
Cal/OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCIC	Central Coast Information Center
CCR	California Code of Regulations
CE	Candidate Endangered
CFM	cubic feet per minute
cfs	cubic feet per second
CV	Central Valley
CCV	California Central Valley
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH	Critical Habitat
CH_4	Methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNPS	California native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Ranks
CSLC	California State Lands Commission
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted sound levels
DES	Division of Environmental Services
DOC	California Department of Conservation
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DPS	Distinct Population Segment
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EFH	Essential Fish Habitat
E	Endangered
EO	Executive Order
EPA	Environmental Protection Agency

ESA	Federal Endangered Species Act
ESRP	Endangered Species Recovery Program
ESU	Evolutionary Significant Unit
FERC	Federal Energy Regulatory Commission
FGC	California Fish and Game Code
FR	Federal Register
FP	Fully Protected
FTA	Federal Transit Administration
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GGERP	Greenhouse Gas Emissions Reduction Plan
GHG	greenhouse gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCP	Habitat Conservation Plan
HFCs	Hydrofluorocarbons
ID	Irrigation District
IPaC	Information for Planning and Conservation
IS	Initial Study
L_{dn}	day-night average level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LRA	Local Responsibility Area
MBTA	Migratory Bird Treaty Act
MRSHEP	Merced River Salmon Habitat Enhancement Project Phase III-Robinson Reach
MRZ	Mineral Resource Zone
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MRR	Merced River Ranch
MTBE	Methyl tert-butyl ether
N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NF_3	nitrogen triflouride
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOD	Notice of Determination
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
OHP	California Office of Historic Preservation
PFMC	Pacific Fisheries Management Council
PFCs	perfluorocarbons
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
PM_{10}	particulate matter equal to or less than 10 micrometers in aerodynamic diameter
PPV	peak particle velocity
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
Reclamation	U.S. Bureau of Reclamation
River Parkway Trust	San Joaquin River Parkway and Conservation Trust

SCS	U.S. Soil Conservation Service
SF_6	sulfur hexaflouride
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SJRRP	San Joaquin River Restoration Program
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLC	State Lands Commission
SLF	Sacred Lands File
SMARA	Surface Mining and Reclamation Act
SPAL	Small Project Analysis Level
SPCCP	spill prevention control and countermeasures plan
SR	State Route
SSC	Species of Special Concern
SSJVIC	Southern San Joaquin Valley Information Center
STA	Station
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	Threatened
TAC	Toxic Air Contaminant
TCR	Tribal Cultural Resource
UCSB	University of California Santa Barbara
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles travelled
WD	Water District
WCB	Wildlife Conservation Board
WL	Watchlist

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Chapter 1. Introduction

This Initial Study (IS) was prepared by the California Department of Water Resources (DWR) to assess the potential environmental effects of implementing the proposed Merced River Robinson Reach Maintenance Project (proposed project or project). This project will maintain the Merced River Salmon Habitat Enhancement Project Phase III-Robinson Reach (MRSHEP-Robinson), which was constructed in 2001 and 2002. DWR is the State lead agency under the California Environmental Quality Act (CEQA). The proposed project would restore salmon spawning and rearing habitat in the floodplain and channel. This document was prepared in compliance with CEQA and the State CEQA Guidelines.

This chapter provides a project overview and describes the project area, project background, purpose of and need for the project, intended uses of this document, anticipated approvals required for the project, and the organization of this IS.

1.1 Project Overview

DWR proposes to design, permit, and implement the following improvements to restore salmon spawning and rearing habitat in the floodplain and channel of the Robinson Reach of the Merced River:

- Stabilize 700 feet of eroded bank.
- Improve the capacity of 1,600 feet of channel by excavating deposited sediment and removing a tree in the channel.
- Install a 900-foot shallow floodplain ditch to route low flows into the main river channel.
- Augment spawning habitat in two riffles in the downstream end of the reach.

1.2 Project Area

The project area is located on the Merced River in Merced County. It is approximately 12 miles north of the City of Merced and approximately five miles southwest of the town of Snelling. The project area extends approximately two miles upstream from the State Route 59 bridge (Figure 1). The project consists of bank stabilization, floodplain, channel improvements, and restoring spawning habitat in the Robinson Reach of the Merced River (Figure 2).

The project area includes approximately 7,000 feet of the MRSHEP-Robinson. The MRSHEP-Robinson begins approximately 6-1/2 miles below the Merced River's downstream-most dam, Crocker-Huffman, which diverts Merced River water into the Merced Irrigation District's (ID's) Main Canal. Crocker-Huffman Dam is the end of the salmon migration range. Proximity to the dam makes the Robinson Reach important because it is so near the end of the spawning migration range, which makes this salmon habitat some of the last available habitat of its type.

Figure 1 Project Location

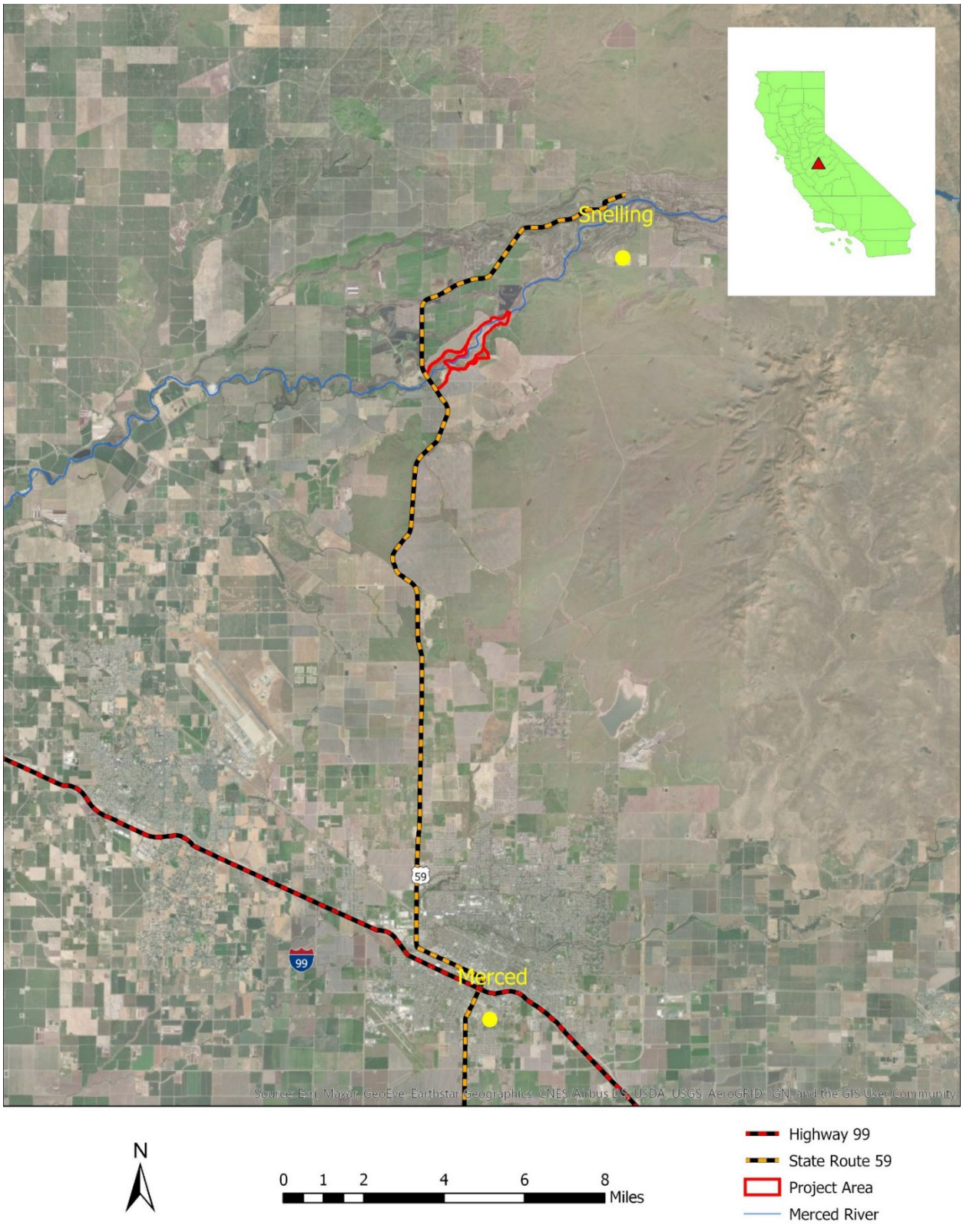
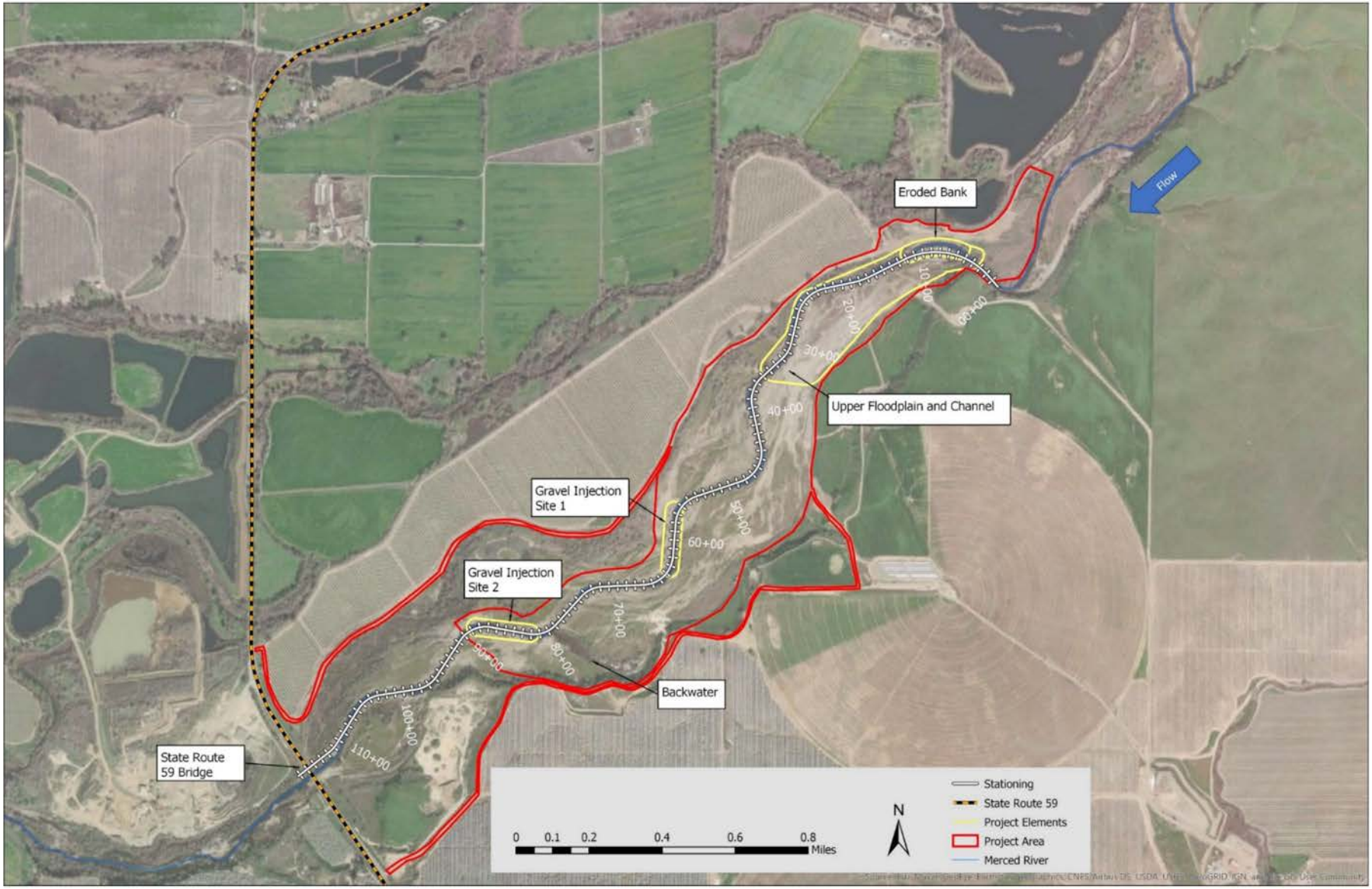


Figure 2 Proposed Merced River Robinson Reach Maintenance Project Locations



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1.3 Project Background

1.3.1 Site History

Historically, the Merced River was a productive salmon spawning and rearing habitat, but over time, the river has changed significantly because of agriculture, dam construction, flow regulation, and gold and gravel mining. These changes degraded both the amount and quality of habitat, and the marked population decrease of Merced River salmon from historic observations strongly correlates with this change in habitat.

Degraded habitat resulting from instream gravel mining drove development of the MRSHEP in the Robinson Reach — a reach of the Merced River contained within the larger Robinson Ranch property, a long-established agricultural operation. Planning was already underway when storms caused heavy flooding in 1997. The flood breached berms around abandoned mining pits in the floodplain — berms that contained the river channel and separated it from the pits. These breaches created an area of sheet flow, wetlands, and braided channels; these conditions impede passage of spawning adults and juveniles through the reach, create habitat for predators that prey upon juveniles, and decrease spawning habitat. This habitat decline sharpened the need for restoration, and the MRSHEP-Robinson broke ground in 2001.

The MRSHEP-Robinson was a joint salmon habitat restoration project between DWR and the California Department of Fish and Wildlife (CDFW) and was completed in early 2002. The channel was realigned, gravel pits were filled, and the floodplain was graded to restore alluvial processes such as floodplain inundation and native aquatic habitat attributes. The designs considered the modern regulated flow regime and included channel geometries (i.e., depth, width, and slope) that would regularly overflow the banks, and bed material sizes able to be mobilized by bankfull flow as typically occurs on gravel-bedded, alluvial rivers. As a result, the MRSHEP-Robinson became a well-defined meandering single-thread channel and floodplain, with desirable hydraulics and substrate for salmon spawning.

The restored area became a field laboratory for monitoring this type of restoration work, and DWR and University of California Santa Barbara (UCSB) conducted regular project site surveys and other data collection. Because of this, the evolution of the MRSHEP-Robinson has been well documented and hydraulics, channel and floodplain evolution, sediment transport, and bed composition data have been regularly collected, analyzed, and reported.

1.3.2 Conservation Easements

CDFW holds two adjacent conservation easements on the Robinson property. The boundary of each easement is indicated by the yellow outlines in Figure 3.

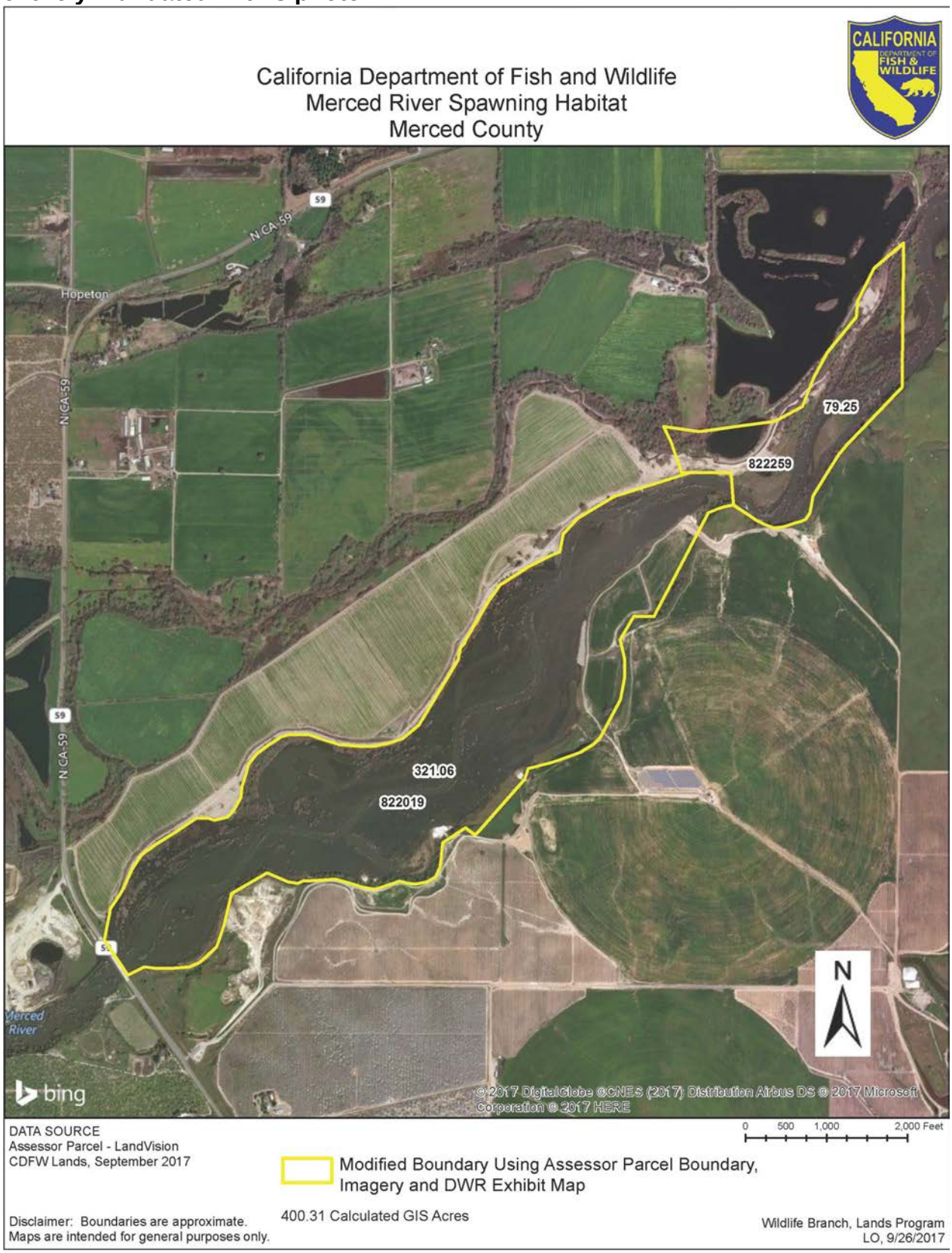
The downstream easement is the larger of the two and was acquired in 2002. This easement was acquired to protect the restoration area because “the project area is considered critically important to the maintenance of salmon populations in the San Joaquin Valley”, and “is considered by CDFW to be essential to the conservation of salmon spawning habitat” (California Wildlife Conservation Board meeting minutes November 28, 2001).

The upstream easement was acquired in 2007 to protect the unfragmented river-bottom land from conversion into subdivision and development, aggregate mining, or agricultural use. Establishing the easement allowed for future restoration and enhancement activities to benefit salmon and wildlife habitat and protect sensitive species on the property. Additionally, because its downstream border abuts the 2002 easement, about 2-1/2 miles of uninterrupted riverine habitat linkage was assured — which includes the previously restored and conserved property (California Wildlife Conservation Board meeting minutes August 23, 2007). This 2007 easement also forms the boundary of a profit agreement that gives the State "CDFW-WCB" the right to mine 544,000 cubic yards of aggregate from within it. The profit agreement was executed simultaneously with the conservation easement and expires December 31, 2057.

Some inclusions to the agreements are as follows. Both easements generally end any further development of these properties and give the State the right to preserve and protect the properties' "Conservation Values." This term refers collectively and contractually to the features and habitat enhancements of the 2002 restoration project (Deed of Conservation Easement, 2002), and the wildlife, riparian, and riverine habitats and open space features (Wildlife Conservation Board 2007). Having the right to preserve and protect habitat gives the State grounds to maintain and enhance the properties. Similarly, the property owner is granted rights, such as the right to maintain and repair, or even replace many specified types of existing facilities, such as the diversion canal at the north end of the conservation easement, as long as the Conservation Values are not interfered with or impaired.

The 2002 document's exhibit C, Cooperative Management Agreement, states under the Project Maintenance heading that the "State is required by permit to maintain the Project for a minimum of 15 years, which will include additions of gravel to maintain salmonid spawning habitat and river dynamics (California Wildlife Conservation Board 2002). (The) State shall have the right to conduct necessary maintenance of the Project, including, but not restricted to, spawning gravel addition." This maintenance has not been performed.

Figure 3 MRSHEP-Robinson Conservation Easement Boundaries. The floodplain is entirely inundated in this photo.



1.4 Purpose and Intended Uses of this Initial Study

The purpose of this IS is to describe potential environmental impacts of the proposed project and to describe measures that would avoid or mitigate potentially significant environmental impacts. This document is intended to meet the requirements of CEQA. Under CEQA, an IS helps a lead agency determine whether a project would have a significant effect on the environment and, in turn, determine whether a negative declaration (ND), MND, or environmental impact report (EIR) should be prepared.

This IS/MND is a required environmental document. The proposed project can be implemented after DWR publicly circulates this IS/MND, considers all comments received on the IS/MND, adopts an MND and a Mitigation Monitoring and Reporting Program (MMRP), approves the project by filing a Notice of Determination (NOD), submitting the appropriate CEQA filing fees, and obtains all required federal permits and non-federal permits and approvals.

1.4.1 Other Public Agencies Whose Approval May Be Required

CEQA requires that State and local government agencies consider the potential environmental effects of projects over which they have discretionary authority before acting on those projects (Public Resources Code Section 21000 et seq.). CEQA also requires that each public agency avoid or mitigate to less-than-significant levels, wherever feasible, the significant environmental effects of projects it approves or implements.

Several federal, State, regional, and local agencies, as well as decision-making bodies, may have jurisdiction over resources that may be affected by the proposed project, or have other permitting or regulatory authority over certain aspects of the project. The following agencies and decision-makers may consider information in this IS/MND during their decision-making processes:

- U.S. Army Corps of Engineers (USACE),
- National Marine Fisheries Service (NMFS),
- U.S. Fish and Wildlife Service (USFWS) (including the Fisheries divisions),
- California Department of Fish and Wildlife (CDFW),
- Central Valley Flood Protection Board (CVFPB),
- California Office of Historic Preservation (OHP),
- Central Valley Regional Water Quality Control Board (CVRWQCB),
- California State Lands Commission (CSLC),
- State Water Resources Control Board (State Water Board), and
- San Joaquin Valley Air Pollution Control District (SJVAPCD).

1.4.2 Previous Environmental Documents

Several environmental documents are associated with the MRSHEP-Robinson completed in 2001 and 2002. The MRSHEP-Robinson was identified as a high priority action in the U.S. Fish and Wildlife Service's Anadromous Fish Restoration Program (AFRP), a program authorized under Section 3406(b)(1) Central Valley Improvement Act (CVPIA). The project contributed to the overall AFRP goal, which is to implement a program that makes all reasonable efforts to ensure, that by year 2002, natural production of anadromous fish in the CV rivers and streams will be sustainable, on a long-term, at levels not less than twice the average levels attained during the period of 1967-1991. The MRSHEP-Robinson was also in support of the California Bay-Delta Program Ecosystem Restoration Program Plan to restore anadromous fish habitat conditions within the Merced River and throughout the CV.

A joint IS and Environmental Assessment (EA) for the MRSHEP-Robinson was completed to satisfy the requirements of CEQA and the National Environmental Policy Act (NEPA). The MRSHEP-Robinson was a joint CDFW, DWR, and USFWS project. CDFW was the lead State agency and USFWS was the lead federal agency. Based on findings and conclusions in the IS/EA, USFWS issued a Finding of No Significant Impact stating the MRSHEP-Robinson did not constitute a major federal action significantly affecting the quality of the human environment under the meaning of Section 102(2)(c) of the NEPA (as amended). As such, an environmental impact statement was not required. CDFW filed an NOD pursuant to compliance of CEQA on March 2, 2001.

Additional documentation associated with this project includes Section 7 ESA intra-formal consultation regarding effects of MRSHEP-Robinson on VELB (*Desmocerus californicus dimorphus*), riparian brush rabbit (*Sylvilagus bachmani riparius*), and riparian woodrat (*Neotoma fusipes riparia*). The USFWS issued a Biological Opinion on the effects of MRSHEP-Robinson on VELB stating that moving forward with the project would not likely jeopardize the continued existence of VELB, or adversely affect VELB critical habitat, or adversely affect riparian brush rabbit or riparian woodrat.

NMFS provided a Section 7 concurrence letter to USFWS that MRSHEP-Robinson would not likely adversely affect fish species listed under the ESA, or adversely modify designated critical habitat (CH), or adversely affect Essential Fish Habitat (EFH) for CV fall/late fall-run Chinook salmon.

1.5 Document Organization

This document is divided into the following sections:

- **Notice of Availability and Intent to Adopt an IS/MND.** The Notice of Availability and Intent to Adopt an IS/MND provides notice to responsible and trustee agencies, interested parties, and organizations of the availability of this IS, as well as DWR's intent to adopt an IS/MND for the proposed project.

- **MND.** The MND, which precedes the IS analysis, summarizes the environmental conclusions, and identifies mitigation measures that would be implemented in conjunction with the proposed project. The MND would be signed by a representative of DWR.

- **Chapter 1, "Introduction."** This chapter introduces the project; provides the project background; explains the intended use of this IS; and lists other public agencies whose approval may be required for the proposed project.

- **Chapter 2, "Description of the Proposed Project."** This chapter describes the purpose of, and need for, the proposed project, identifies the project features, outlines the construction of the proposed project, and describes future operation and maintenance activities.

- **Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures."** This chapter describes the environmental setting for each resource, and discusses the potential environmental impacts associated with implementing the proposed project. It also identifies mitigation measures to reduce potentially significant impacts to less-than-significant levels.

- **Chapter 4, "Consultation and Coordination."** This chapter describes the agencies and organizations consulted throughout the development of the environmental documentation for the proposed project.

- **Chapter 5, "List of Preparers."** This chapter lists the preparers of the IS and other agency staff who contributed to the preparation of this document.

- **Chapter 6, "References."** This chapter lists references and personal communications used to prepare this IS.

- **Appendices.** This section presents technical information supporting the analyses in the main document.

Chapter 2. Project Description

This chapter describes the proposed project and details the construction activities within the project area. It has four primary sections:

- Section 2.1, “Project Purpose, Objective, and Need” provides information on the need, purpose, and objectives of the proposed project.
- Section 2.2, “Project Features” describes the proposed project, details each project feature, and explains how the changes to each feature meets the project’s objectives and needs.
- Section 2.3, “Proposed Construction” describes the proposed project construction including identifying equipment to be used, methods, and schedule.
- Section 2.4, “Project Operations and Maintenance” identifies potential operations and maintenance activities that will be required to continue meeting the proposed project purpose and objective.

2.1 Project Purpose, Objectives, and Need

2.1.1 Project Purpose

The primary purpose of the proposed project is to maintain the 2002 MRSHEP-Robinson restoration project performed on this section of the Merced River.

2.1.2 Project Objectives

The project will address impacts caused by the 2017 flood flows and restore habitat that has degraded since the MRSHEP-Robinson was completed by meeting the following project objectives:

- Stabilizing and protecting an eroding bank.
- Improving the salmon migratory path by addressing channel capacity and floodplain connection issues.
- Improve salmon spawning and rearing habitat.

2.1.3 Need for Project

This reach of the Merced River is an important salmon habitat because it is near the end of their migration range. Since completion of the MRSHEP-Robinson in 2002, the river has seen recurring overbank floods with peak flows of at least 4,800 cubic feet per second (cfs) roughly every five years. Following each flood event, the incremental changes to the channel and floodplain have been measured. Compared to the as-constructed channel, monitoring data showed the following patterns:

- sediment accumulation has decreased the channel slope in the top quarter of the reach;

- degradation (lowering) of the channel slope has increased the slope of the lower three-quarters of the reach; and

- coarsening bed material throughout the reach.

The steepening slope in the lower reach is increasing flow velocity. Higher velocities mobilize smaller bed particles, so the gravel substrate continues to coarsen as the smallest bed particles are swept downstream. This leaves the remaining bed less hospitable as salmon spawning habitat.

The sediment accumulation pattern observed in the upper-most portion of the Robinson Reach was punctuated by the magnitude and duration of the 2017 flood. That event eroded about one acre of the bank and deposited substantial sediment farther downstream in the channel and on the floodplain. This deposition decreased the channel capacity and caused very low flows to overspill the banks and spread out on the floodplain. This is often beneficial to juvenile salmon, but in this case, a very shallow sheet flow forms that impedes their migration. This shallow depth also contributes to increased water temperature, and both conditions increase the likelihood of salmon mortality.

2.2 Existing Project Features and Conditions

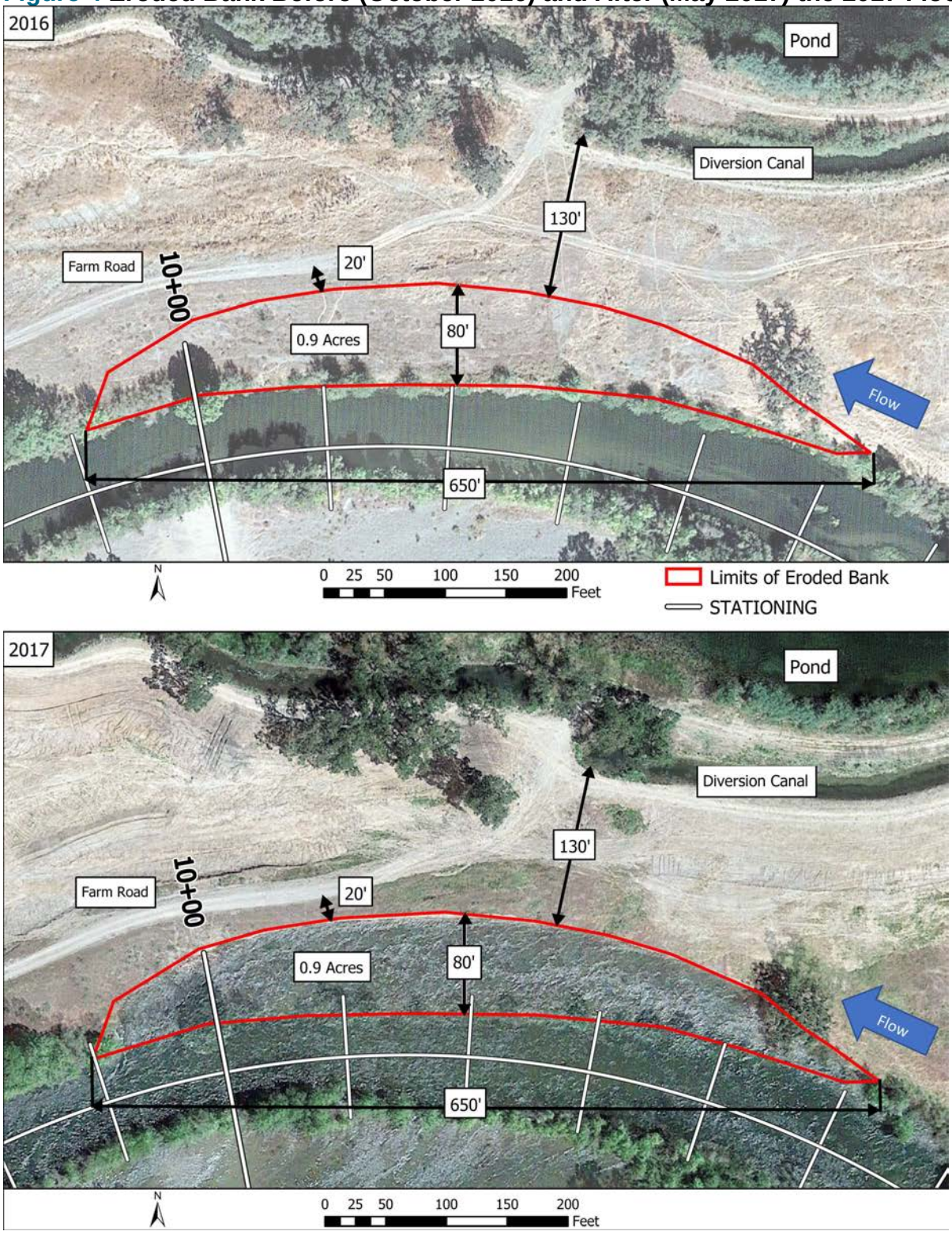
2.2.1 Eroding Bank

At the upstream-most end of the proposed project area is the eroding bank (Figure 4). The 2017 flood migrated 650 linear feet of the bank as much as 80 feet laterally, which eroded nearly 11,000 cubic yards of material from an acre of floodplain terrace (Figure 4). Consequently, the bank is perched as much as 16 feet above the low-flow water surface, and the eroded sediment appears to have deposited in the channel and on the left bank floodplain (Figure 4).

The loss of this acre of floodplain terrace reduced the buffer to the adjacent property infrastructure. North of the eroding bank is a farm road that connects the east and west ends of the property. Clearance between the road and bank is now as little as 20 feet (Figure 4). North of the farm road is a diversion canal fed by the river and maintained by the landowner for crop irrigation. Just north of this canal is a 5.5-acre pond. Minimum clearance from the bank to the canal is now 130 feet, and 220 feet to the pond. Using the 2017 lateral bank migration magnitude as a guide, another similar event could encroach the road and limit access on this part of the property. Assuming similar erosion rates, two more events could be enough to breach the canal, and possibly the pond, and jeopardize the irrigated cropland.

Corrective actions need to occur at the eroding bank to manage future sediment influx from the bank, protect local infrastructure, and contain this part of the channel within the easement boundaries. Not taking action to stabilize the bank is expected to result in more bank erosion and downstream deposition during future floods.

Figure 4 Eroded Bank Before (October 2016) and After (May 2017) the 2017 Flood.



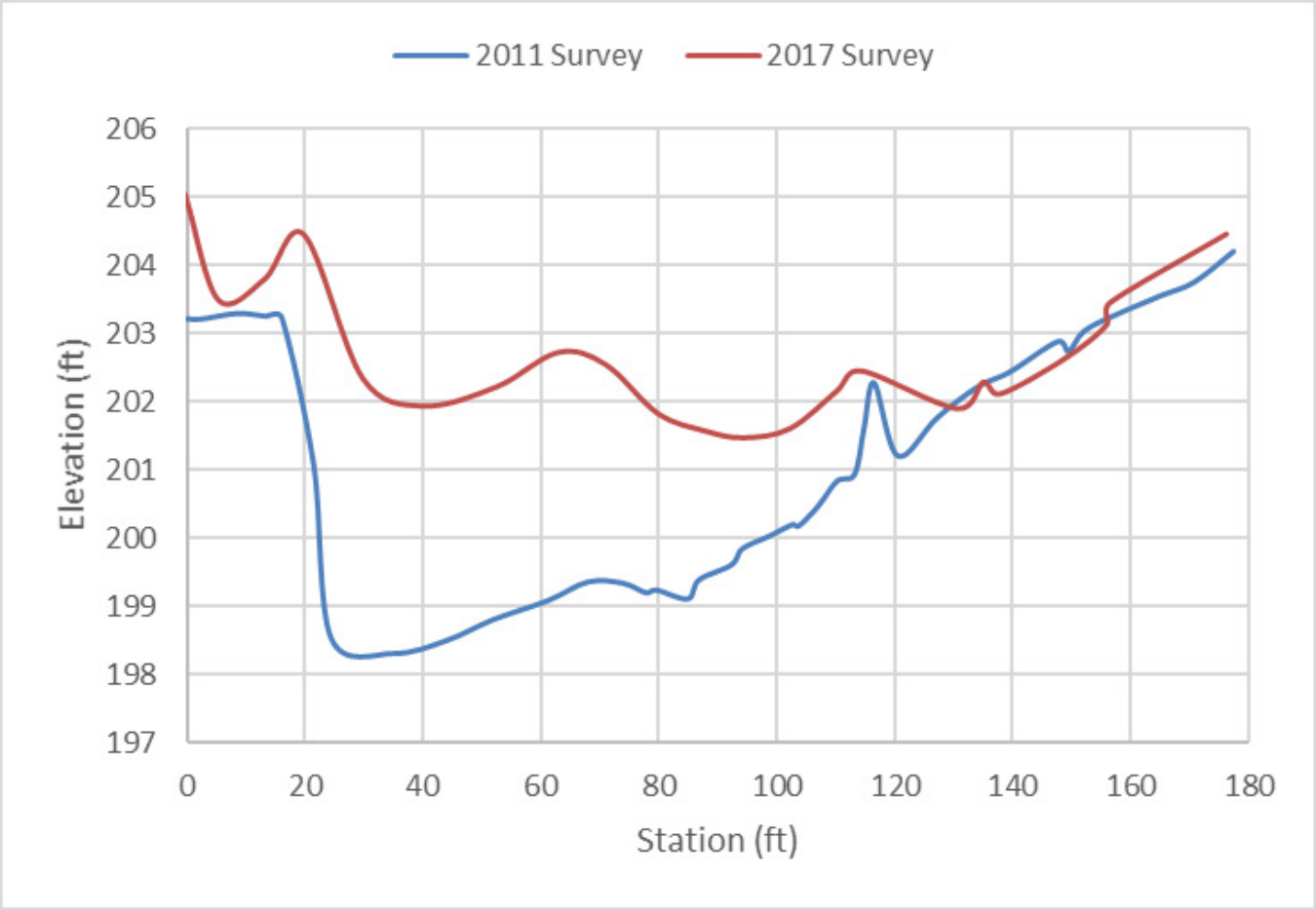
Source: California Department of Water Resources 2017.

2.2.2 Upper Channel and Floodplain

High flows during the 2017 flood event changed the topography of the upstream end of the MRSHEP-Robinson, significantly. Comparing June 2011 and November 2014 topographic data with the modern survey conducted in November 2017 revealed substantial changes in the channel and on the floodplain for about 3,700 feet of the channel. This includes significant sediment deposition in the channel and left bank floodplain from the top of the restored floodplain at STA 5+00 as far down as STA 32+00. A station is a point of reference along a survey line. STA 1+00 can be interpreted, in this case, as 100', STA 3+00 as 300', STA 5+50 as 550' and so on. Subtracting one station from another will give the distance between those points, so subtracting STA 1+00 (100') from STA 5+50 (550') yields 450's between those points.

Monitoring Section 1 (Figure 5) is at STA 17+75 and is the furthest upstream regularly monitored bank to bank cross section. It is about 700 feet downstream of the eroding bank. This section shows over three feet of sediment deposition between an early 2011 survey and the 2017 survey.

Figure 5 Plot of 2011 and 2017 Monitoring Section 1 Surveys. Plots Represent the Change in Channel and Floodplain Surface Elevation between 2011 and 2017 DWR Topographic Surveys.



The MRSHEP-Robinson channel restoration work between STA 24+00 and State Route 59 was designed for 1,700 cfs at bankfull. The channel upstream of STA 24+00 was not reconfigured, although it was augmented with spawning gravel and was measured to handle more than 1,700 cfs. Following the 2017 flood event, locations upstream of the restored channel have been observed overflowing the bank onto the floodplain at river flows as low as 200 cfs (December 23, 2017, per California Data Exchange Center; Crocker-Huffman Stream Gage; California Department of Water Resources 2017) resulting in shallow sheet flow over the floodplain. As flow increases, more locations upstream experience overbank flow, but sheet flow remains shallow. Channel capacity calculations on sections from STA 10+50 to 24+00 support the observation that bankfull flow is below 1,700 cfs throughout most of this stretch.

The 2017 flood event also moved a London plane tree (*Platanus hispanica*) from upstream and left it mostly upright near midchannel at STA 17+75. The combined effects of sediment deposition and the tree's location in the channel appear to have led to formation of a secondary side channel in the left bank and floodplain. This side channel widens and becomes shallower as it extends into the floodplain, becoming non-distinct.

The side channel and floodplain flowing at relatively low channel flows presents issues for salmon because the floodplain flow is typically widespread, shallow sheet flow. Juvenile salmon are attracted to shelter and food sources of flooded floodplains, but shallow flow increases the potential for stranding if the fish cannot make it to the main channel. This can also lead to juveniles becoming prey to egrets, great blue herons, and other predators.

2.2.3 Gravel Augmentation/Injection

Salmon rely on the gravel streambed of a river to spawn and make their nests (redds). Riffle gravel quality and quantity have been identified as a key component for ensuring successful salmon breeding, egg incubation, and fry emergence (Bjornn and Reiser 1991). Naturally occurring maintenance of spawning beds results from sediment transport processes that frequently erode and deposit the bed with well sorted gravel (Kondolf and Wilcock 1996). Being regulated by dams, the Merced River is no longer a natural river, so this process is hindered, which negatively affects the salmon spawning habitat productivity. To provide healthy spawning habitat, riffle gravel addition, also known as gravel augmentation or injection, is commonly used to restore spawning bed gravel; thereby, enhancing both usable spawning area and salmon production in locations where the natural sediment recruitment process is hindered (Bunte 2004).

DWR sponsored a study by UCSB to research the changes in the restored channel through 2012, and then predict the effects of gravel injections (Dunne 2016). The study found that channel topography changes in the reach up to 2012 are generally characterized by the following:

- Gravel deposition causing bed aggradation within the upstream-most three bends (bend one is at STA 31+00, and bend three is at STA 46+00);
- Little change within the middle portion of the reach (bends four through seven); and

- Bed degradation in the lowermost four bends (seven through ten), which is evident by channel widening, coarsening, downcutting, and steepening (bend seven is at STA 79+00 and bend ten is at STA 104+00).

Following UCSB's work, DWR gathered channel topographical data after the 2017 flood, calculated changes, and compared them to the existing conditions in 2012 and the predicted conditions. The 2017 floods caused net gravel storage (more gravel entered than left) within the restoration reach, with a continued trend of less bar growth and more gravel losses as you move downstream. More specifically, the gravel supplied to the reach gets trapped upstream of bend 3 (STA 46+00), so gravel replenishment downstream of bend 3 is minimal, and the gravel supply and storage is depleting below bend 5 (STA 65+00).

During the 2017 high flows, a large influx of coarse sediment was introduced to the reach, but it deposited mostly upstream of bend 1 (STA 31+00) with as much as five feet in depth of gravel deposition in the channel. To provide a point of comparison: virtually as much sediment accumulated within the upper three bends during the 2017 high flows as was measured after the previous three high flow events. The effect of the accumulated sediment on the topography is limited to upstream of bend 3 (STA 31+00), which is consistent with previous observations. These observations suggest that it is presently unnecessary to supplement the gravel supply in the upper third of the reach.

2.3 Project Construction

2.3.1 Project Access and Staging

The proposed project area lies entirely within the Robinson Ranch Property and two consecutive conservation easements held by CDFW. Various State, county, and local roads could be used for project access. State Route (SR) 59, SR 99 and the Merced County Turlock Road, Snelling Road, Merced Falls Road, and Robinson Road would be used to transport materials, equipment, and crews to and from the project area (Figure 6). The Robinson Property may be accessed from SR 59 off two existing dirt roads just north and south of the SR 59 bridge (Figure 7). These two dirt roads are referred to as: the Northwest Access and Southwest Access at the west end of the property.

Both roads extend approximately two miles upstream of SR 59. The Northwest Access will be the primary access road. These roads will be used for equipment access, and to haul material between project elements. Construction equipment would be brought to the project area on flatbed trucks through these access points.

From these two access roads, approximately 1.36 miles of temporary existing access routes would be reactivated, and about one mile of temporary new access routes would be created (Figure 7). Temporary existing and new access roads would be on highly disturbed riverwash within the floodplain. Once the project is complete, these areas would be leveled into the floodplain.

Access in the upstream end of the project area includes three temporary water crossings (Figure 7) and three temporary ramps. Each crossing has been developed as part of the temporary redirection of the main river channel for dewatering, which is described in Section

2.3.2. The downstream-most crossing, TMP-WC-1, is located between STAs 30+00 and 32+00. It serves as a plug structure to contain the plugged channel water from the live channel, and as the downstream bridge between the left and right floodplain.

Upstream, near STA 29+00, is the next temporary crossing, a culvert crossing (TMP-WC-2), providing access to either side of the temporary channel. This culvert crossing would be installed between STAs 29+00 and 30+00 and would be made of up to eight round 60 feet long galvanized corrugated steel pipes with diameters ranging from 42 to 72 inches. It would have the capacity to carry the temporary channel flow of 400 cfs or more (Figure 8). The pipes would be brought in from off site on flatbed trucks, offloaded, and staged next to the crossing site prior to installation. This culvert crossing would be installed before the main channel is redirected. Once flow is restored from the temporary channel and back to the main channel, this crossing would be removed.

The upstream-most, and last crossing, TMP-WC-3, is located just upstream of the eroded bank area. Like the TMP-WC-1, it would serve as a plug to redirect the river flow to the temporary channel. It also connects and gives access between the left and right floodplains.

The three temporary ramps would be located between STAs 05+00 and 30+00 to provide access from the floodplain to the temporary berm. Each ramp would be about 100 feet long, and 20 feet wide with a slope of 5 percent.

To remove the excavated material from the channel, access points would be identified. This would allow for equipment to excavate the channel and then place material along the floodplain. It is estimated that access would be every 200 to 300 feet which would make five or six access points.

Two temporary staging areas, Staging Area 1 and 2 (Figure 7) would be established on the northeastern side of the project area in a previously disturbed area. Staging Area 1 is approximately 1.53 acres and Staging Area 2 is approximately 2.43 acres. Either staging area would be arranged to not impede landowner access through the property. The stockpile and staging areas would be cleared and grubbed of vegetation.

Six stockpile areas would be established throughout the project to reduce the amount of access routes needed on the site. Stockpile Area 1 is in a disturbed area, and Stockpile Areas 2–6 are in the floodplain.

The temporary crossings would be removed following in-channel construction. All temporary access, stockpile areas, and staging areas will be restored as described in the revegetation plan and consistent with any permit conditions.

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Figure 6 Hauling Routes

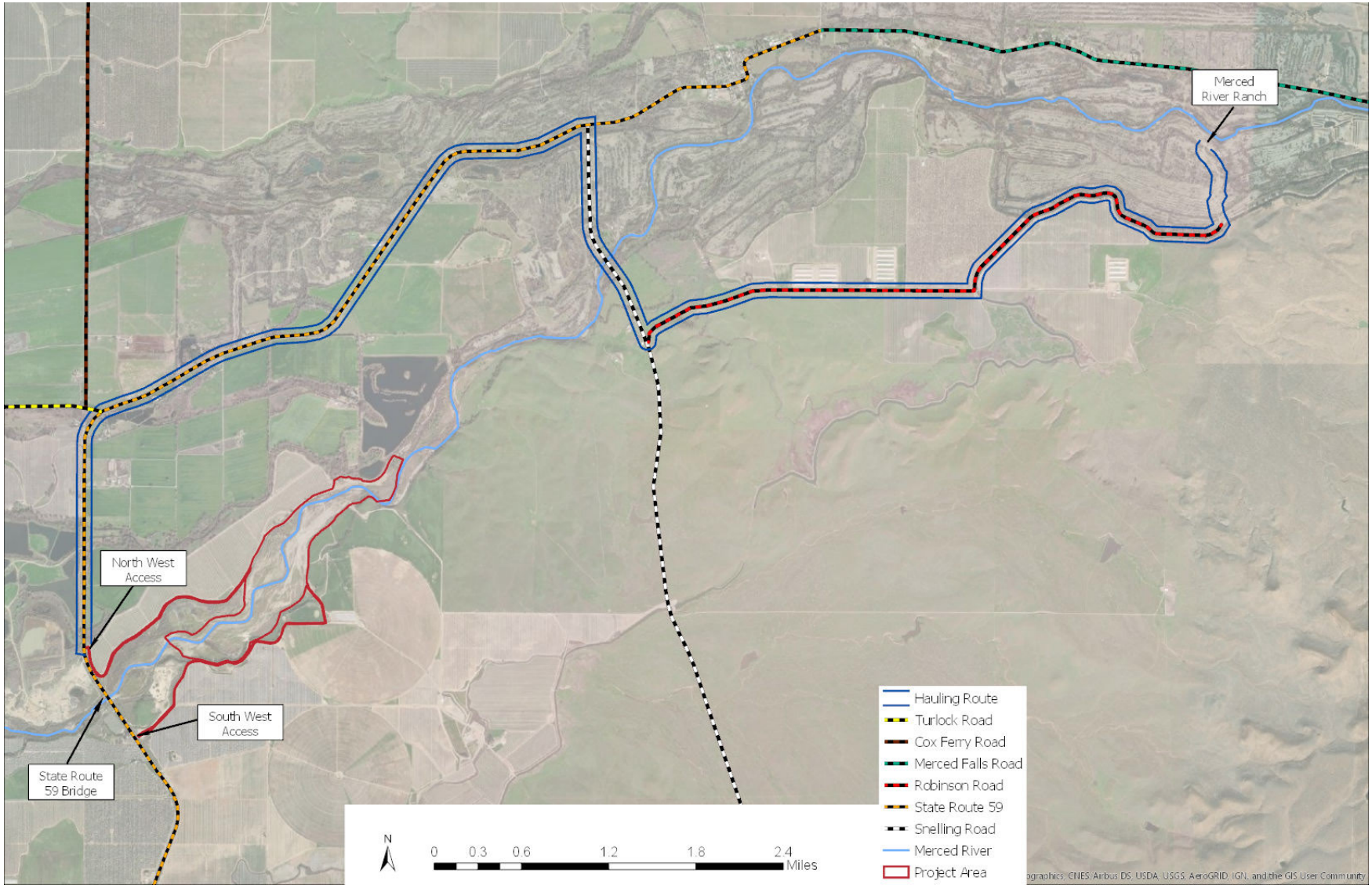
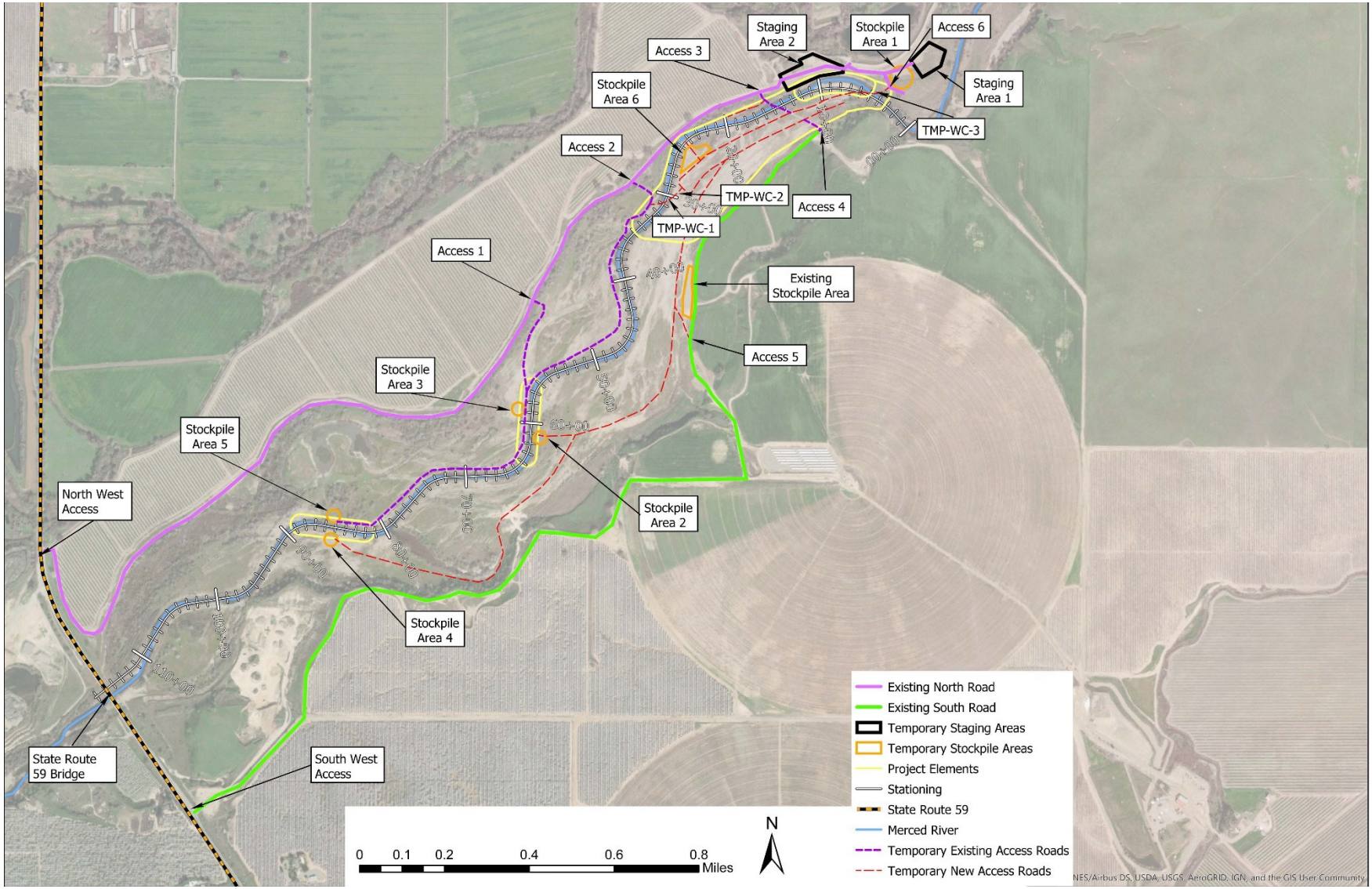


Figure 7 Access Roads, Staging, and Stockpile Areas



2.3.2 Temporary Channel

Approximately 2,300 linear feet of in-channel excavation work would occur. Implementation of the temporary channel would help reduce impacts related to water quality and turbidity. The in-channel excavation work would be temporarily isolated by redirecting the main channel into a 2,500-linear-feet channel created on the left bank floodplain (Figure 8). This channel excavation would temporarily displace as much as 15,000 cubic yards (CY or cy) of floodplain material, which would be replaced following construction. Most of the excavation would be placed on the floodplain immediately right of the temporary channel as a berm to contain higher flows than the channel alone might contain. This same excavated material, as well as non-erodible materials (such as geotextile fabric, sheet piles, or other comparable materials), would be placed to form the upstream and downstream plugs in the main channel to redirect main channel flow into the temporary channel. This temporary channel and berm would be established up to very near the mainstem Merced River channel, then the last section of temporary channel would be excavated to connect the river to the temporary channel. Finally, the plug would be placed to complete the temporary redirection of the main river channel into the temporary channel.

The redirected main channel would begin at STA 3+00, immediately upstream of the eroding bank work. Redirection would end at STA 32+00, just downstream of the 2,300 linear feet in-channel excavation work. The main channel would be allowed to drain by gravity and a downstream end plug would be installed. This constitutes dewatering and would be maintained until all in-channel work is complete.

Once in-channel construction is complete, the main channel would be reconnected by removing the downstream plug, then removing the upstream plug, then backfilling the upstream end of the temporary channel. Revegetation would occur in areas that are disturbed by this project element, in accordance with the revegetation plan.

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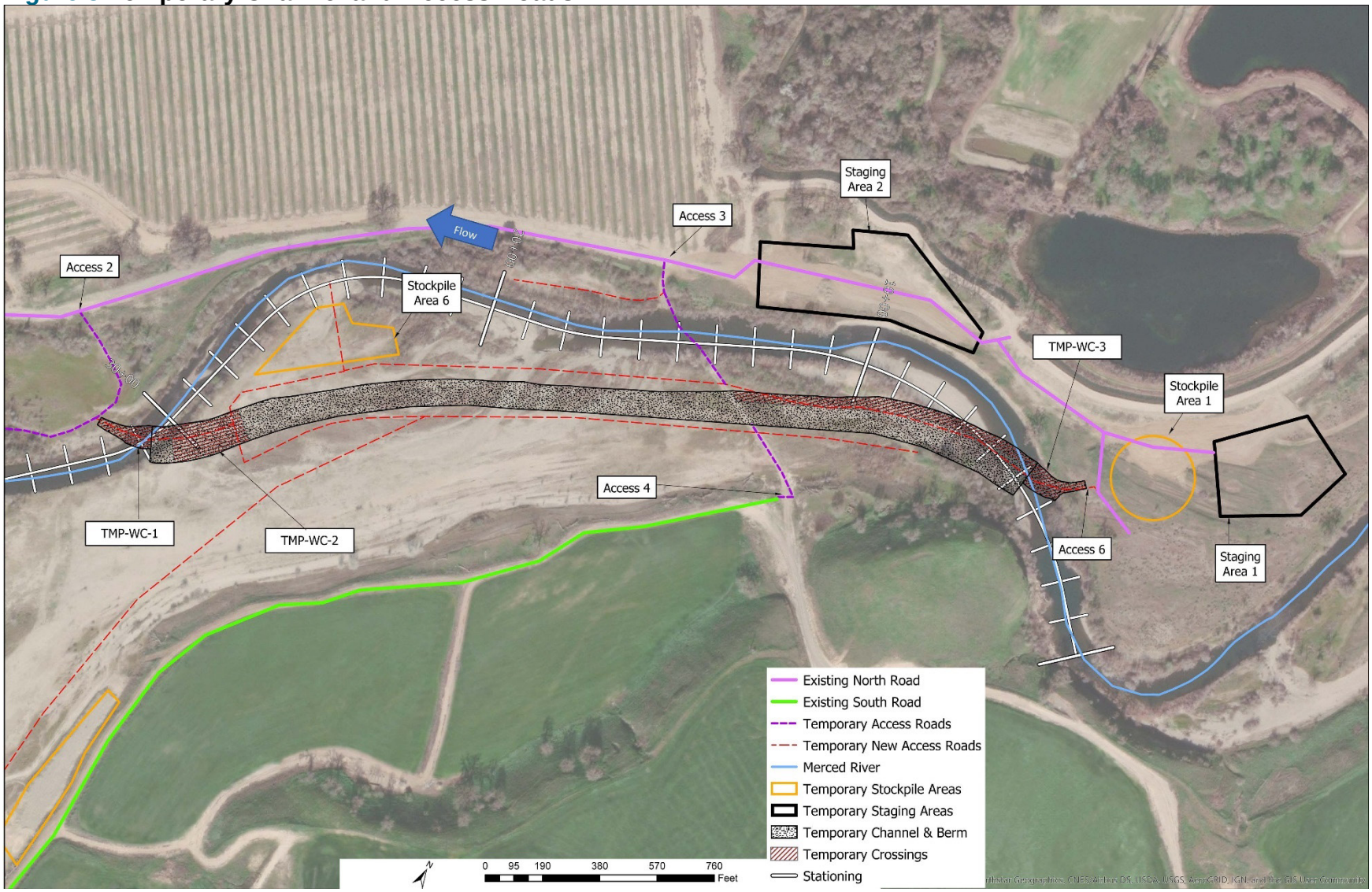
Figure 8 Temporary Channel and Access Roads



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2.3.3 Eroding Bank

The eroding right bank would be stabilized by installing engineered rock slope protection (RSP) over 700 linear feet of the bank. This would consist of a layer of fill sourced from this project's excavations, covered by a layer of cobble sourced from upstream on the Merced River, then topped off by a final layer of fill sourced from this project's excavations. The top elevation of the cobble layer is designed to have one foot of freeboard above an 8,000 cfs flow (Figure 9).

The cobble layer requires importing 2,600 cy of five-inch and greater cobble, sourced from CDFW's Merced River Ranch (MRR) gravel screening operation, 6.5 miles upstream on the Merced River. The cobble would be hauled by dump trucks from MRR and stockpiled near the eroded bank for placement later. Approximately 230 truck trips are required.

The channel capacity along the eroded bank would be reworked to accommodate a 1,700 cfs flow by excavating approximately 2,500 cy of sediment from the left bank point bar opposite the eroded bank, and the channel in between these two existing features. This excavated material would be reused in the RSP's top and bottom fill layers that sandwich the cobble layer. The remainder of the top and bottom layer fill material would come from the channel excavation downstream.

Most of this work occurs from the left bank. This work would be performed by excavators, and assisted by dozers, loaders, and dump trucks. A dozer assisted by a loader would finish the channel work to achieve design grades and geometry.

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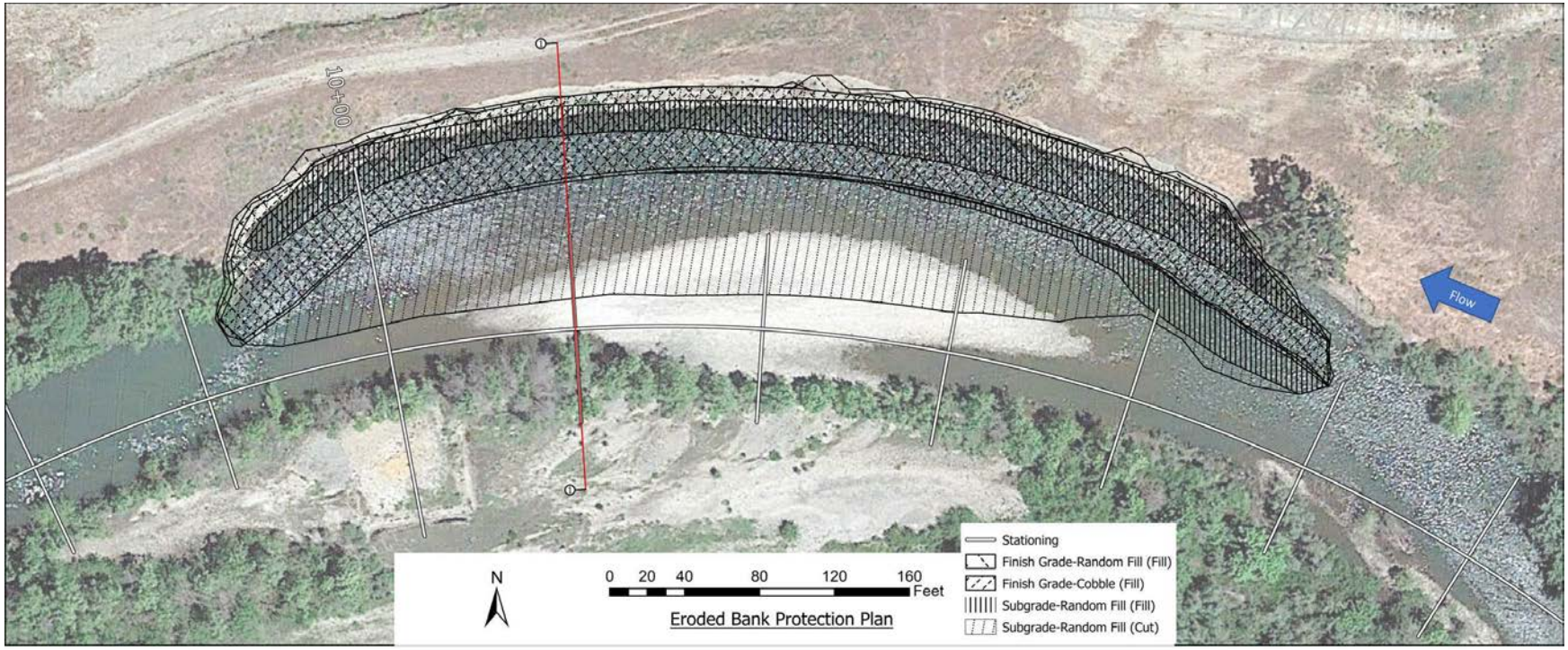
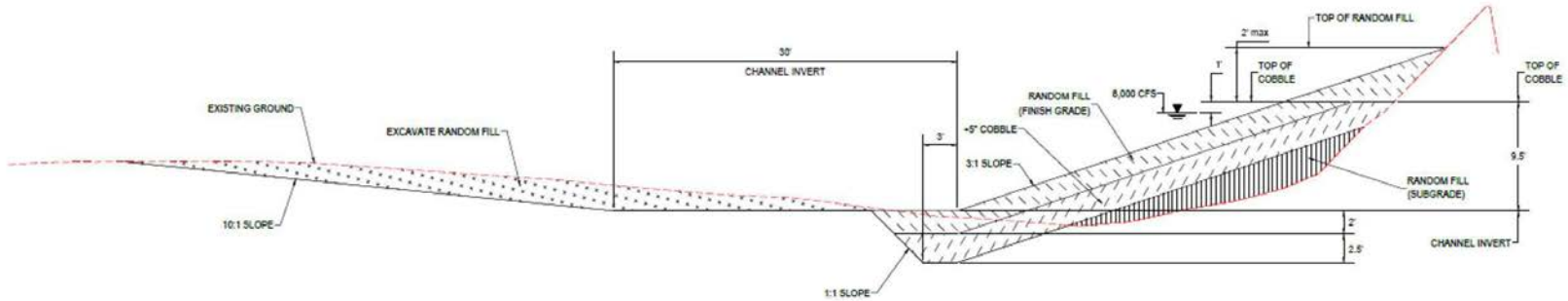
Figure 9 Eroding Bank





Typical Bank Protection Section

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2.3.4 Upper Channel and Floodplain

Channel flow capacity from STAs 14+00 to 29+00 would be restored to at least 1,700 cfs by excavating as much as 10,500 cy of channel material. The excavated channel geometry would maintain 1:4 bank slopes (Figure 10 and Figure 11). The material in this area has been identified by DWR as high-quality spawning habitat gravel. Placing the material at the channel perimeter and in the floodplain benefits natural processes as it becomes an upstream sediment source to be mobilized to restore spawning beds downstream with the river's rise and fall.

Approximately 1,100 cy of this material would be hauled upstream by dump trucks or by scrapers to be used in the top and bottom fill layers sandwiching the cobble at the eroded bank RSP.

Approximately 2,600 cy of material would be hauled by dump trucks downstream and unloaded into two 1,300 cy stockpiles; one at each of the two gravel augmentation sites (described in Section 2.3.5). This would be the material source for the augmentation.

As much as 2,600 cy of the channel material would be used to fill the side channel formed in the left bank at STA 3+00, and the adjacent floodplain, to eliminate this low-flow source to the floodplain. The dead tree deposited by the 2017 flood, near STA 2+50, would be removed to re-establish this bank.

The remaining material would be placed on the right bank, adjacent to the channel from STAs 1+00 to 5+00 to form a terrace over a naturally formed point bar that has been encroached by woody vegetation over time (Figure 10 and Figure 11). This terrace/point bar would be accessed using Access 3, and an additional access from the channel onto the point bar would be added at the downstream end of the point bar.

The floodplain topography has evolved to guide floodplain flow toward the left bluff for a long distance downstream, even at very low flows. From this, shallow sheet flow forms, which is undesirable for fish migration. While the purpose of the 2,600 cy of side channel and floodplain fill just described is to address this, the project would add a backup measure. If low-flow sheet flow occurs, it would be steered back to the main channel by the addition of a shallow, narrow collector ditch installed across the floodplain from the left bluff back to the channel (Figure 12). This one-foot-deep collector ditch would be excavated in the floodplain with the excavated ditch materials placed immediately to the downstream side of the ditch to form a one-foot-tall berm.

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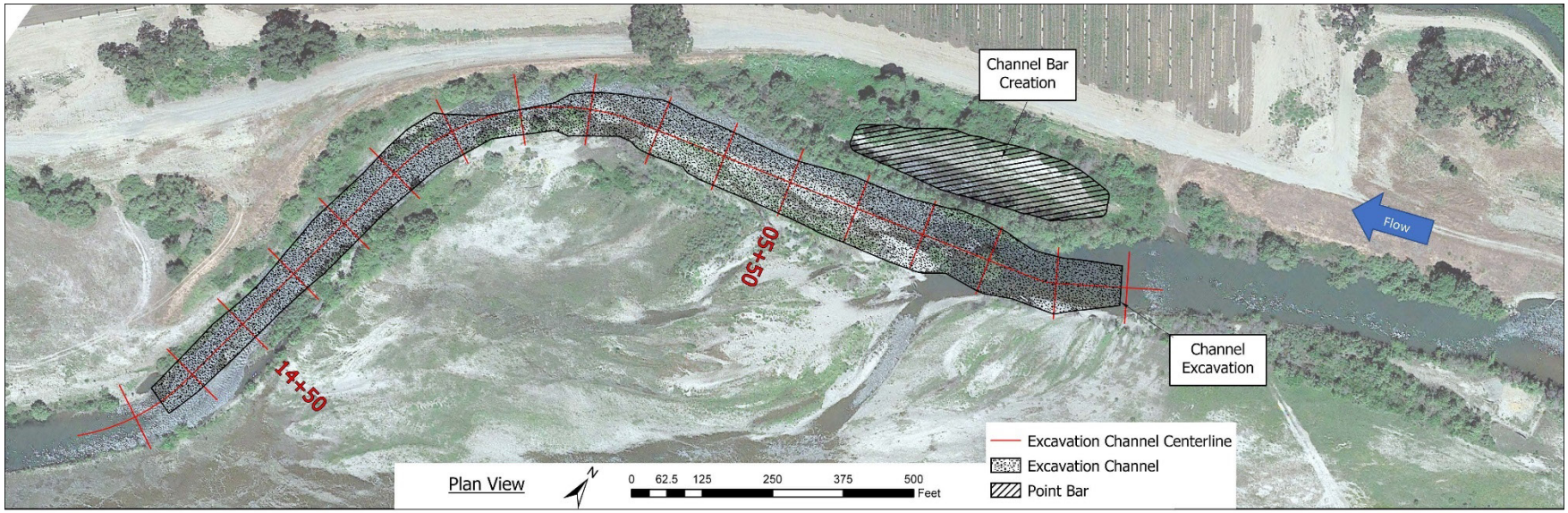
Figure 10 Channel Excavation



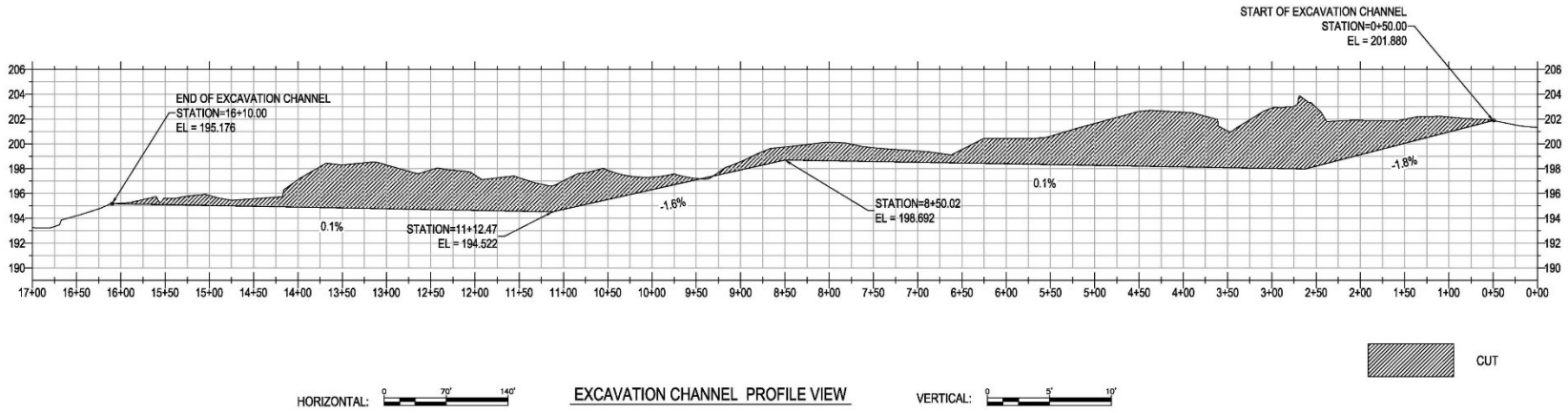


Figure 11 Channel Excavation Sections

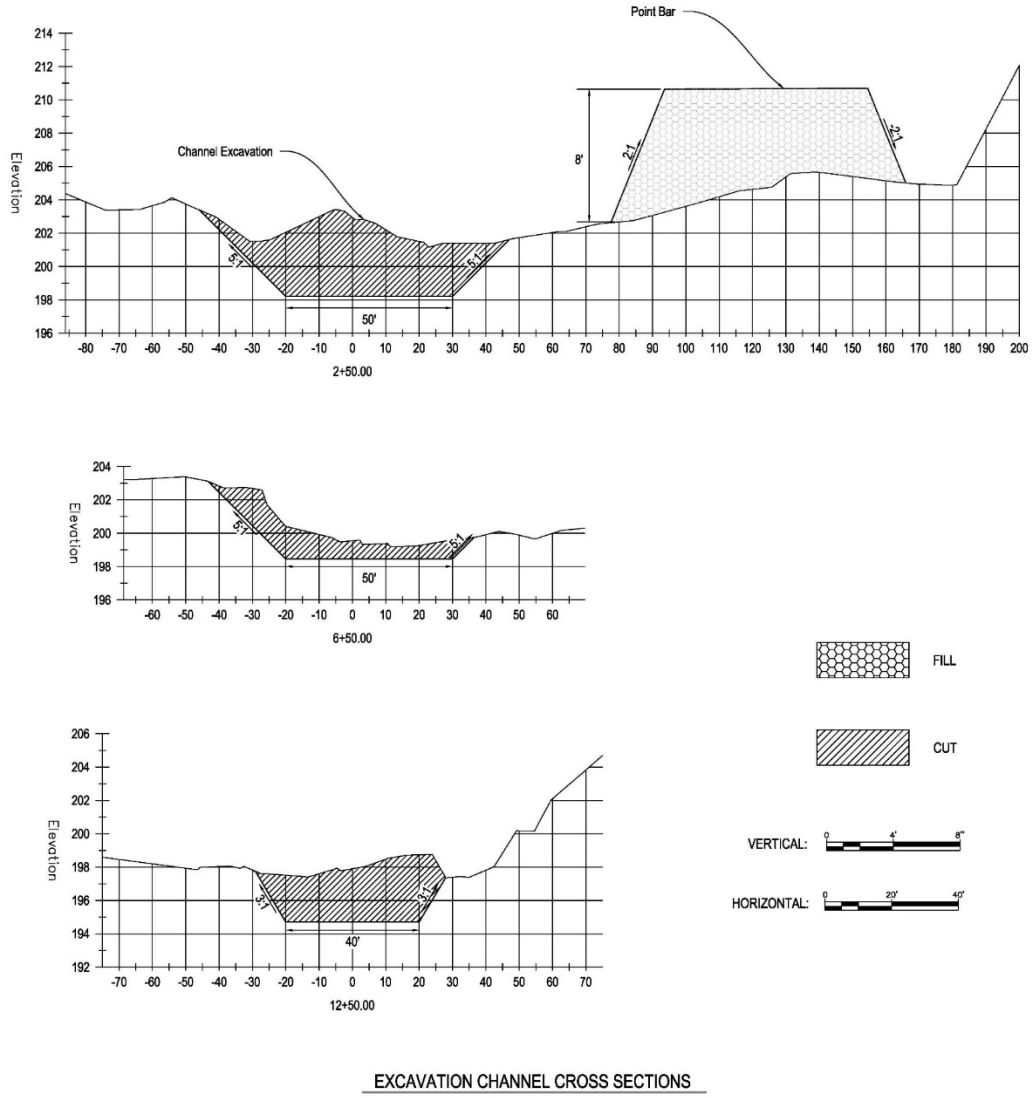
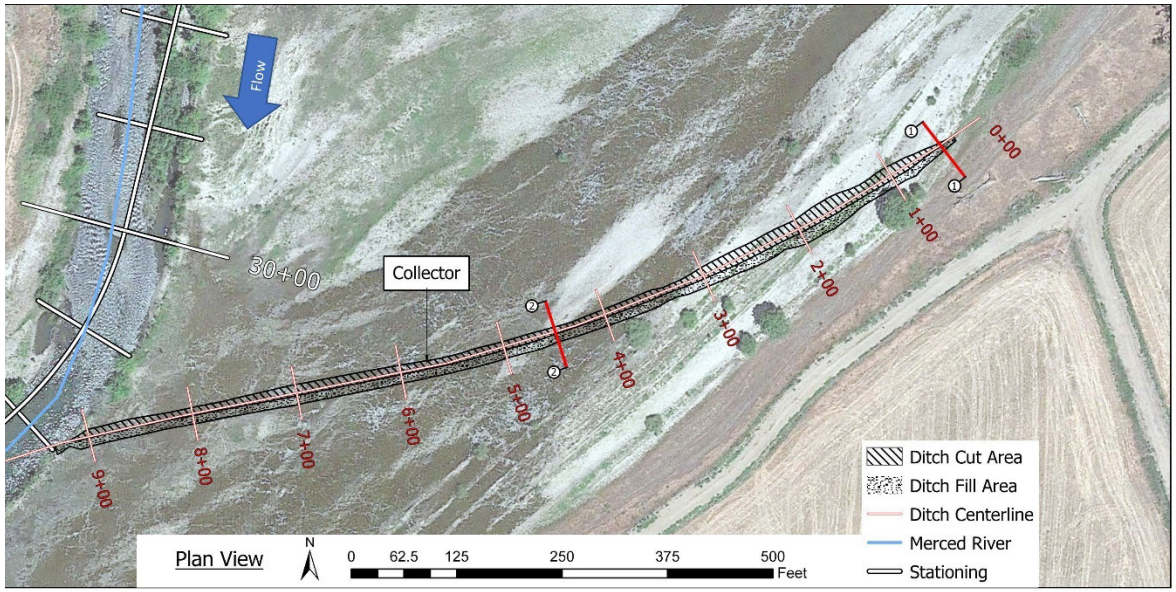
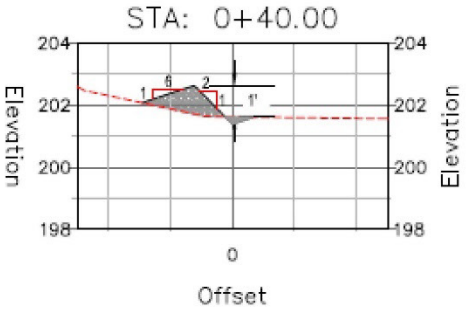
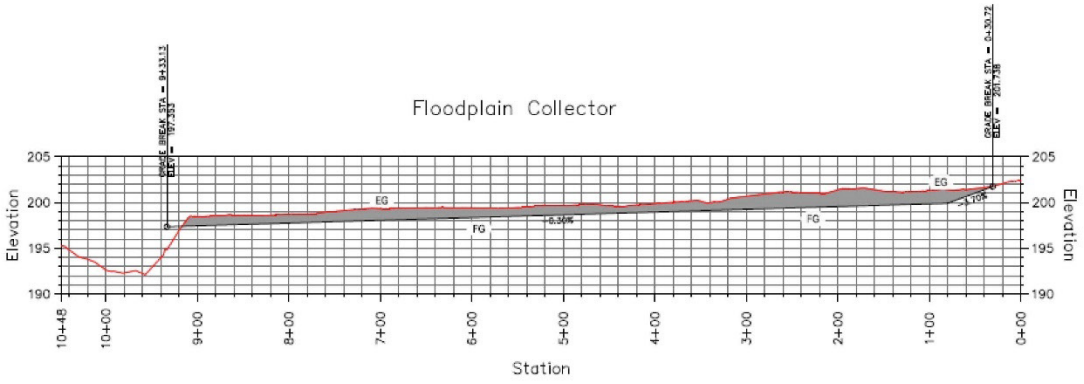


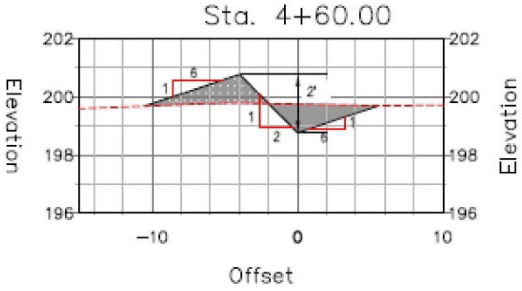
Figure 12 Collector Ditch







Profile View



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The channel excavation as well as the floodplain and side channel fill operations would be performed by scrapers, excavators, and assisted by dozers, loaders, and dump trucks. A dozer assisted by a loader would finish this work to achieve design grades and geometry. Excavated material would be hauled from the channel by a scraper and dump truck, loaded by either an excavator or loader, or hauled solely by a loader. All excavated material would remain local to this project. The collector ditch would be created like the channel, with all excavated collector material remaining beside the collector ditch to form the low berm. The project element footprints and acreages are provided in Figure 13.

2.3.5 Gravel Augmentation/Injection

To increase quality and quantity of salmon spawning habitat, gravel would be placed (injected) in two sites along the downstream half of the MRSHEP-Robinson Reach (Figures 13, 14, and 15). Gravel would be placed as much as 3.5 feet deep to produce an undulating barform approximately 600 feet to 700 feet long at each site. Each bar would begin just downstream of a bend, and end before the next bend downstream begins. The finished surface will undulate to produce a series of humps. The bar depth would taper gently from the upstream end to downstream to a hump crest, then drop suddenly, and repeat. Each bar ends on a gentler taper into the existing channel bed. This forms a series of humps in the riffle that increases the likelihood of use as spawning habitat (Mager and Wydzga 2006; Wydzga 2009) and enhance flow through the bed (Bray and Dunne 2017), which improves incubation habitat and fry production.

These injections would use roughly 1,300 cy each of gravel materials from the upper floodplain and channel excavation. Injections may use screened local gravel materials stockpiled on this project site during the MRSHEP-Robinson (*Existing Stockpile Area* labeled in Figure 8), or possibly a combination of both sources. Use of the MRSHEP-Robinson stockpile would only occur if there is not enough material from the upper channel excavation.

Material would be moved from the upper channel excavation by dump trucks or by scrapers to stockpiles near the injection sites (Figure 8). A loader or similar piece of construction equipment would place and grade the gravel in the wetted channel. Placement would begin at the upstream end of each site and progress downstream, and the undulations would be shaped with the appropriate construction equipment (for example, a loader bucket). The construction equipment would need to enter the wetted channel to complete the gravel augmentation as designed. Techniques such as constructing platforms made from spawning size gravel for construction equipment to operate from may be implemented.

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Figure 13 Project Site Acreages

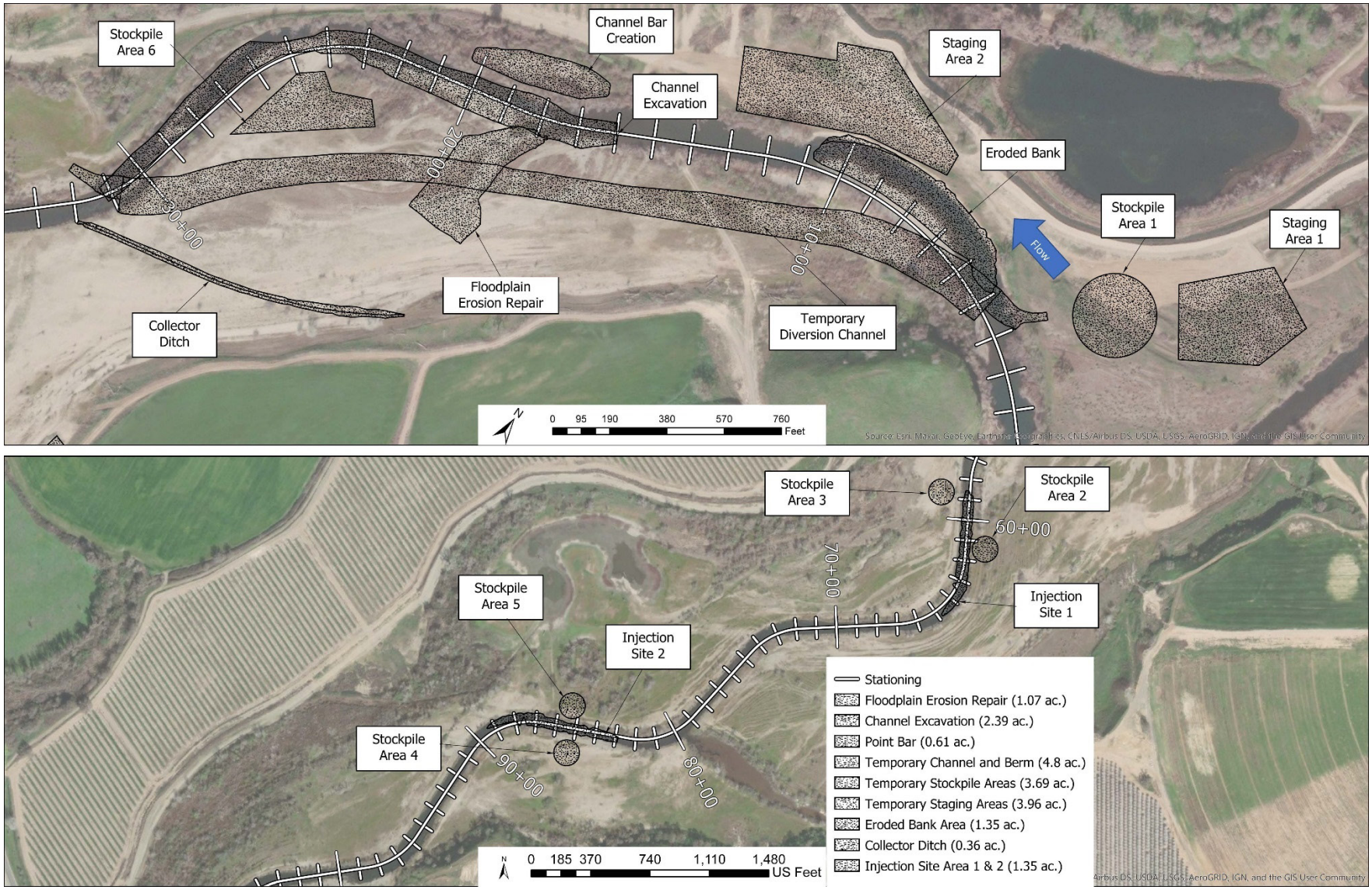
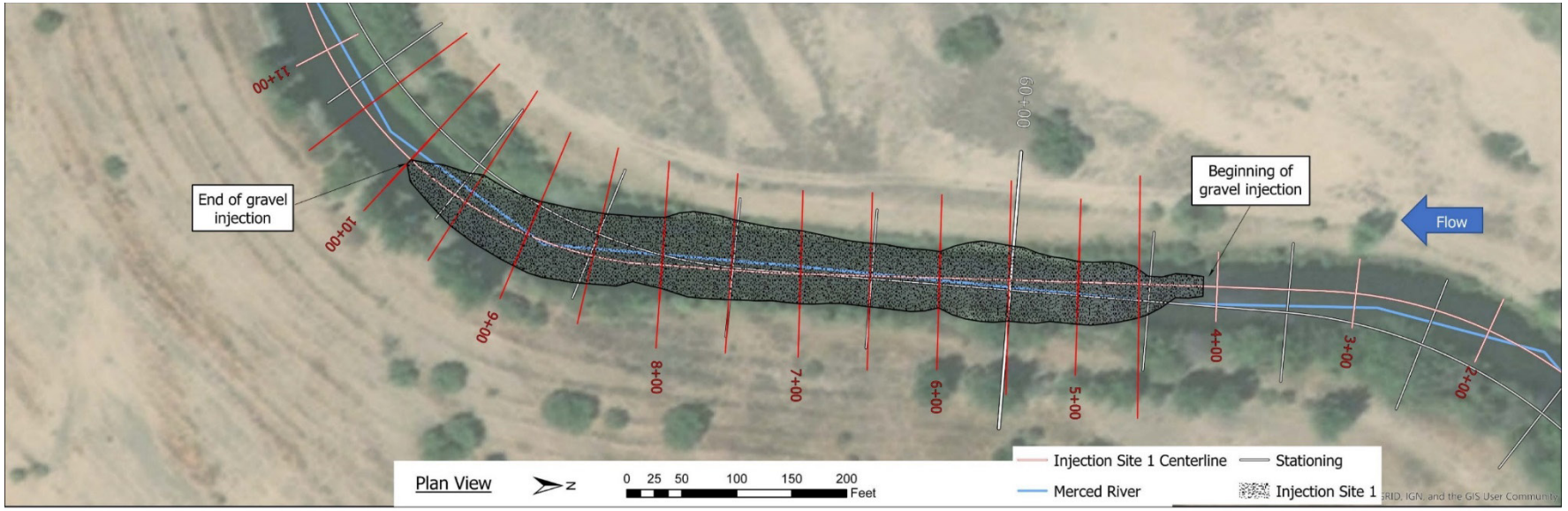
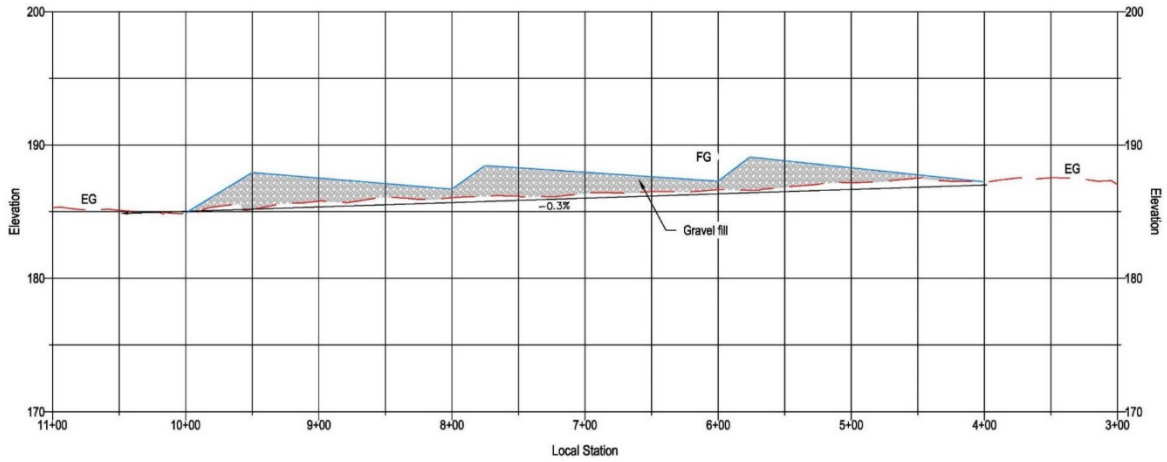


Figure 14 **Injection Sites**

Figure 15 Injection Site 1 Plan and Profile





Profile View

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2.3.6 Revegetation

During construction, mature vegetation will be avoided. Where trees cannot be avoided, the number, species, and diameter at breast height of all trees and shrubs removed would be documented to determine the appropriate planting ratio and species replacement. The final planting ratio would be determined in cooperation with CDFW and the Lake and Streambed Alteration Agreement requirements.

All planting would be conducted in late fall or early winter as proposed in the revegetation plan. Riparian species may include valley oak (*Quercus lobata*), cottonwood (*Poplus fremontii*), willow (*Salix spp.),* western sycamore (*Platanus racemosa*), and other riparian species native to the area including shrubs, forbs, and grasses.

Plant spacing would comply with CVFPB requirements to ensure that the vegetation will not obstruct high water flows.

2.3.7 Project Work Window

Project construction is expected to take less than seven months. To avoid potential impacts to spring and fall salmon migrations, all in-water work would be conducted from July 1 through September 30. Cleanup work and plantings outside the channel are likely to follow the in-water work but could begin earlier.

All work would take place within one-half hour of both sunrise and sunset each day. These work times may be extended into the evenings or weekends during key points of the construction phase, as needed.

2.3.8 Site Preparation

If permit conditions require resource protection, areas with sensitive resources such as wildlife habitat and waterways would be isolated from construction activities and protected by the contractor. Measures may include erosion control devices, high visibility temporary fencing or flagging, and temporary chain-link fencing. Staging and stockpile areas would be cleared and grubbed of vegetation and potentially fenced. Existing site roads may be graded to improve a pathway. A site office could be established in one of the staging areas.

2.3.9 Sequencing of Work

Multiple crews may work simultaneously on different components of the proposed project, while other components would likely occur in sequence. Table 1 lists the expected duration of each construction phase; some phases may occur simultaneously.

Table 1 Approximate Duration of Construction Phases

Construction Phase	Length of Time to Complete
Mobilization	1 week
Site Preparation	2 weeks
Cobble Haul	2 weeks
Redirect and Dewater Channel	2 weeks
Upper Channel and Floodplain	4 weeks
Eroding Bank	4 weeks
Remove Temporary Channel	1 week
Gravel Augmentation	2 weeks
Revegetation	3 weeks
Site Cleanup & Miscellaneous	3 weeks

Prior to construction, the following would occur:

1) At least two weeks prior to construction, biological and other environmental surveys would be conducted by qualified biologists.

2) Utility companies would be informed of the proposed construction.

3) Clearing and grubbing would occur prior to construction as needed.

4) Fencing, flags, or other methods to protect facilities from construction would be installed.

2.3.10 Construction Crews and Equipment

Average daily commuter trip miles for DWR staff are estimated at 73 miles each way from the DWR Fresno office. The daily commuter trip for contractor crews is estimated to range from 15 to 100 miles each way. Heavy equipment for each phase would be dropped off at the site by the contractor prior to construction and would remain on-site until the equipment is no longer needed. Equipment would be stored in the staging areas when not in use. Table 2 describes the type and horsepower of the heavy equipment that would likely be used during construction. Final equipment selection would depend on the contractor.

Table 2 Construction Equipment List for Proposed Project

Equipment Type	Horsepower
Generator	9
Water Trucks 3600 Gal	400
Backhoe	75
Bobcats	50
Excavator (325L)	168
12H Motor Grader	165
140H Motor Grader	185
D-8N Dozer	270
623F Self Load Scrapers	365
Compressor 750 CFM	275
Off Highway Truck 18-22 Ton	381
Flatbed Truck	250
4x2 Pick Up	250
4x4 Pick Up	250
Foreman Operator 4x2 Pick Up	250
Dump Truck	250
Loader	120

2.4 Project Operations and Maintenance

The topography contained by the MRSHEP-Robinson has been monitored since completion in 2002 to track its geomorphic evolution.

Following this project construction, surface topography would be gathered for an “as-built” project record. Topographic monitoring will continue as it has since the MRSHEP-Robinson and will likely occur following the major river flow events that produce the most pronounced change in the channel and floodplain topography. These flood events have tended to occur every five years or so following the MRSHEP-Robinson.

Flood events as well as recurrent common flows naturally change riverine and riparian topography through fluvial geomorphic processes. Future maintenance of this project will likely occur to restore spawning riffle gravels throughout the project area, to fortify the protection installed at the eroded bank, or to improve degraded floodplain connectivity. Any material would be sourced from either the existing stockpile referenced in Section 2.3.5, or from the Merced River Ranch gravel screening operation referenced in Section 2.3.3. Work to restore and augment the riffles would be done as described in this document.

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Chapter 3. Environmental Settings, Impacts, and Mitigation Measures

This chapter briefly describes the environmental setting of the project area and a discussion of the potential environmental impacts associated with the proposed project.

The environmental setting for each resource describes the existing conditions when the environmental analyses were initiated and conducted for this environmental documentation: 2019, 2020, and 2021.

For each resource, there is a discussion of the potential environmental impacts associated with construction of the proposed project. Potential direct and indirect impacts of the proposed project are analyzed in accordance with 40 CFR 1508.8. Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action but are later in time or farther removed in distance. The IS analyzes the direct and indirect impacts for each resource but does not specifically differentiate between direct and indirect.

CEQA Guidelines Appendix G was used as the basis for assessing the significance of potential environmental impacts, considering the whole of the action as required by CEQA. Agency standards, regulatory requirements, and professional judgement were also used, where appropriate.

Each of the resources was evaluated and determinations were made to describe the level of significance of impacts. The impact levels are categorized based on their level of significance and whether they can be mitigated to lessen the impact on the environment. This IS uses the following terminology based on the CEQA Guidelines to denote the significance of each environmental impact. Impact categories are provided below:

No Impact. No impact indicates that the proposed project would not have any direct or indirect impacts on the environment. It means that no change from existing conditions would result. This impact level does not require mitigation under CEQA.

Less-than-Significant Impact. These are impacts resulting from the implementation of the proposed project that would not have a substantial and adverse effect on the environment. This impact level does not require mitigation under CEQA.

Less-than-Significant Impact with Mitigation Incorporated. These are impacts that typically would have a significant or potentially significant impact to a resource prior to implementing mitigation measures. Once mitigation measures are implemented; however, the impacts to that resource would be reduced to a less-than-significant level.

Potentially Significant or Significant Impact. These are impacts that are deemed to be potentially significant or significant. Under CEQA, feasible mitigation measures or alternatives to the proposed project must be adopted, when available, to avoid, minimize, reduce, or compensate for potentially significant or significant impacts. In this IS, all potentially significant or

significant impacts can be reduced to a less-than-significant impact with implementation of feasible mitigation measures.

Mitigation measures are provided to reduce potentially significant and significant impacts to less-than-significant levels, where applicable. Implementation of all mitigation measures are the responsibility of DWR.

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

3.1.1 Environmental Setting

The proposed project area is located within Merced County where the predominant scenic resources include natural, rural, and agricultural landscapes, and views of the Coast Range to the west and the Sierra Nevada to the east of the county (County of Merced 2012). The visual resources in the proposed project area are landscape resources of both river corridor and agricultural landscape. The project area encompasses all the floodplain and riparian area from SR 59 bridge to the upstream end of the proposed temporary channel. Agricultural land is adjacent to the project area on the north and south sides of the Merced River and its associated riparian and floodplain habitat. The southwest side of the project area is near an on-site operational aggregate mine. Agricultural uses surrounding the project area consist of deciduous orchard and grain operations. Primary access to the project area is SR 59 on the western side of the project area, and the secondary access is Snelling Road to the east of the project area. SR 59 provides scenic viewpoints along its route according to the County of Merced 2030 Plan EIR (County of Merced 2012); however, none are officially designated by Caltrans (California Department of Transportation 2020).

3.1.2 Discussion

a, c) Less-than-Significant Impact. Scenic vistas are defined as expansive views of distant landforms and aesthetic features from public vantage points, including areas designated as official scenic vistas along roadway corridors or otherwise designated by local jurisdictions. The proposed project area is not located in the vicinity of an officially designated scenic vista or Scenic Highway by Merced County (County of Merced 2012). The proposed project would occur on a CDFW conservation easement that is private property and not accessible without permission from the current property owner. Most of the project area is not visible from SR 59 because of riparian vegetation that blocks the view of the river and floodplain. In the summer, the view of the north side of the project area would be further limited due to the leafed out deciduous orchard. The upstream components of the project (Eroding Bank, Upper Channel and Floodplain, and Temporary Channel) have the potential to be visible to adjacent property owners or persons traveling within the main river channel by kayak, boat, or raft.

To complete the project, temporary changes to the visual resources would result during construction of the temporary channel, repairing the eroded bank and floodplain, channel excavation, collector ditch, and gravel augmentation. Stockpiling of materials would occur in the six designated stockpile areas, which are not visible from any public access areas. Project-related equipment would be staged in the two designated staging areas far upstream from public viewing areas. Primary access to the project construction sites would be from the north bank of the river using existing roadways and temporary access paths. The designated staging areas would be in previously disturbed areas that would require minimal to no additional clearing of vegetation. The six designated stockpile areas and two staging areas would temporarily occur on approximately 3.75 acres. Any tree removal would occur in areas that are not visible to the public. Most of the construction is taking place further upstream of SR 59 and is not visible from the State right of way.

When construction is completed, the temporary channel will be disconnected to restore natural flow, and the area will be returned to grade. Repair of the eroded bank and the upper floodplain will decrease the chances of future repair and improve the hydrologic regime of the river and floodplain. Once the temporary channel is removed and flow is restored in the river, the visible changes to the channel excavation and gravel augmentation areas would include differences in water depth and flow and reduced riparian vegetation. To mitigate for removal of riparian and floodplain vegetation, a revegetation plan would be developed to identify the tree, shrub, and herbaceous species that would be planted, including how, when, and where they would be planted. Therefore, due to the limited presence of construction equipment and the short-term temporary nature of project activities, project implementation would not significantly impact surrounding scenic vistas or resources. Impacts to scenic vistas would be considered less-than-significant.

b) No Impact. According to the California Department of Transportation, Merced County has two designated scenic highways: Interstate 5 from the Stanislaus County line south to State Highway 152, and State Highway 152 west of Interstate 5. These designated scenic highways are approximately 55 miles away from the project area; therefore, would have no impact on scenic resources.

d) No Impact. The project is designed for salmonid habitat rehabilitation that includes excavation, grading, and gravel augmentation into the Merced River channel and associated floodplain. Construction activities would take place within one-half hour of both sunrise and sunset each day, so artificial lighting is not expected to be used. These rehabilitation activities would not create a new source of light or glare; therefore, the project would have no impact on day or nighttime views.

3.2 Agriculture and Forestry Resources

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

3.2.1 Environmental Setting

Agricultural Resources

Land uses adjacent to the proposed project consist of agriculture. Agriculture is the prominent economic sector in Merced County and accounts for more than 90 percent of all land use. Merced County is ranked fifth among all counties in California and sixth in the nation in terms of annual market value of farm products (Merced County 2013).

The DOC Important Farmland classifications recognize the land's suitability for agricultural production by considering physical and chemical characteristics of the soil, such as soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. In addition, DOC identifies other categories based on their suitability for agricultural use.

Williamson Act Contracts

The Williamson Act is designed to preserve agriculture and open space lands by discouraging their premature and unnecessary conversion to urban uses. The act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use (California Department of Conservation 2019a). In return, landowners receive property tax assessments that are much lower than normal because they are based on farming and open space uses as opposed to full market value.

The project area is located within a CDFW conservation easement which includes an area designated as Farmland of Local Importance according to the DOC. This approximate 22 acres of farmland is outside the southern boundary of the project and will not be impacted by construction activities. On the north side of the project area, the primary project access road runs along an approximate 180-acre deciduous orchard, which is considered Prime Farmland. Both the existing primary access and secondary access routes of the project run through or along many acres of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, or Unique Farmland (California Department of Conservation 2019). The farmland surrounding the project area has an agricultural preserve designation established by Merced County. The project area is not located within Williamson Act lands (PBS&J, 2009, County of Merced, 2017).

Forestland Resources

Forestland, as defined in California Public Resources Code (PRC) Section 12220(g), is land that can support 10 percent native tree cover of any species—including hardwoods—under natural conditions, and that allows for management of one or more forest resources including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The project area contains at least 10 percent native tree cover, but it is located within a CDFW Conservation Easement and is protected from timber harvesting operations.

3.2.2 Discussion

a) No Impact. Implementation of this project would not convert any lands designated as Prime Farmland, Unique Farmland, Farmland of State Importance, or Farmland of Local Importance to non-agricultural use. The only farmland areas that would be temporarily impacted by this project are the primary and secondary access routes to the project site. No construction activities will occur within these areas designated as farmland. The construction activities of this project will not disturb or convert any farmland to non-agricultural use; therefore, no impact would result.

b) No Impact. The project area is in an agricultural land use designated area and is zoned A-2 (Exclusive Agricultural) according to the Merced County General Plan (County of Merced 2013). Construction activities are confined to the Merced River and the associated floodplain, which are adjacent to, not within agricultural production areas. The existing primary and secondary access routes to these agricultural production areas are the same routes being used to access the project construction areas. These adjacent agricultural use areas would not be disturbed during or after project completion. No Williamson Act lands are occurring in the project area according to the 2017 Williamson Act preserve data provided by the Merced County GIS Information Portal (County of Merced 2017). Williamson Act lands are adjacent to the project area but will not be accessed during project implementation. The existing agricultural land use designation and A-2 zoning (Exclusive Agricultural) will not change because of the project, thus, no impacts to the existing zoning for agricultural use, or a Williamson Act will occur.

c) No Impact. Forestland, as defined in PRC Section 12220 (g), and timberland, as defined by PRC Section 4526, and timberland production areas, as defined by Government Code Section 51104(g), do not even occur within Merced County. Merced County does not contain any large forested areas, commercial forestry production, or known timber resources (County of Merced, 2012). The project area and lands in the vicinity do not consist of any land that is zoned as forestland or timberland, or timberland zoned for timberland production. The surrounding area of the project includes some oak woodland habitat, but these areas are not classified as timber stands according to the existing Merced County zoning designations. There would be no impact to existing zoning of forestland, timberland, or timberland production areas.

d) No Impact. Forestland, as defined by PRC Section 12220 (g) does not exist in the project area or the surrounding area; therefore, the project would have no impact or would not result in the loss of forest land or conversion of forest land to non-forest use.

e) No Impact. The proposed project is designed for salmon habitat rehabilitation and does not include the conversion of Farmland or forest land to non-agricultural or non-forest use. Therefore, the project would have no impact on the existing environment.

3.3 Air Quality

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

This section analyzes the proposed project's impacts related to air quality. Refer to Section 3.8, "Greenhouse Gas Emissions", for an analysis of project-related greenhouse gas emissions.

Air quality in a specific area is affected by the location of air pollutant sources and the quantity of pollutants that are emitted. Topography and meteorology also influence air quality. Physical features of the landscape along with atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, determine the movement and distribution of air pollutants.

CARB divided California into regional air basins based on topographic and meteorological features. The proposed project is in Merced County, which is in the San Joaquin Valley Air Basin (SJVAB). SJVAPCD, which includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the SJVAB portion of Kern County, regulates air quality in these counties in accordance with federal and State laws and regulations.

The SJVAB is approximately 250 miles long and is shaped like a narrow bowl. It comprises the southern portion of California's CV, is bounded by the Sierra Nevada Mountains in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. While marine air from the San Francisco Bay generally flows into the SJVAB through the Carquinez Straits, the topography of the basin hinders the movement of air through and out of the basin.

The elevation of the surrounding mountains ranges from 3,000 feet to the west (Coast Ranges); 6,000 to 8,000 feet to the south (Tehachapi Mountains); and 8,000 to 14,000 feet to the east (Sierra Nevada mountains). Because the normal height of summer inversion layers is 1,500 to 3,000 feet, well below the vertical height of the surrounding mountains, air pollution readily accumulates in the SJVAB (SJVAPCD 2002).

During summer, wind usually originates in the northern portion of the SJVAB and flows in a south-southeasterly direction through the Tehachapi pass into the Mojave Desert Air Basin. During winter, wind occasionally originates in the south and flows in a north-northwesterly direction. The SJVAB also experiences light (less than 10 mph), variable winds that create a climate favorable to high carbon monoxide (CO) and inhalable particulate matter (less than 10 microns in aerodynamic diameter, PM_{10}) concentrations. A diurnal wind cycle also exists in the SJVAB, with a sea breeze that flows into the basin from the north during the day and a land breeze that flows out of the basin during the night. Combined with this is an upslope (mountain) flow during the day and a downslope (valley) flow at night (San Joaquin Valley Air Pollution Control District 2002).

The SJVAB has an "inland Mediterranean" climate that is characterized by warm, dry summers and cooler winters. Summer high temperatures average between 90 and 100 degrees Fahrenheit (°F) throughout the valley with maximums that frequently exceed 100°F. These high temperatures are crucial in the formation of ozone, which forms from a photochemical reaction with sunlight; generally, ozone formation increases with higher temperatures. Air temperature typically decreases with increasing altitude; however, an atmospheric condition where air temperature increases with height, called an inversion, occurs frequently in the SJVAB. The "mixing height" is the height of the base of the inversion and is the level to which pollutants can mix vertically. The inversion layer traps pollutants below the mixing height, playing an important role in ozone formation and CO and PM_{10} concentrations (San Joaquin Valley Air Pollution Control District 2002).

Extremely hot temperatures can break the inversion layer that forms in the afternoon, allowing winds to transport pollutants to the Mojave Desert Air Basin. Ozone levels would peak in the early afternoon under such conditions; otherwise, peak concentrations typically occur around 3 to 7 p.m.

Winters are mild and humid because the Sierra Nevada prevent cold, continental air masses of the interior from influencing the basin; however, storm systems from the Pacific Ocean bring a maritime influence. The average daily low temperature is 45°F (San Joaquin Valley Air Pollution Control District 2002).

Precipitation and fog often act to reduce pollutant concentrations because ozone needs sunlight for its formation, CO is slightly water-soluble, and precipitation removes PM_{10} from the atmosphere. Most precipitation in the basin occurs during winter. Average annual rainfall for the basin is 9.25 inches on the floor. Tule fog forms between winter storms when the combination of high pressure and light winds allow cold moist air to pool on the SJVAB floor. Maximum CO concentrations often occur during clear, cold nights when many fireplaces are in use. A secondary peak often occurs during the morning commute when the nightly surface inversion has not broken. Additionally, although precipitation can reduce PM_{10} concentrations, fog can help in formation of secondary particulates like ammonium sulfate. These secondary particulates contribute to winter season violations of PM_{10} and fine particulate matter ($PM_{2.5}$) (San Joaquin Valley Air Pollution Control District 2002).

The basin is bordered by the Sierra Nevada mountains to the east, the Coast Ranges to the west, and the Tehachapi mountains to the south. This topography and the CV's weather conditions, which include frequent temperature inversions; long, hot summers; and stagnant, foggy winters; are all conducive to the formation and retention of air pollutants (San Joaquin Valley Air Pollution Control District 2006-2012).

Air quality in the SJVAB has been designated as "severe" non-attainment for the State one-hour ozone standard, "extreme" nonattainment for the federal eight-hour ozone standard, nonattainment for federal and State PM_{25} standards, attainment (maintenance) for the federal PM_{10} standard, and nonattainment for the State PM_{10} standard.

Odors

Odors are generally regulated as nuisances and do not typically pose a health risk. Odorous processes or facilities often lead to citizen complaints to local governments, including the SJVAPCD. Odor impacts are subjective because different people have different sensitivities to odor. As such, the significance of odor impacts is usually determined by the number of complaints received for a source (San Joaquin Valley Air Pollution Control District 2016). Examples of facilities that could adversely affect area receptors because of odors include wastewater treatment facilities, landfills, petroleum refineries, asphalt batch plants, chemical manufacturing, coating operations, food processing facilities, dairy lots, and rendering plants.

Sensitive Receptors

Sensitive receptors are areas where human populations (especially children, seniors, and sick persons) are located and where there is reasonable expectation of continuous human exposure to air pollutants of concern. Typical sensitive receptors are residential subdivisions, schools, or hospitals. The proposed project area is in a rural area along the Merced River located on private property. The area is surrounded by orchards and other farmed acreage. The nearest school to the construction areas is approximately 2.5 miles to the northwest and the nearest residence is approximately 0.5 miles to the north.

3.3.2 Discussion

a-d) Less-than-significant with Mitigation Incorporated. The SJVAPCD prepares the GAMAQI. The GAMAQI includes thresholds for significance for criteria pollutant emissions based on project type and size (San Joaquin Valley Air Pollution Control District 2002). The SPAL (San Joaquin Valley Air Pollution Control District 2020) pre-quantifies emissions and determines a size below, which is reasonable to conclude that a project would not exceed applicable thresholds of significance for criteria pollutants and are, therefore, excluded from quantifying criteria pollutants for CEQA purposes. Projects that fit into the different descriptions and project sizes are excluded from the need to conduct an AAQA. The closest land use category the proposed project fits under, according to the SPAL, is city park. The proposed project area is less than 256 acres, it will generate less than 1,110 average daily one-way trips for vehicle trips per day (all fleet vehicles except Heavy-Heavy Duty Trucks (HHDT), and the average daily one-way HHDT trips (within 50 miles) will be less than 20 (San Joaquin Valley Air Pollution Control District 2020).

This project qualifies as a small project and does not require completion of an AAQA. It will not conflict with or obstruct implementation of any air quality plan or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under federal or State ambient air quality standards.

Construction activities could contribute to an existing air quality violation. Because PM_{10}, PM_{25}, and ozone are the pollutants of greatest concern in the SJVAB and because the basin is designated non-attainment for each of these pollutants (San Joaquin Valley Air Pollution Control District 2012), construction activities would temporarily contribute additional particulate matter to an air basin that is already classified as non-attainment.

Construction activities would generate dust and equipment emissions, including CO, which could affect sensitive receptors. Construction-related commuter traffic, operation of construction equipment, and construction activities such as excavation would temporarily generate additional dust and CO in the project area. These emissions could affect sensitive receptors. The project area is surrounded by agricultural fields including orchards and grain. The nearest rural residence is approximately 0.5 miles to the north of the project area.

Operation of construction equipment could generate odors from diesel exhaust. The nearest potential sensitive receptor to the project area is a rural residence located approximately 0.5 miles away from the project site. Diesel odors are typical with construction, and would be temporary, dissipating rapidly from the source especially as distance increases. No long-term odors would result from project construction. Impacts related to objectionable odors would be less-than-significant, and no mitigation is required.

The proposed project would involve short-term construction activities in the project area. Proposed project construction is expected to occur from June through November. Equipment and materials for the proposed project would be transported to the project area by using haul trucks. Construction equipment anticipated for use would include excavators, graders, Bobcats, scrapers, dozers, backhoes, compressors, generators, pumps, and a water truck. Smaller vehicles would also be used to transport construction workers to the project area.

Table 1 in the project description addresses the approximate duration of the project construction phases; Table 3 lists the types of equipment that would be used during each construction phase; and Appendix B, “Inventory and Calculations of Greenhouse Gas Emissions”, presents the types and amounts of emissions that would be generated by the project.

Table 3 List of Equipment During Each Construction Phase

Equipment Type	Construction Phase
Generator	Temporary Channel Site Preparation Miscellaneous
Water Trucks3600 Gallons	Temporary Channel Upper Channel and Floodplain Cobble Haul Eroded Bank Site Preparation Remove Temporary Channel
Loader	Temporary Channel Upper Channel and Floodplain Eroded Bank Site Preparation Cobble Haul Remove Temporary Channel
Backhoe	Temporary Channel Dewater Channel Upper Channel and Floodplain Eroded Bank
Excavator (325L)	Temporary Channel Upper Channel and Floodplain Eroded Bank Gravel Augmentation Remove Temporary Channel
140H Motor Grader	Temporary Channel Upper Channel and Floodplain Eroded Bank
D-8N Dozer	Temporary Channel Upper Channel and Floodplain Eroded Bank Gravel Augmentation Site Preparation Remove Temporary Channel Miscellaneous
Off Highway Truck 18-22 Ton	Temporary Channel Upper Channel and Floodplain Cobble haul Gravel Augmentation Remove Temporary Channel
Dump Truck	Temporary Channel Upper Channel and Floodplain Cobble haul Gravel Augmentation Remove Temporary Channel
Flatbed Truck	Mobilization
Foreman Operator 4x2 Pick Up	Temporary Channel Upper Channel and Floodplain Cobble haul Gravel Augmentation Remove Temporary Channel

Implementation of Mitigation Measure AQ would make contributions to an existing air quality violation and construction-related impacts of dust and equipment emissions on sensitive receptors less-than-significant.

Mitigation Measure AQ: Reduce and Minimize Impacts to Air Quality.

The SJVAPCD requires that all construction projects comply with Regulation VIII Control Measures. It also requires compliance with additional measures if the construction site is large or in close proximity to sensitive receptors. The following measures will be implemented during project construction (San Joaquin Valley Air Pollution Control District 2002):

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized for dust emissions using water or chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled for fugitive dust emissions by presoaking or water application.

- When materials are transported off site, all material will be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container will be maintained.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)*

- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, the piles will be effectively stabilized for fugitive dust emissions using enough water or chemical stabilizer/suppressant.

- Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

- Suspend excavation and grading activity when winds exceed 20 mph.

- Construction equipment will be maintained according to manufacturer's specifications. Construction vehicle idling time will be limited.

- To minimize dust emissions on unpaved roads and all project entry points, and to increase fuel efficiency of vehicles and reduce emissions; vehicles driven in the construction area will be limited to 15 mph.

- On-road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals.

3.4 Biological Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – Would the project:				
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 Wildlife, U.S. Fish and Wildlife Service, or National Marine Fisheries 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 Wildlife or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

3.4.1 Environmental Setting

The project area includes approximately 7,000 feet of the Robinson Reach of the Merced River in Merced County, California and is within the Great Valley Section and San Joaquin Basin subsection of the USDA Ecological Subregions of California (Miles and Goudey 1997). The Great Valley Section contains alluvial plains of the Sacramento and San Joaquin Valleys. Summers are hot and dry, and winters are mild. The Great Valley Section of California historically was covered by vast grasslands, oak savannas, riparian/marsh habitats, vernal pools, and large lakes. Throughout time, much of this environment has been drastically changed, but the remaining natural and semi-natural habitat is inhabited by many plant and animal species (Buck-Dias et al. 2012). The San Joaquin Basin is characterized by hot and dry summers and cool and damp winters. Summer daytime temperatures can reach 90 °F with occasional heat waves with temperatures exceeding 110 °F. Most of the precipitation occurs from mid-autumn to mid-spring.

Reconnaissance-level field surveys were conducted on February 4, March 5, and March 12, 2020. These surveys involved walking transects across the project area to assess the potential impacts the project could have on local biological resources, especially special-status species, and other sensitive biological resources. Additional focused surveys completed in 2020 and 2021 included protocol Swainson's hawk surveys, rare plant surveys, and vegetation removal surveys.

The project area is in approximately 224 acres of riverine and floodplain habitat but would only impact 21.31 acres (Table 4). Topography consists mostly of floodplain and river channel, and the surrounding area is an elevated terrace, which primarily contains sandy soils. Adjacent lands include orchards and field crops. The project area ranges in elevation above mean sea level from 190 feet within the river channel to 265 feet along the Southwest Access route.

Habitat types and vegetation alliances were delineated using field surveys and aerial photo interpretation. Major habitat types in the project area defined by the CDFW California Wildlife Habitat Relationships (CWHR) include non-native annual/perennial grassland, Valley oak woodland, Valley foothill riparian, riverine, freshwater emergent wetland, seasonal wetland, and barren (Mayer and Laudenslayer 1988). These CWHR classifications have been cross walked by CDFW to correlate with the CalVeg vegetation alliances (California Department of Fish and Game 2005). The CDFW crosswalk of valley foothill riparian habitats within the project area consisted of the following modified CalVeg vegetation alliances, riparian mixed woodland, riparian willow woodland, and riparian mixed scrub (Table 4). The 21.31 acres that would be impacted includes the footprints of the work areas, and the staging and stockpile areas. The descriptions of the habitat types in the project area are discussed below. Figure 16 shows the project habitat types in relation to the project area, project element footprints, and the 100-year floodplain.

Non-native Annual and Perennial Grassland

Non-native annual and perennial grassland habitats are open grasslands dominated by introduced annual plant species including wild oats (*Avena fatua)*, soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis*), wild

barley (*Hordeum marinum* ssp. *gussoneanum)*, fotxtail fescue (*Festuca myuros**),*** Italian rye grass (*Festuca perennis*), and rattail sixweeks grass (*Festuca myuros*). Perennial species may include bermuda grass (*Cynodon dactylon),* creeping wildrye *(Elymus triticoides),* Baltic rush *(Juncus balticus),* purple sand spurry *(Spergularia rubra),* Ithuriel's spear *(Triteleia laxa),* and silver lupine (*Lupinus albifrons*)*.* Most of the project area (131.70 acres) consists of disturbed non-native annual and perennial grassland, and riverwash within the floodplain (Table 4).

Valley Oak Woodland

Scattered throughout the periphery of the project area are patches of Valley oak woodland, characteristic of the Valley oak (*Quercus lobata*) vegetation alliances. The Valley oak vegetation alliance on-site is dominated by Valley oak in the tree canopy, the understory is primarily blue elderberry (*Sambucus nigra ssp. caerulea*), Goodding's willow (*Salix gooddingii),* sandbar willow *(Salix exigua),* California buttow willow (*Cephalanthus occidentalis)*, Himalayan blackberry (*Rubus armeniacus)*, and the herbaceous layer consists primarily of wild oat (*Avena barbata*), rip-gut brome, and soft chess. Valley oak stands are found in valley bottoms, lower slopes, and alluvial or residual soils, which are characteristics of the project area. Most of the 12.49 acres of Valley oak woodland in the project area are away from the construction footprints and minimal impacts are expected (Table 4). Many blue elderberry shrubs that were mitigation plantings from the 2001-2002 MRSHEP-Robinson Reach are in the understory of the Valley oak woodland on the eastern bluff of the floodplain. Several elderberry shrubs are within 25 feet of the access routes and project elements including Staging Areas 1 and 2, Stockpile Area 1, and the upstream end of the temporary channel (Figure 17).

Riparian Mixed Woodland

The 16.39 acres of mixed riparian woodland habitat type includes areas with greater than 50 percent riparian tree aerial cover. It occurs in narrow bands along the banks and floodplain of the Merced River (Table 4). Mixed riparian woodland on the project site is dominated with non-native London plane tree (*Platanus ×hispanica)* in the overstory, in most areas; in some areas, co-dominant trees are Goodding's willow, Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), and white alder (*Alnus rhombifolia*). The shrub layer primarily consists of willow spp., California buttonwillow (*Cephalanthus occidentalis*), and Himalayan blackberry. Most of these areas are lacking an established herbaceous layer because of the dense tree canopy cover.

Riparian Willow Woodland

Willow riparian woodland lacks a well-developed tree layer and is dominated by tall shrubs (shrubs comprise 50 percent or more of this habitat). On the project site, Goodding's willow is the dominant species, but sandbar willow, shining willow (*Salix lucida*), red willow (*Salix laevigata*), Fremont cottonwood, Oregon ash, box elder, and California buttonwillow are present; various rushes occur in the herbaceous layer. This habitat type covers 0.17 acres on the northwest floodplain between the Merced River and the agriculture to the north.

Riparian Mixed Scrub

Mixed riparian scrub habitat type lacks a well-developed tree layer and is dominated by tall shrubs (shrubs comprise 50 percent or more of this habitat). On the project site, sandbar willow, Goodding's willow, and California buttonwillow saplings and young trees are the dominant species in the scrub layer; various sedges, and rushes occur in the herbaceous layer. This habitat type covers approximately 18.40 acres of the project area, mostly along the Merced River banks.

Riverine (Perennial and Intermittent)

The primary wetland feature that falls under jurisdiction of the U.S. Army Corp of Engineers (USACE) pursuant to Section 404 of the Clean Water Act is the Merced River. The proposed project includes modifying the existing conditions of the Merced River channel documented following the 2017 high-flow events. This project is to repair or rehabilitate the hydrologic regime of the Merced River channel for improving habitat for salmonids and other aquatic species. Within the project area there are 19.79 acres of non-wetland jurisdictional waters of the U.S.; 16.49 acres include main channel of the Merced River and 3.30 acres are in the simulated abandoned intermittent channels of the MRSHEP-Robinson on the north and south floodplains. The riverine habitat was delineated using field survey data and a Hydrologic Engineering Center's River Analysis System (HEC-RAS) generated model of the bankfull elevation at a two-year flow event of 1700 cfs. Modifications of the bankfull elevation delineation were completed using aerial imagery to include wetted channel areas not delineated by the HEC-RAS model.

Freshwater Emergent Wetland

Approximately one acre of freshwater emergent wetland occurs within the backflow area of the Robinson Reach just upstream of Gravel Augmentation Site 2. The yearly flows from the Merced River perennially inundate this habitat. This backflow area was created during MRSHEP-Robinson in 2001 as mitigation for the loss of wetland habitat.

Alluvial Bar

Alluvial bars are formed within river systems through the deposition of sediment by water flow. The alluvial bars within the project area include the point bar located just downstream of the eroded bank, and the other, along the left bank of the river within the channel excavation footprint. Riparian mixed hardwood species have established on the edges of the point bar, but most of the point bar contains bare sediment, willow saplings, and herbaceous species such as Bermuda grass and Himalayan blackberry. The alluvial bar on the left bank of the river is not heavily vegetated and only a few shrub-sized London plane trees, box elder, California buttonwillow, and sandbar willows occur. These alluvial bars encompass approximately 1.05 acres within the project area.

Barren

Barren habitat is any habitat that has less than 2 percent total vegetative cover by herbaceous, desert, or non-wildland species and less than 10 percent tree or shrub species. Along rivers, barren habitat includes vertical riverbanks and canyon walls. In an agricultural setting, barren habitat includes roads, storage areas, or stockpile areas. Within the project area, the barren habitat is primarily the existing access roads and stockpile area. Barren habitat can also include sparely vegetated areas due to hydrology or other factors. Approximately 23.00 acres of barren habitat exist within the project area, and15.17 acres is within the primary and secondary access roads.

Table 4 Habitat Types Within the Project Area

Habitat Types	Total Acres (Project Area)	Impact Acres
Non-native Annual and Perennial Grassland	131.70	8.80
Valley Oak Woodland	12.49	0.04
Riparian Mixed Woodland	16.39	0.39
Riparian Willow Woodland	0.17	0.00
Riparian Mixed Scrub	18.40	0.16
Riverine	19.79	7.01
Freshwater Emergent Wetland	0.91	0.00
Alluvial Bar	1.05	1.01
Barren	23.00	3.90
Total	223.90	21.31

Source: California Department of Water Resources 2020

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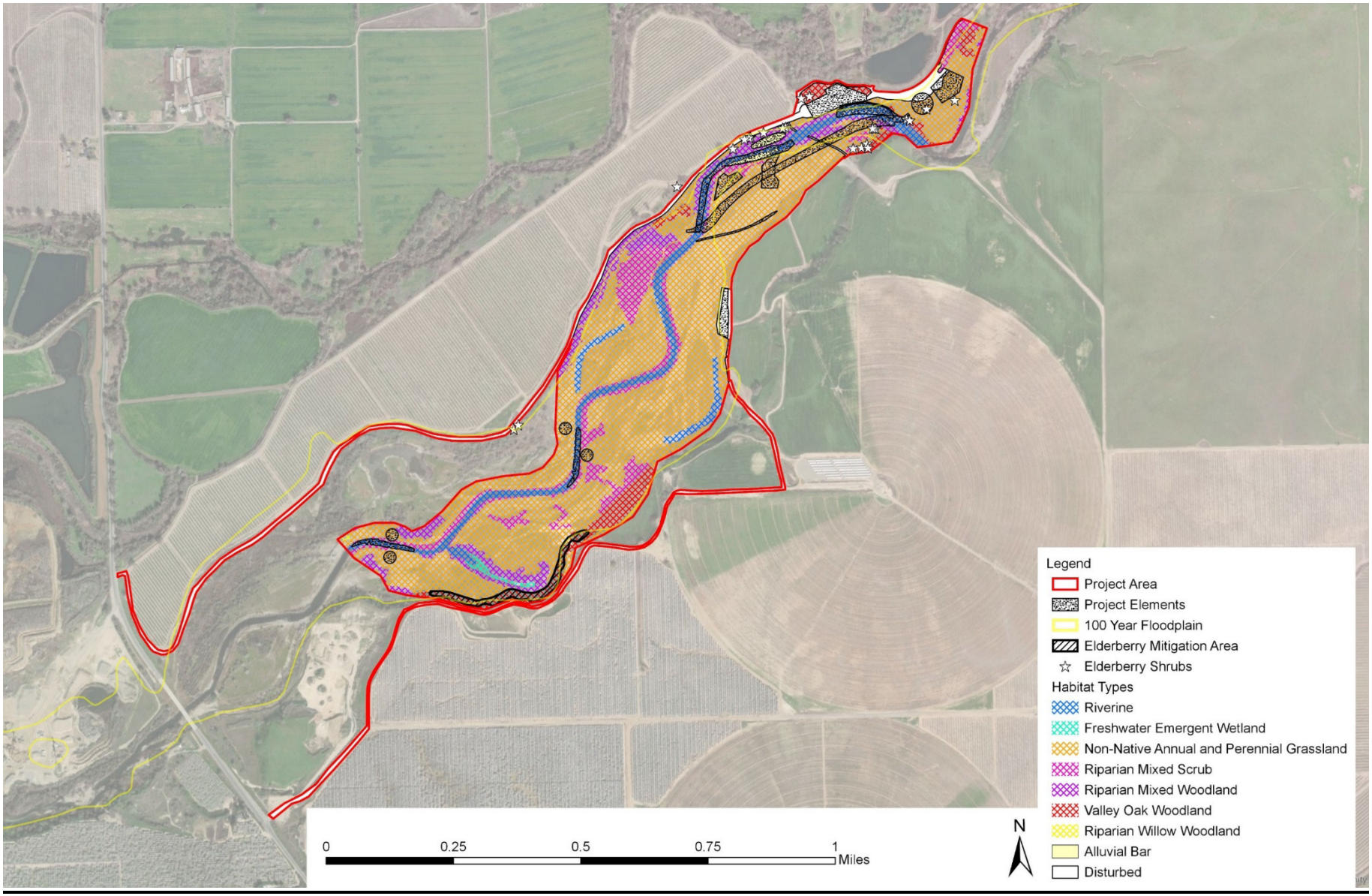
Figure 16 Habitat Types Within the Project Area and Locations of Elderberry Shrubs



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Wildlife

The Robinson Reach of the Merced River supports a diversity of terrestrial and aquatic wildlife species. Based on surveys conducted for the 2001-2002 MRSHEP-Robinson and surveys in 2020, several terrestrial and aquatic species are known to be present. The Merced River riparian corridor within the project area provides breeding, foraging, and refuge habitat for several mammal species including the river otter (*Lontra canadensis),* bobcat (*Lynx rufus*), coyote (*Canis latrans),* mule deer (*Odocoileus hemionus*), beaver (*Castor canadensis*), raccoon (*Procyon lotor*), and muskrat (*Ondatra zibethicus*). Bat species observed in or near the project area include the Western red bat (*Lasiurus blossevillii)*, Mexican free-tailed Bat (*Tadarida brasiliensis*), Pallid bat (*Antrozous pallidous*), big brown bat (*Eptesicus fuscus*), Yuma myotis (*Myotis yumanensis)*, Western mastiff bat (*Eumops perotis)*, Hoary bat (*Lasiurus cinereus*), Western pipistrelle (*Pipistrellus Hesperus*), and California myotis (*Myotis californicus*).

The Merced River and its associated riparian habitat provides for a diversity of amphibian, reptile, fish, and crustacean species including the following: bullfrog (*Rana catesbiana*), Pacific tree frog (*Hylioa regilla*), Northwestern pond turtle (*Actinemys marmorata*), largemouth bass (*Micropterus salmoides*), Western mosquitofish (*Gambusia affinis*), carp (*Cyprinius carpio*), blue gill (*Lepomis macrochirus*), crayfish (*Procambarus sp.*), and fall-run Chinook salmon (*Oncorhynchus tshawytscha*). The annual and perennial grasslands in the project area support several of the already mentioned species as well as the following: deer mouse (*Peromyscus maniculatus*), San Joaquin pocket mouse (*Perognathus inornatus inornatus*), California ground squirrel (*Spermophilus beecheyi)*, Western fence lizard (*Sceloporus occidentalis*), and side-blotched lizard (*Uta stansburiana*).

The riparian habitat and associated floodplain provides breeding, roosting, or foraging habitat for a diversity of bird species, including the following: bald eagle (*Haliaeetus leucocephalus*), Swainson's hawk (*Buteo swainsonii*), red-tailed hawk (*Buteo jamacensis*), osprey (*Pandion haliaetus)*, great horned owl (*Bubo virginianus*), white-tailed kite (*Elanus leucurus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), belted kingfisher (*Ceryle alcyon*), sandpiper (*Calidris sp.*), white-faced ibis (*Plegadis chihi*), great egret (*Casmerodius albus*), black-necked stilt (*Himantopus mexicanus*), killdeer (*Charadrius vociferous*), tree swallow (*Tachycineta bicolor)*, cliff swallow (*Hirundo pyrrhonota*), American bittern (*Botaurus lentiginosus*), greater yellowlegs (*Tringa melanoleuca*), lesser yellowlegs (*Tringa flavipes),* Forester's tern (*Sterna forsteri*), and Canada goose (*Branta canadensis*).

The special-status species including the western pond turtle, bald eagle, Swainson's hawk, and white-tailed kite are further discussed in the following sections.

Invasive Plants

Non-native and invasive plant species are present throughout the project area. Invasive plant species defined by the Cal-IPC are plants that are not native to an environment, and once introduced, they establish, quickly reproduce, spread, and cause harm to the environment, economy, or human health. Invasive plant species that occur in the project area and their associated Cal-IPC rating are identified in Table 5. Yellow starthistle (*Centaurea solstitialis*) occurs in large patches within Staging Area 1 and Stockpile Area 1. Himalayan

blackberry is dominant in the understory at the upstream end of the temporary channel and on the right bank gravel bar. Bermuda grass is the dominant groundcover in the non-native annual and perennial grasslands on both sides of the floodplain. Water primrose (*Ludwigia peploides ssp. peploides*) occurs along the riverbanks, but not within any of the project footprint elements.

Table 5 Invasive Plant Species within the Project Area

Scientific Name	Common name	Cal-IPC Rating
Avena barbata	wild oats	Moderate
Avena fatua	slender wild oats	Moderate
Brassica nigra	black mustard	Moderate
Bromus diandrus	ripgut brome	Moderate
Bromus hordeaceus	soft chess	Limited
Centaurea melitensis	tocalote	Moderate
Centaurea solstitialis	Yellow starthistle	High
Conium maculatum	poison hemlock	Moderate
Cynodon dactylon	Bermuda grass	Moderate
Festuca myuros	rattail sixweeks grass	Moderate
Festuca perennis	Italian rye grass	Moderate
Geranium dissectum	Cut leaved geranium	Limited
Hypochaeris glabra	smooth cat ears	Limited
Iris pseudacorus	horticultural iris	Limited
Ludwigia peploides ssp. peploides	water primrose sp.	High
Lythrum hyssopifolia	hyssop loosestrife	Moderate
Plantago lanceolata	narrow leaved plantian	Limited
Polypogon monspeliensis	annual beard grass	Limited
Raphanus sativus	wild radish	Limited
Rubus armeniacus	Himalayan blackberry	High
Rumex crispus	Curly dock	Limited
Silybum marianum	milk thistle	Limited
Trifolium hirtum	rose clover	Limited

Cal-IPC Categories:
High — Have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
Moderate — Have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Reproductive biology and other attributes are conducive to moderate to high rates of dispersal, but establishment generally depends on ecological disturbance. Ecological amplitude and distribution range from limited to widespread.
Limited — Invasive but ecological impacts are minor on a Statewide level, or not enough information was available to justify higher rating. Reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are limited, but these species may be locally persistent and problematic.
Sources: California Invasive Plant Council 2006; California Department of Water Resources 2020

Special-status Species

The potential presence of special-status plant and animal species or other special habitats occurring in the project area was assessed using data from the U.S. Fish and Wildlife Service Information for Planning and Consultation System, CDFW Rare Find, CDFW CNDDB, previous biological resource documents for the MRSHEP-Robinson, and surveys completed in 2020 and 2021. To determine what federally listed species and critical habitat have the potential to occur, the IPaC system was searched using a boundary of the project area. Rare Find, CNDDB, and CNPS databases were queried to create the list of special-status plant, animal, and sensitive habitats that have the potential to occur within the project area (Yosemite Lake quadrangle and eight adjoining quadrangles) (See Appendix A, "Special Status Wildlife and Plant Species Lists").

Special-status species are legally protected by federal acts, State Endangered Species Acts, and other regulations such as the Migratory Bird Treaty Act, or species that are sufficiently rare that they require special consideration and/or protection. Special-status species include the following:

- listed, proposed, or candidate species for listing as threatened or endangered by the USFWS pursuant to the Federal Endangered Species Act (ESA) of 1969, listed or proposed species - 50 Code of Federal Code of Regulations 17.12 [listed plants], 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species], candidate species - 61 FR 40, February 28, 1996, as amended;

- listed as rare, threatened, or endangered by the CDFW pursuant to the California Endangered Species Act (CESA) of 1970 – 14 California Code of Regulations 670.5, as amended;

- designated as Fully Protected under Sections 3511 (birds), 4700 (mammals), and 5050 (reptiles and amphibians) of the California Fish and Game Code (FGC);

- designated by the CDFW as California Species of Special Concern (SSC) (CDFW, 2020);

- plant species listed as rare or endangered under the California Native Plant Protection Act – FCG, Section 1900 et seq;

- species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (State CEQA Guidelines, Section 15380); and

- plant species considered under the CDFW and California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B, and 2) (California Native Plant Society 2020).

The potential for each species to occur in the project area was assessed using the criteria outlined below (Table 6 and Table 7).

- **None:** the area contains a complete lack of suitable habitat, the local range for the species is restricted, and/or the species is extirpated in this region.

- **Not Expected**: suitable habitat or key habitat elements might be present but might be of poor quality or isolated from the nearest extant occurrences, and/or the species is not known to occur in the area.

- **Possible**: presence of suitable habitat or key habitat elements that potentially support the species.

- **Present**: the species was either observed directly or its presence was confirmed by field investigations or in previous studies in the area.

Special-status Fish Species

Since 1850, native fish populations and assemblages have markedly changed within the San Joaquin River and its tributaries including the Merced River. Historically, the San Joaquin Basin Rivers experienced large flow events, annually, which mobilized the riverbeds-cleansing gravel for spawning fish and revived riparian forest along the bank and floodplain. Native fish assemblages and other aquatic species adapted their life cycles to these annual flow events and exploited the diversity of physical habitats created by the fluctuating channel. These ever-changing riverine conditions provided suitable habitat for a diversity of fish. Due to human alterations of the hydrologic regimes in the San Joaquin Basin rivers, many native fish species have become extirpated, endangered, or declined. Historically, the Merced River has been inhabited by several special-status fish species, and species that may occur or are seasonally present (Table 6).

Table 6a Special-Status Native Anadromous Fish Species with Historical or Current Presence within the Project Area and Merced River Robinson Reach

Species	Scientific Name	Status Federal/State/ Habitat	Current Presence
Central Valley Spring-run Chinook Salmon	*Oncorhynchus tshawytscha*	T/T/–	None
Central Valley Fall-run Chinook Salmon	*Oncorhynchus tshawytscha*	SSC/SSC/EFH	Present
Central Valley Winter-run Chinook Salmon	*Oncorhynchus tshawytscha*	E/E/–	None
California Central Valley Steelhead	*Oncorhynchus mykiss*	T/SSC/CH	Present
Delta Smelt	*Hypomesus transpacificus*	T/E/–	None
Longfin Smelt	*Spirinchus thaleichthys*	SSC/SSC/–	None
North American Green Sturgeon	*Acipenser medirostris*	T/–/–	None
White Sturgeon	*Acipenser transmontanus*	--/SSC/–	None
Pacific Lamprey	*Entosphenus tridentata*	SSC/SSC	Present
River Lamprey	*Lampetra ayersi*	–/SSC/–	Present
Kern Brook Lamprey	*Lampetra hubbsi*	–/SSC/–	Present

Table 6b Special-Status Native Riverine Fish Species with Historical or Current Presence within the Project Area and Merced River Robinson Reach

Species	Scientific Name	Status Federal/State/ Habitat	Category
Sacramento Hitch	*Lavinia exilicauda*	–/SSC/–	Not Expected
Central California Roach	*Lavinia symmetricus*	–/SSC/–	Present
Sacramento Splittail	*Pogonichthys macrolepidotus*	–/SSC/–	None
Hardhead	*Mylopharodon conocephalus*	--/SSC/–	Present
Riffle Sculpin	*Cottus gulosus*	–/SSC/–	Present

Legal Definitions:
E – Species listed as Endangered under the Federal or California Endangered Species Acts.
T – Species listed as Threatened under the Federal or California Endangered Species Acts.
SSC – Species of Special Concern under the Federal or California Endangered Species Acts.
EFH – Essential Fish Habitat under Section 305(b)(4)(A) of the Magnuson-Stevens Act (MSA).
CH – Critical Habitat under the Endangered Species Act.
– No listing under the Federal or California Endangered Species Acts.
Sources: California Department of Fish and Wildlife 2019; Santos et al. 2014; National Marine Fisheries Service 2014; Moyle et al. 2015; Pacific Fishery Management Council 2014; San Joaquin River Restoration Program 2014; Stillwater Sciences 2008; US Fish and Wildlife Service 2020

The two sections that follow provide background information for the special-status native anadromous and riverine fish species that historically or currently are present in the project area. The special-status fish species that are not currently present in the project area are not discussed further. Background information of these fish species includes current and historical geographic distributions, life history patterns, and habitat requirements.

Native Anadromous Fish Species

Although the Merced River historically supported both spring and fall Chinook salmon runs, and occasionally steelhead trout, access by anadromous salmonids is now restricted to the lower reaches of the river downstream of the Crocker-Huffman Dam. The placement of fish barriers including Exchequer Dam, Merced Falls Dam, McSwain Dam, and Crocker-Huffman Dam has reduced the original estimated 107 miles of habitat available to migrating anadromous fish to just 52 miles (Yoshiyama et al. 2001).

Central Valley Fall-run Chinook Salmon

The CV fall- and late fall-run Chinook salmon population is considered an ESU by the NMFS and is considered a federal and State species of special concern (Myers et al. 1998). Sustainability of this ESU is questionable because it is largely supported by hatchery-reared fish. Continued reliance on hatchery stock will further decrease genetic variability, leading to a largely homogenized population that is unlikely to be sustainable (Moyle et al. 2015). CV fall-run Chinook salmon unlike spring-run Chinook salmon are adapted for spawning in low elevation reaches of big rivers and their tributaries (Moyle 2002). The abundance of fall-run Chinook salmon has varied in recent years but still is the most abundant of the four runs of salmon in the CV of California. Historically, CV fall-run Chinook salmon spawned in all major rivers of the CV, migrating as far as the Kings River to the south and Upper Sacramento, McCloud, and Pit Rivers to the north. Currently, in the San Joaquin River Basin, CV fall-run Chinook salmon are limited to the Mokelumne, Merced, Stanislaus, and Tuolumne Rivers where they spawn and rear downstream from mainstem dams (Reynolds et al. 1993; Kano 2004; Azat 2018).

Since 1953, CDFW, has been conducting fall-run Chinook salmon escapement surveys in the lower Merced River, a 24.7-mile reach extending from the Crocker-Huffman Dam at the Merced River Hatchery (river mile 51.9) to the Santa Fe Road (river mile 27.1). CV fall-run Chinook salmon escapement averaged less than 500 fish in most years from 1953 to 1959 (Fry 1961). Since 1971, the Merced River Hatchery has been operated by CDFW to mitigate for lost habitat caused by the construction of Crocker-Huffman, Merced Falls, and New Exchequer dams. In 1970, fall-run Chinook salmon escapement in the Merced River increased due to flow increases from the New Exchequer Dam and releases of hatchery raised salmon into the river. In the early 1990s, fall-run spawning escapements in the Merced River were less than a couple hundred fish (Yoshiyama et al. 2001). In 2018, the total spawning escapements observed entering the Merced River Hatchery and in the Merced River was 1,850 fish; 975 entered the Merced River Hatchery, and 875 were found in the Merced River (Azat 2018).

Since 1993, CDFW has operated the Hills Ferry Barrier, which provides a seasonal barrier, benefiting fall-run Chinook salmon by directing upstream migrating adult fall-run Chinook salmon into suitable spawning habitat in the Merced River. The barrier helps prevent adult fall-run Chinook salmon from swimming into the San Joaquin River upstream of the confluence of

the Merced River where habitat conditions and water quality are currently unsuitable for anadromous fish to complete their life cycle.

CV fall-run Chinook salmon spend most of their lifecycle in the coastal waters of the Pacific United States but must return to freshwater to reproduce (Merz et al. 2013). Adult salmon migrate into the CV rivers to spawn, which usually occurs October through January. Salmon fry emerge from the substrate in December through March and rear in fresh water for one to seven months, moving downstream into large rivers within a few weeks (Moyle et al. 2015). Migration of salmon smolts is known to be initiated by storm events and increases in river flow, thus migration in the CV primarily occurs in late March and mid-June (Michel et al. 2013; Brandes and McLain 2001).

Spawning habitat consists of a mixture of large gravel and small cobble. These coarser substrates permit sufficient water flow through the spawning grounds, providing oxygen for developing embryos, and helps eliminate their metabolic waste (Moyle et al. 2015). Consequently, substrate permeability and subsurface water flow are critical factors in selecting redd sites. In suitable conditions, embryos hatch after 40 to 60 days and remain in the gravel as alevins until they emerge as fry. As fry, they are more vulnerable to predators, so they seek cover in vegetation along the stream edges and move into deeper (greater than 50 centimeters) water as they get larger.

The Merced River supports CV fall-run Chinook salmon, with an estimated 25 percent of the fall-run Chinook salmon spawning occurring upstream, including the Robinson reach (California Department of Fish and Game 2000). Based on the CDFW escapement surveys from 1953 to 2018, CV fall-run Chinook salmon spawn and rear in the lower Merced River, including the project area. Avoidance and mitigation measures for this run have been incorporated into the project description, minimizing any project-related impacts. Salmonid habitat restoration is the intent of this project and the project will have a long-term positive impact on this run.

California Central Valley Steelhead

Historical rainbow trout/steelhead are found in all the major tributaries of the Sacramento and San Joaquin Rivers (Pearse and Garza 2015). Populations of steelhead in California are divided into six Distinct Population Segments (DPSs) for management purposes; five on the coast and one in the CV. These DPSs include only anadromous life-history fish that spawn below impassable barriers to migration. Non-anadromous *O. mykiss* isolated above natural or artificial barriers to fish passage are excluded from the DPS and, subsequently, from protection under the ESA (ESA; Federal Register 2006). The CCV Steelhead DPS was listed as “Threatened” under the ESA in 1998 and this status was reaffirmed in 2006 (Federal Register 2006). The CCV Steelhead DPS also includes propagated fish produced from the Feather River and Coleman National fish hatcheries (National Marine Fisheries Service 2014).

O. mykiss is considered to have the most complex and varied life history pattern of any Pacific salmonid species, with varying degrees of anadromy, differences in reproductive biology, and malleability of life history within a genetic lineage (Behnke 1992). Many populations of *O. mykiss*, including the CV populations, consist of anadromous and non-anadromous individuals (McEwan 2001; Moyle 2002). A non-anadromous individual is referred to as rainbow or

redband trout, while the anadromous individual (which migrate as juveniles from freshwater to the ocean, then return to freshwater to spawn) is referred to as steelhead. Steelhead typically migrate to marine waters after spending two years in freshwater. They reside in the marine environment for 2 to 3 years prior to returning to their natal stream to spawn (National Marine Fisheries Service 1996).

CCV steelheads are divided into two basic life history patterns: summer and winter. The summer steelhead are river-maturing fish species that require coldwater pools for holding and staging (Moyle 2002). These fish have been extirpated since suitable summer holding habitats are inaccessible because of impassable dams. Consequently, only ocean-maturing winter steelhead are extant in the CV (Moyle 2002). Migration of winter CCV steelhead into CV streams typically occurs August to April with a peak in late September to October (Moyle 2002). Winter CCV steelhead adults typically spawn December through April, with peaks from January through March.

Winter steelhead prefer cold water between 12.8° and 21.1 degrees Celsius (°C) that is saturated with dissolved oxygen. Steelhead are iteroparous, so they are capable of spawning more than once before they die. However, it is rare for steelhead to spawn more than twice before dying, and even rarer for males to do so (Moyle 2002). Female steelhead prefer redds in coarse (1 to 13 centimeters) gravel of the tail of a pool or in a riffle, where there is good intergravel flow. Depending on water temperature, steelhead eggs can incubate in redds, or nesting gravels, for 1.5 to 4 months before hatching as alevins, the larval life stage that depends upon a yolk sac for nutrition. Steelhead can survive in water temperatures between 2° and 15°C but have the highest survival rates in water temperatures between 7° and 10°C (Myrick and Cech 2001). Juveniles rear in fresh water for 1 to 4 years, then migrate to the ocean as smolts (National Marine Fisheries Service 1996).

In the Merced River, the anadromous and non-anadromous forms of *O. mykiss* potentially exist, but currently no data has been collected to definitively confirm their presence. According to USFWS, the Merced River is sporadically used by steelhead for spawning and rearing (U.S. Fish and Wildlife Service January 2000). A few large rainbow trout that could be returning steelheads have been reported at the Merced River hatchery. Avoidance and mitigation measures for this species will be incorporated into the project description, minimizing any project-related impacts. Salmonid habitat restoration is the intent of this project; the project will have a long-term positive impact on this species.

Pacific Lamprey

Pacific lamprey is an anadromous fish that have the most widespread distribution of freshwater species in western North America. Historically, the Pacific lamprey occupied coastal drainages from Alaska to northern Baja California (Renaud 2011). Their population and range throughout California have declined and reduced because of fish passage barriers, streamflow management, habitat degradation, and reduced water quality. By 1985, they were extirpated from half of their historical habitat in Northern California. By 2016, the Pacific lamprey's range was reduced to a southern limit of Big Sur, California (Reid and Goodman 2016). However, in 2017 and 2018, spawning and recruitment occurred in the San Luis Obispo Drainage, which is about 160 km south of Big Sur, California. Recolonization of the San Luis Obispo Drainage was possible because of the lamprey passage facility that was installed in 2013 by the Central

Coast Lamprey Working Group (Reid and Goodman 2020). In the San Joaquin River system, the Pacific lamprey occurred as far south as the Kings River during wet years (Goodman and Reid 2018). Pacific lamprey currently inhabit the mainstem of the San Joaquin River and its major eastern tributaries including the Merced River up to the Crocker-Huffman Dam.

Pacific lamprey, like Chinook salmon, can have more than one spawning run within the same river system (Moyle 2002). In some California rivers, two spawning runs have been observed (Moyel et al. 2009). In the Pacific Northwest, adult Pacific lamprey typically enter freshwater systems in the spring (April-June) and begin their initial upstream migration from July-September prior to their overwintering holding during October-March (Clemens et al. 2010, Keefer et al. 2009). Pacific lamprey matures, spawn, and die in the April to June period (Clemens et al. 2016). Spawning and migration periods in California are earlier than the ones mentioned above because these periods vary with latitude (Clemens et al. 2010). The Pacific lamprey is known to disregard the rule of homing in anadromous fish; therefore, individuals do not return to their natal streams for spawning.

Studies have indicated that the Pacific lamprey possibly uses spawning cues related to flow patterns and the presence of ammocoete pheromones in the offshore river plumes to identify suitable rivers for spawning and subsequent rearing (Spice et al. 2012, Moser et al. 2015). Temperature, photoperiod, water flow, and distance from spawning grounds are considered the primary catalysts of when upstream migration and spawning occurs (Clemens et al. 2010, Clemens et al. 2012). Water temperatures that are beneficial for all life stages vary between 13 to 17°C (Clemens et al. 2016).

Pacific lamprey typically build spawning nests in low-gradient riffles of streams and rivers. Both male and female lamprey build nest depressions that are 30 to150 centimeters deep and 221 to 270 centimeters in diameter. The nests have been found in water depths ranging from 30 to 82 centimeters in the American River and 36 to 73 centimeters in Putah Creek (Moyle et al. 2015). Water velocities in nest locations have ranged from 24 to 84 centimeters per second in the American River and 17 to 45 centimeters per second in Putah Creek (Moyle et al. 2015). Nest depressions can have piles of stones on the upstream (Susac and Jacobs 1999) or downstream (Moyle 2002) side. After the embryos hatch, the ammocoetes stay in the nest for a short period of time and then swim into the water column where they are washed downstream to areas of sand or mud. Ammocoetes burrow into soft stream sediments tail first, at which point they begin filter feeding by sucking organic matter and algae from stream substrates. Lamprey can be in the ammoceote stage for 5 to 7 years and metamorphosis into adults occurs at the end of this stage. Downstream migration of adults occurs when metamorphosis is complete and is frequently associated with high-flow events in the winter and spring (Moyle et al 2015).

The population status of Pacific lamprey in the California San Joaquin Regional Management Unit has remained unchanged since the 2012 assessment and are still considered unknown (Goodman and Reid 2018). The lower reaches of the Stanislaus, Tuolumne, and Merced Rivers all have lengthy reaches of passable occupied habitat up to their lowest foothill dams. The lower Merced River has at least 52 miles of occupied habitat from the San Joaquin River and Merced River confluence to the Snelling Diversion Dam. Pacific lampreys were observed both downstream and upstream of the Crocker-Huffman Dam during the 2006 to 2008 biological assessment surveys conducted by Stillwater Sciences for the Merced River Alliance

Project. Although the Pacific Lamprey were in low abundance, they were occupying the lower Merced River Reach; therefore, they could be present in the project area.

River Lamprey

River lamprey or the western river lamprey is a small, anadromous, and predaceous species that have been collected from large coastal streams from Juneau, Alaska, to San Francisco Bay (Moyle 2002). The biology of the California river lamprey has not been well documented, so most life history is based on studies from British Columbia. In California, they have mostly been captured from the Sacramento and San Joaquin Delta while migrating in tributaries to the San Francisco Estuary (Napa River, Sonoma Creek, Alameda Creek), and tributaries to the Sacramento and San Joaquin rivers (Tuolumne River, Stanislaus River, Cache Creek) (Moyle et al. 2015). Adults migrate into fresh water during fall and spawn during February through May in tributary streams. They dig saucer-shaped depressions in gravelly riffles for spawning. Larval river lamprey (ammocoetes) take 9 to 10 months to metamorphize into adults, the longest metamorphosis for any lamprey. It is unknown how many years river lamprey spend as ammocoetes before metamorphizing into adults, but it is likely 3 to 5 years. The total life span of river lamprey is likely 6 to 7 years (Moyle et al. 2015). It is presumed that adult lamprey die after spawning, even though this life history trait has not been well documented in California.

Habitat requirements of spawning adults or ammocoetes have not been studied in California, but they are assumed to be the same as other lamprey. Adult lamprey require clean and gravelly riffles located in permanent streams, whereas ammocoetes need sandy to silty backwaters or stream edges wherein to bury themselves, where water quality is continuously high and temperatures do not exceed 25°C (Moyle et al. 2015). In the freshwater tributaries of the Bay-Delta, such as the Sonoma and Napa rivers, spawning occurs April and May at temperatures of 13° and 13.5°C (Wang 1986).

In the Sacramento River system, the river lamprey has been observed for spawning in Cache Creek and were captured in the Knight's Landing rotary screw trap (Moyle et al. 2015). The river lamprey may be present in the lower Merced River in the wettest years, including the project area.

Kern Brook Lamprey

Kern brook lamprey is a non-predatory lamprey species endemic to Sierra streams of the San Joaquin drainage (Moyle et al., 1996). This species has a sucking disc rather than jaws (Vladykov and Kott 1976). It is assumed that this species has a life cycle like that of other brook lamprey species, but very little is known about its life history (McGinnis 1984).

Kern brook lamprey are typically found in silty backwaters of large rivers in foothill regions. This lamprey is typically found in sand, gravel, and cobbly substrates, whereas the ammocoetes are associated primarily with sandy substrates (Brown and Moyle 1993). This species was initially discovered in the Friant-Kern canal (McGinnis 1984), but subsequent fish monitoring and surveys have also found this species to occur in the lower reaches of the Merced, Kaweah, Kings, and San Joaquin rivers (Brown and Moyle 1993). During surveys conducted by Stillwater Sciences from 2006 to 2008, a few Kern brook lamprey were observed in the Merced Falls Reach, which is upstream of the Crocker-Huffman Dam but still considered within the lower Merced River (Stillwater Sciences 2008). The full distribution of this species is

not currently well understood (Moyle et al.1996). This species is threatened by dams and other river alterations that reduce silty backwater areas (Brown and Moyle 1993). Kern brook lamprey are a Federal Species of Concern and a State Species of Special Concern.

Although Kern brook lamprey are not known to occur specifically in the project area, they are known to occur in the lower Merced River. Avoidance and mitigation measures for this species will be incorporated into the project description, minimizing any project-related impacts. The project will have a long-term positive impact on this species.

Native Riverine Fish Species

Many of the native riverine species historically present in the San Joaquin River and project area are still present (U.S. Fish and Wildlife Service 2017a; San Joaquin River Restoration Program 2014; Unpublished Data), but their abundance trends are unknown. The native riverine species generally can be divided into two assemblages: the deep-bodied fishes and the Pikeminnow-Hardhead-Sucker assemblage (Moyle 2002). Degradation or complete destruction of historical aquatic habitats due to mining activities, agricultural conversion, and channelization likely has led to greatly reduced abundances of native riverine species in the project area, despite the MRSHEP-Robinson completion in 2002. Furthermore, remaining native riverine species are likely competing with introduced species for limited habitat. Special-status native riverine fish may be seasonally present within the project area.

Sacramento Hitch

Sacramento hitch are endemic to the Sacramento-San Joaquin River Basin; however, presently they are absent from the San Joaquin River and the lower reaches of its tributaries from Friant Dam down to the Merced River (Brown 2000; California Department of Fish and Game 2007). Prior to the construction of the Friant Dam, the hitch were abundant in the San Joaquin River at Friant (Moyle 2002). Installation of dams along the CCV rivers has fragmented watersheds and created undesirable tailwater conditions for native fish such as the hitch (Moyle et al. 2015). Introduced populations of hitch have established in a few upstream reservoirs within their native range, such as Beardsley (Tuolumne County), San Luis (Merced County), and Bass Lake (Fresno County). There are three subspecies within this species found in the Clear Lake, Pajaro, and Salinas watersheds and Sacramento-San Joaquin Watershed (Lee et al. 1980). Several studies, including years of sampling, have indicated that hitch populations are drastically low within their native range (Brown 2000; Brown and May 2006; Moyle et al. 2007; Nobriga et al. 2005). Brown and Michniuk 2007; Feyrer and Healey 2002 determined that the Sacramento hitch is mostly confined to the northern Delta and likely extirpated from the southern Delta.

Hitch occupy warm, low-elevation lakes, sloughs, and slow-moving stretches of rivers and clear, low-gradient streams. They can withstand water temperatures up to 100°F although they prefer temperatures of 81 to 84°F. Hitch also have moderate salinity tolerances and can be found in environments with salinities up to nine parts per thousand (Moyle 2002). Hitch require clean, smaller gravel and temperatures of 57 to 64°F to spawn. When larvae and small juveniles move into shallow areas to shoal, they require vegetative refugia to avoid predators. Larger fish are often found in deep pools containing an abundance of aquatic and terrestrial cover (Moyle 2002).

Mass spawning migrations typically occur when flows increase during spring, raising water levels in rivers, sloughs, ponds, reservoirs, watershed ditches, and riffles of lake tributaries. Females lay eggs that sink into gravel interstices (San Joaquin River Restoration Project 2011). Hatching occurs in 3 to 7 days at 59 to 72°F, and larvae take another 3 to 4 days to emerge. As they grow, they move into perennial water bodies where they shoal for several months in association with aquatic vegetation or other complex vegetation before moving into open water. Hitch are omnivorous and feed in open waters on filamentous algae, aquatic and terrestrial insects, zooplankton, aquatic insect pupae and larvae, and small planktonic crustaceans (Moyle 2002).

During snorkel and electrofishing surveys from 2006 to 2008, Stillwater Sciences found a few Sacramento hitch within the Dredger Tailings Reach, which included the stretch of river between Crocker-Huffman Dam and 1.2 miles downstream of Snelling Road Bridge (Stillwater Sciences 2008). These approximate seven miles of river include the CDFW owned Merced River Ranch approximately 2.5 miles upstream of MRSHEP-Robinson. Stillwater Sciences captured young of the year hitch in low numbers in fall 2006, summer 2007, and spring 2008. It is unknown whether hitch use this stretch of river for spawning or not. This project intends to improve spawning habitat for several anadromous and riverine species; hence, it will have a potential long-term positive impact on this species.

Central California Roach

Central California roach are generally found in small streams and are well adapted to life in intermittent water courses; dense populations have been found in isolated pools (Leidy 2007). Roach are most abundant in mid-elevation streams in the Sierra Nevada foothills and in lower reaches of some San Francisco Bay streams, but they may also be found in the main channels of some rivers, such as the Stanislaus River (Roehrig 1988) and Tuolumne River (Moyle 2002). Currently, Central California roach are absent from the Fresno River and other tributaries to the San Joaquin River where they once occurred, and most populations are isolated by downstream barriers such as dams, diversions, or polluted waters containing introduced predatory fishes (Moyle 2002). Central California roach have been captured in eight tributaries of the San Joaquin River, including the Merced River (Brown et al. 1992).

Central California roach can be found in cold, well oxygenated streams and can survive in high temperatures (30 to 35°C), poorly oxygenated (1 to 2 parts per million) habitat characteristic of intermittent streams (Moyle et al. 1982). Spawning is temperature dependent and typically occurs in March through early July when temperatures exceed 16°C (Moyle et al. 2015). Suitable spawning habitat is in riffles over coarse substrates 3 to 5 centimeters in diameter. Roach spawn in large groups where females deposit eggs into the interstices between rocks, which are immediately fertilized by males (Moyle et al. 2015). In 2 to 3 days, the eggs hatch and the larvae remain in the gravel until they are large enough to actively swim (Moyle et al. 2015).

In the fall and summer of 2006, Stillwater Sciences found a few Central California roach within the mid- to upper-reaches of the lower Merced River (river miles 32.2 – 44.7), which includes the project area (Stillwater Sciences 2008). It is not known whether the Central California roach are occurring directly within the project area, but their presence is possible. This project

intends to improve spawning habitat for several anadromous and riverine species; hence, it will have a potential long-term positive impact on this species.

Hardhead

Hardhead are confined to scattered populations within San Joaquin River tributary streams and are rarely found within valley reaches of the San Joaquin River (Moyle and Nichols 1973; Saiki 1984; Brown and Moyle 1987). During an extensive sampling program by Jones and Stokes (1987), a few hardheads were found in the lower Kings and San Joaquin Rivers, but the hardheads failed to recolonize the historic habitat. The majority of hardhead occur in the Sacramento, Russian, Napa, and Pit river drainages. Distribution of hardhead is still widespread in foothill streams, but degradation of habitat has isolated most populations from one another, making them vulnerable to localized extinctions (Moyle 2002).

Habitat requirements include undisturbed habitats of larger streams with cool and clear water conditions. In CV California streams, hardhead spawning is thought to occur April to June and may extend into August in the foothill streams of the Sacramento-San Joaquin drainages (Wang 1986). Following fertilization, eggs develop until hatching into larvae, which then seek refuge along the stream margins where there is abundant cover. As the larvae grow larger, they move into deeper and slower velocity habitats. Preferred mean water temperature for hardhead is 19.4°C and they avoid water temperatures exceeding 26.0°C (Thompson et al. 2012).

Hardhead are known to occur near the SR 59 bridge, just downstream of the project area. Avoidance and mitigation measures will be incorporated into the project description, minimizing any project-related impacts. Since hardhead are thought to spawn in gravelly substrates of relatively deep water, the project will have a long-term positive impact on this species.

Riffle Sculpin

California populations of riffle sculpin possibly represent four species or subspecies associated with the San Joaquin, Sacramento, Pajaro-Salinas, and Russian river watersheds (Baumsteiger et al. 2012; Baumsteiger et al. 2013); however, further research is needed. Until this research is completed, all riffle sculpin populations in California should be treated as one species. Riffle sculpin mostly occur in mid-elevation reaches of watersheds throughout the CV drainage and central coast of California but are present below dams with cold water releases (e.g., Kings and Tuolumne rivers, Moyle 2002). Currently, in the San Joaquin River system, riffle sculpin can be found from the Mokelumne River south to the Kaweah River. In most streams, riffle sculpin can be found with 3 to 6 other native fish species, most often with rainbow trout (Moyle et al. 2015).

Riffle sculpin typically live in the headwaters of cool perennial streams where riffles and rocky substrate predominate (Moyle 2002; Leidy 2007). Riffle sculpin are reproductively mature at two years and typically spawn February to April (Moyle 2002). Preferred spawning habitat is under rocks in high velocity riffles or inside cavities in submerged logs (Moyel et al. 2015). The male riffle sculpin select the nest locations and are capable of mating with multiple females. Once the embryos are fertilized, the males will guard the embryos and the fry once the embryos hatch.

During seining and electroshocking surveys performed by Stillwater Sciences in 2006 to 2008, riffle sculpin were captured in the lower Merced River between river miles 0 and 54.3. They also captured riffle sculpin in one reach of the upper Merced River, between river miles 91.3 and 100.6 (Stillwater Sciences 2008). Riffle sculpin are known to be in the Merced River, but their presence within the project area is unknown. Avoidance and mitigation measures will be incorporated into the project description, minimizing any project-related impacts. Since riffle sculpin are thought to spawn in gravelly substrates of relatively deep water, the project will have a long-term positive impact on this species.

Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration under State and federal regulations. Sensitive habitats may be of special concern for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat for special-status species.

Wetlands and Other Waters of the United States and State

Section 404 of the federal Clean Water Act (CWA) regulates the discharge of dredged or fill material into “navigable waters” (33 U.S.C. §1344), defined in the CWA as “the waters of the United States, including the territorial seas” (33 U.S.C. §1362(7)). USACE has jurisdiction over features that qualify as waters of the United States, including some wetlands that support appropriate vegetation, soils, and hydrology. Waters of the United States are currently defined by the Navigable Waters Protection Rule (33 CFR Part 328), which took effect on June 22, 2020. The rule identifies four categories of waters of the United States: (1) territorial seas and traditional navigable waters, (2) tributaries, (3) lakes, ponds, and impoundments of jurisdictional waters, and (4) adjacent wetlands. These categories are defined as follows:

Territorial Seas and Traditional Navigable Waters (TNWs)

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

Tributaries

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.
- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other “waters of the United States,” through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

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

Adjacent Wetlands

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

The Merced River is a tributary of the San Joaquin River, qualifying it as category two jurisdictional waters of the United States. Only 20 miles of the Merced River are considered navigable, from the confluence of the San Joaquin River to 1500 feet upstream of SR 99 and Southern Pacific Railroad (U.S. Army Corps of Engineers 2021). The project area is approximately 14.59 river miles upstream of this navigable portion of the Merced River, disqualifying it as a category one jurisdictional water of the United States. Majority of the project area outside the river channel is floodplain that is hydrologically connected in a typical year, qualifying the floodplain as category 3 or jurisdictional adjacent wetlands.

All surface waters on the project site, including the river, floodplain, and freshwater emergent wetland, also fall under the CVRWQCB jurisdiction as waters of the State. In addition, the river, adjacent riparian habitat, and floodplain are subject to CDFW jurisdiction under the FGC Section 1600. An aquatic resources delineation of the project area has not been completed for the project, but could be as conditions of CWA Section 404, 401, and CDFW 1600 permits.

Critical Habitat (CH)

The project is in a designated CH of the CCV steelhead DPS. CH is habitat that is needed to support recovery of listed species and is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features essential to conservation of the species and that my require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation (NMFW 2009). CH boundaries include the stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line (33 CFR 329.11). In areas where the ordinary high-water line has not been identified, the lateral extent is defined by the bankfull elevation. Bankfull elevation is the elevation at which water begins to leave the channel and move into the floodplain and is reached at a discharge, which generally has recurrence interval of 1 to 2 years on the annual flood series.

CH of the CCV steelhead DPS is designated by the presence of primary constituent elements that are physical and biological features essential to one or more of the life stages of the ESU. The primary constitute elements for this ESU include the following: (1) freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development; (2) freshwater rearing sites with (a) water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility, (b) water quality and forage supporting juvenile development, and (c) natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; (3) freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival; (4) estuarine areas free of obstruction and excessive predation with (a) water quality, water quantity, salinity conditions supporting juvenile and adult physiological transitions between fresh and saltwater, (b) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and (c) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (50 CFR 226.211).

The Merced River is designated by the NMFS to contain CH for the CCV steelhead DPS from Merced River, from its mouth in the San Joaquin River to the Crocker Huffman Dam. CV steelhead are sporadically present in the Merced River between Crocker Huffman Dam and the SR 59 bridge, but this population is not viable (California Department of Fish and Wildlife 2019). The purpose of this project is directly related to improving the primary constituent elements for anadromous salmonid CH and will provide long term benefits to the CV steelhead.

Essential Fish Habitat (EFH)

The project is in EFH for the CV fall-run Chinook salmon ESU. EFH is defined as those waters and substrate necessary for fish for spawning, feeding, or growth to maturity. “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. “Substrate” includes sediment, hard bottom, structures underlying waters, and associated biological

communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem (50 CFR.600.10).

The Merced River from the confluence of the San Joaquin River to the Crocker-Huffman Dam is designated as EFH under the Pacific Coast Salmon Management Plan (Pacific Fisheries Management Council 2016). EFH includes aquatic habitat above all artificial barriers except impassable barriers such as the Crocker-Huffman Dam. Although habitat above the Crocker-Huffman Dam is not designated at EFH, any project occurring in this habitat that can adversely affect the EFH below the dam can be subject to consultation under the Magnuson-Stevens Act (MSA).

The statutory authority of EFH is Section 305(b)(4)(A) of the MSA. NMFS is required to provide EFH Conservation Recommendation to federal and State agencies for action that would adversely affect EFH. The MSA defines adverse effects as any impact that reduces quality or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR.600.910).

The project is in salmonid spawning habitat, which is considered a habitat of concern according to the Pacific Fisheries Management Council’s Pacific Fisheries Management Plan (Pacific Fisheries Management Council 2014). The project area supports the following four main components of freshwater EFH: (1) spawning and incubation, (2) juvenile rearing, (3) juvenile migration corridors, and (4) adult migration corridors and holding habitat. The purpose, and intended effect, of the project is to improve migratory fish passage and enhance the spawning and rearing habitat of anadromous salmonids.

Sensitive Natural Communities

Sensitive natural communities include areas that are of special interest to federal, State, or local resource agencies, such as the CDFW, USACE, or USFWS, or have specific consideration through CEQA, Section 1602 of the FGC, or Section 404 of the Federal Clean Water Act. The following habitat types within the project area are considered sensitive natural communities: riparian mixed woodland, riparian mixed scrub, riparian willow woodland, valley oak woodland, riverine, and freshwater emergent wetland. Within these sensitive natural communities there are many blue elderberry shrubs near access routes and project footprints, but these shrubs are to be avoided.

Special-status Plant Species

The results of the USFWS, CDFW, and CNPS data queries identified several special-status plant species known to occur in the north east region of Merced County, which includes the largest areas of pristine, high-density vernal pool grassland habitat. Many of the special-status plant species identified in the region are associated with vernal pools, which do not occur in the project area. The nearest vernal pool habitat is approximately 1.70 miles of the project area. Therefore, those vernal pool species are not considered to occur in the project area. The

special-status plant species with the potential to occur in the project area are listed in Table 7 (See Appendix A. “Special Status Wildlife and Plant Species Lists”).

Table 7 Potentially Occurring Special-status Plant Species

Species	Status (federal/ State/ CRPR)	Habitat Requirements	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Brasenia schreberi watershield	-- / -- / 2B.3	wetland, ponds, slow streams Blooms: Jun-Sept Elevation: 30 - 2200 meters	Possible. Suitable habitat is present in the backwash area of the river and along the river. Many occurrences are historical.	freshwater emergent wetland, slow moving streams
Convolvulus simulans small-flowered morning-glory	-- / -- / 4.2	seeps, valley grassland, northern coastal scrub, coastal sage scrub Blooms: Mar-Jul Elevation: 30 -740 meters	Possible. Suitable habitat exists in the project area, and known occurrences are present in the project area vicinity.	non-native annual and perennial grassland,
Eryngium racemosum delta button-celery	-- / E /1B.1	riparian, wetlands, freshwater wetlands, vernally mesic clay depressions Blooms: Jul-Oct Elevation: 3 - 30 meters	None. Suitable habitat is not present in the project area. This plant is typically found in vernally mesic clay depressions. The nearest CNDDB occurrence is 9.25 miles from the project area along the bank of Turlock Lake.	riparian, freshwater emergent wetland, freshwater wetlands
Eryngium spinosepalum spiny-sepaled button-celery	-- / -- / 1B.2	vernal Pools, swales, roadside ditches, valley and foothill grassland Blooms: Apr-May Elevation: 80 - 975 meters	None. Suitable habitat is not present in the project area. Typically found in vernal pools, the nearest CNDDB record is 5.25 miles away from the project area.	roadside ditches, non-native annual and perennial grassland
Fritillaria agrestis stinkbells	-- / --/ 4.2	wetland and non- wetlands, chaparral, valley grassland, foothill woodland, wetland-riparian Blooms: Mar-Jun Elevation: 10 - 1555 meters	Possible. Suitable habitat is present in the project area.	freshwater emergent wetland, non-native annual and perennial grassland, foothill woodland, wetland-riparian lacking mesic clay soils.
Gratiola heterosepala Boggs Lake hedge-hyssop	-- / E / 1B.2	lake margins, vernal pools, edges, shallow water, margins of vernal pools, clay soils Blooms: Apr-Aug Elevation: 10 - 2375 meters	None. Suitable habitat is not present in the project area.	None

Species	Status (federal/ State/ CRPR)	Habitat Requirements	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Hesperevax caulescens hogwallow starfish	-- / -- / 4.2	wetlands, valley grassland, foothill woodland, wetland-riparian Blooms: Mar-Jun Elevation: 0 - 505 meters	Not expected. Non-native annual and perennial grassland, foothill woodland, and wetland-riparian area are within the project area, but this species typically occurs in shallow vernal pools in Valley and foothill grasslands with mesic clay soils.	freshwater emergent wetland, non-native annual and perennial grassland, non-native annual grassland, foothill woodland, wetland-riparian lacking mesic clay soils.
Potamogeton zosteriformis eel-grass pondweed	-- / -- / 2B.2	freshwater-marsh, ponds, lakes, streams Blooms: Jun-Jul Elevation: 0 - 1860 meters	Possible. Suitable habitat is within and adjacent to the project area. The backwash area of the Merced River Robinson Reach provides suitable habitat and the freshwater pond near the northwest corner of the project area. The nearest CNDDB record is 7.5 miles northeast of the project area near Lake McSwain.	riverine, freshwater emergent wetland
Sagittaria sanfordii Sanford's arrowhead	-- / -- / 1B.2	freshwater-marsh (Assorted freshwater), emergent Blooms: May-Oct Elevation: 0 - 650 meters	Possible. Suitable habitat is present in the project area and adjacent pond. The nearest CNDDB record is approximately 3.75 miles from the project area.	freshwater emergent wetland, seasonal wetlands

Legal Status Definitions:
E — Species listed as Endangered under the Federal or California Endangered Species Acts
T — Species listed as Threatened under the Federal of California Endangered Species Acts
R — Species listed as Rare in California under California Endangered Species Act

California Rare Plant Rank (CRPR)
1B — Plant species considered Rare, Threatened, or Endangered in California and elsewhere.
2B — Plant species considered Rare or Endangered in California but more common elsewhere.
3 — Plants species about which more information is needed - a review list
4 — Plant species are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly

California Rare Plant Threat Ranks
0.1 — Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).
0.2 — Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

0.3 — Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Sources: California Department of Fish and Wildlife 2019; U.S. Fish and Wildlife Service 2020; California Department of Water Resources 2020

Special-status Wildlife Species

The project area is in northeast Merced County, which is rich in biological resources, including 32 special-status terrestrial wildlife species, according to the results of the USFWS and CDFW data queries. Habitat requirements for special-status species were assessed and compared to the habitats occurring within the vicinity of the project area (Table 8) (See Appendix A. “Special Status Wildlife and Plant Species Lists”). Aquatic species such as vernal pool fairy shrimp (*Branchinecta lynchi*) and conservancy fairy shrimp (*Branchinecta conservatio*) are not included within the Table 8, because vernal pool habitat does not exist within the project area.

Table 8 Potentially Occurring Special-status Wildlife Species

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Bombus crotchii Crotch bumble bee	– / CE / –	Inhabits open grassland and scrub habitat. Nesting occurs underground in rodent burrows, or above ground in tufts of grass, old bird nest, rock piles, or cavities of dead trees.	Possible. The floodplain is not conducive for nesting bees, but the non-native annual and perennial grasslands where Stockpile Area 1 and Staging Area 1 are located provides suitable nesting habitat. The non-native annual and perennial grassland within the floodplain and upland provide suitable foraging habitat. The nearest CNDDB record for this species was approximately 9.75 miles northeast of the project area and was recorded in 1956. This species has been nearly extirpated from the center of its historic range, the Central Valley, where agriculture and urban development have transformed the landscape (California Department of Fish and Wildlife 2019a).	non-native annual and perennial grassland
Desmocerus californicus dimorphus valley elderberry longhorn beetle	T / – / CH	Primarily associated with the host plant red or blue elderberry shrubs (*Sambucus species*), with stems at least 1 inch in diameter at ground level. Typically found in valley foothill riparian habitats within the California Central Valley. Can occur in non-riparian habitat such as valley oak, blue oak woodland, and annual grassland (U.S. Fish and Wildlife Service 2017b).	Possible. Suitable habitat is present in the project footprint, several hundred elderberry shrubs are in within 50 feet of project access routes and areas of disturbance. These elderberry shrubs were planted as mitigation for the MRSHEP-Robinson in 2002.	valley foothill riparian, valley oak woodland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Ambystoma californiense California tiger salamander (central population)	T / T / CH	Inhabits grasslands and low (typically below 2000 feet) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral vernal pools complexes or ponds that mimic them (stock ponds that can go dry) (U.S. Fish and Wildlife Service 2009). Need associated upland habitat, typically in valley-foothill hardwood habitats that provide underground refuge (burrows).	None. Suitable vernal pool habitat is not present in the project area. The nearest suitable breeding pond is 1.1 miles south of the project area. The nearest CNDDB breeding occurrence is 1.75 miles from the project area. Critical Habitat for this species is approximately 4.2 miles southeast of the project area.	perennial and ephemeral ponds, valley oak woodland, non-native annual and perennial grassland
Rana draytonii California red-legged frog	T / SSC / CH	Inhabits distinct habitat, combining both aquatic and upland components. California red-legged frog habitat includes nearly any area within 1 to 2 miles of a breeding site that stays moist and cool through the summer; this includes non-breeding aquatic habitat in pools of slow-moving streams, perennial or ephemeral ponds, and upland sheltering habitat such as rocks, small mammal burrows, logs, densely vegetated areas, and even, man-made structures (i.e., culverts, livestock troughs, spring-boxes, abandoned sheds). Breeding sites are generally found in deep, still, or slow-moving water (greater than 2.5 feet) and can have a wide range of edge and emergent cover amounts. California red-legged frogs can breed at sites with dense shrubby riparian or emergent vegetation, such as cattails, tules, or overhanging willows or can proliferate in ponds devoid of emergent vegetation and any apparent vegetative cover (i.e., stock ponds) (U.S. Fish and Wildlife Service 2017c).	Not expected. Marginal habitat exists in the backwash area and of the river and within ephemeral and perennial ponds in and adjacent to the project area. On-site and adjacent freshwater ponds are dominated by invasive predatory species. No CNDDD occurrences or Critical Habitat of this species exist within or near the project area. This species occurs along the Coast Range Mountains from Mendocino County south, and in portions of the Sierra Nevada and Cascade mountain ranges. Sierra populations are highly restricted and consist of small numbers of individuals.	perennial and ephemeral ponds

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Spea hammondii western spadefoot	– / SSC / –	Western spadefoot toads prefer terrestrial areas of open vegetation, short grasses, and where the soil is sandy or gravelly. They can be found in the valley and foothill grasslands, open chaparral, and pine-oak woodlands. Western spadefoot toads are almost completely terrestrial and enter water only to breed (Dimmitt and Ruibal 1980). Breeding occurs in vernal pools and other temporary rain pools, water or feed tanks, and pools of intermittent streams. Vernal pools and other temporary wetlands may be optimal for breeding due to the absence or reduced abundance of both native and non-native predators, many of which require more permanent water sources (U.S. Fish and Wildlife Service 2005).	Not expected. The nearest CNDDB occurrence of this species is approximately 7.25 miles northwest of the project area. The existing freshwater ephemeral and perennial ponds in and adjacent to the project area are dominated by invasive predatory species. Preferred habitat is in vernal pool areas void of predatory species.	seasonal wetlands, non-native annual and perennial grassland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Actinemys marmorata northwestern pond turtle	– / SSC / –	Western pond turtles inhabit both ephemeral and permanent aquatic habitats, including sloughs, streams, large rivers, human-made ponds (including flooded gravel pits), irrigation canals, small lakes, reservoirs, marshes, oxbow lakes formed from larger rivers and even sewage treatment ponds (Rosenberg et al. 2013; Germano 2010; Winchell et al. 2016). They prefer either stagnant or slow-moving waters. The microhabitats found within the main bodies of water that are suitable for western pond turtles include adequate woody debris for basking, pools, and ponds with muddy bottoms. Overwintering habitat includes forest, open grasslands, and shrubs. Ideal nesting habitat is in areas with minimal vegetation, usually consisting of grass and forbs. Nesting sites are usually in areas receiving lots of solar radiation, in the open with no tree canopy to shade the site (Rathbun et al. 2002). Prefers compact soil composed of clay or silt, sandy loam alluvial deposits, and sometimes gravel mixed with soil.	Present. Suitable habitat is present in and adjacent to the project area. Western pond turtles have been observed using the freshwater pond north of the of the eroded bank.	Aquatic Habitat - freshwater pond, freshwater emergent wetland Nesting/Overwintering – non-native annual and perennial grassland, valley oak woodland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Thamnophis gigas giant garter snake	T / T / –	Giant garter snakes are semi-aquatic and historically inhabit freshwater marshes, ponds, small lakes, low-gradient streams with silt substrates, and managed waterways. Giant garter snakes also spend a large part of their time in terrestrial habitats during their active and inactive seasons, usually seeking cover under vegetation and vegetative litter, or underground when in terrestrial habitat (Halstead et al. 2015). The most important components of habitat are a fresh-water aquatic component with protective emergent vegetative cover that will allow foraging, an upland component near the aquatic habitat that can be used for thermoregulation and for summer shelter in burrows, and an upland refugia component that will serve as winter hibernacula (Halstead et al 2010).	Not expected. Potential marginal habitat exists in the backwash area of the Merced River Robinson Reach and the freshwater pond north of the eroded bank. The irrigation canal near the north side of the project area doesn't provide suitable cover along its banks.	freshwater pond, managed waterway
Accipiter cooperii Cooper's hawk	– / WL / –	Typically inhabits dense stands of live oak, riparian deciduous, or other forest habitats near water. Often uses patchy woodlands and edges with snags for perching. Dense stands with moderate crown-depths used for nesting (California Department of Fish and Wildlife 2014). Usually nests in second-growth conifer stands, or in deciduous riparian areas, usually near streams.	Present. Suitable habitat exists throughout project area. Habitat in the project area occurs in distinct patches and provides plenty of edge habitat containing snags. This species was observed within the project area during an environmental site visit on March 23, 2021.	valley foothill riparian, valley oak woodland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Agelaius tricolor tricolored blackbird	– / T / –	Typically found near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	Possible. Suitable breeding and foraging habitat exist in the backwash area of the Merced River Robinson Reach and the freshwater pond north of the eroded bank, and the agriculture nearby.	freshwater pond, seasonal wetland, agriculture, non-native annual and perennial grassland
Aquila chrysaetos golden eagle	– / WL;FP / –	Habitat typically rolling foothills, mountain areas, sage-juniper flats, desert, and includes secluded cliffs with overhanging ledges and large trees used for cover. Rugged, open habitats with canyons and escarpments used most frequently for nesting (California Department of Fish and Wildlife 2014). Nests on cliffs of all heights and in large trees in open areas.	None. Suitable habitat is not present in the project area. The project area does not contain rugged open habitat with canyons and escarpments, or overhanging ledges.	None
Athene cunicularia burrowing owl	– / SSC / –	Burrowing owl habitat includes annual and perennial grasslands, deserts, and arid scrub lands characterized by low-growing vegetation. Burrows are the essential element of their habitat. Burrowing owls typically use burrows made by other animals, but may also use man-made structures such as culverts, cement, asphalt or wood debris piles, and openings beneath cement or asphalt pavement.	Not expected. Suitable habitat exists on the southern side of the project area which consists of annual grassland and sandy soils. During transect surveys no suitable burrows or evidence of burrowing owls were observed.	non-native annual and perennial grassland
Buteo regalis ferruginous hawk	– / WL / –	Requires large, open tracts of grasslands, sparse shrub, or desert habitats with elevated structures for nesting (CDFW 2014). Roosts in open areas, usually in a lone tree or utility pole, fence posts, rocky outcrops, and cliffs. Tolerant of heat; nest often unshaded. Frequently winters in the Central Valley, generally arrives in September to November and departs February to March (Watson et al 2018).	Possible. Suitable habitat exists throughout the project area. The Merced River floodplain in the project area provides open tracts of grassland that supports ferruginous hawk prey base (gophers, ground squirrels, cottontail rabbits).	non-native annual and perennial grassland, valley oak woodland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Buteo swainsonii Swainson's hawk	– / T / –	Swainson's Hawks prefer open native grassland, prairies, and shrub habitat throughout California. With conversion of native habitat to agriculture, cultivated lands became important breeding and foraging habitat for Swainson's hawk, particularly in the Great Valley ecological region. Strongly associated with edge habitat, particularly areas with alfalfa and large riparian trees such as cottonwood, which provide both foraging and nesting habitat (Battiston et al. 2019, Anderson et al. 2011).	Present. Swainson's hawks have been documented nesting and foraging in and adjacent to the project area. During protocol surveys in 2020, no Swainson's hawks were observed nesting within one-half mile of the project area.	non-native annual and perennial grassland, valley oak woodland, valley foothill riparian
Charadrius montanus mountain plover	– / SSC / –	This species requires short grassland areas with flat topography, open expanses with exceptional horizontal visibility (Smith and Keinath 2004). Unlike other plovers, mountain plover is not found near water, and will only inhabit areas with sparse vegetation or bare ground. Typically winters in Sacramento, San Joaquin, and Imperial Valleys of California. Native to short prairie and shrub-steep landscapes. Often found in agricultural areas under various stages of cultivation. Heavily grazed areas benefit this species nesting habitat requirements. Plovers will not occupy any landscape in winter where cover exceeds 20 centimeters (Wunder and Knopf 2003).	Not expected. Suitable habitat is present, mostly in the floodplain on the south side of the project area. No CNNDB occurrences of this species exist in or near the project area. Mountain plovers only winter in California, so they wouldn't be present during construction in the summer and fall. This species does not nest in California.	non-native annual and perennial grassland

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Chlidonias niger black tern	– / SSC / –	Black Terns nest semicolonially in favorable, protected areas of marshes (Dunn and Agro 1995, Shuford 1999). Preferred nesting habitat is in ephemeral, early successional habitats created by natural overflow of rivers and lakes or by flood irrigation of pasturelands (Shuford et al. 2001). Most black terns in Central California breed in flooding agricultural fields, including rice fields.	Possible. Suitable habitat exists throughout the project area, especially in the floodplain in wet years. In wet years the floodplain would provide suitable breeding habitat for this species. The agricultural fields adjacent to the project area exist on rolling hills and are not flood irrigated.	floodplain in wet years, freshwater pond, backwash area of MRSHEP-Robinson
Circus cyaneus northern harrier	– / SSC / –	Northern Harriers breed and forage in a variety of open (treeless) habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. In California, habitats include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands (including those with vernal pools), weed fields, ungrazed or lightly grazed pastures, some croplands (especially alfalfa, grain, sugar beets, tomatoes, and melons), sagebrush flats, and desert sinks (MacWhirter and Bildstein 1996).	Present. Northern harriers have been documented using habitat in and adjacent to the project area. The floodplain that the project area resides in provides ample foraging and nesting habitat for harriers. The adjacent agriculture also provides suitable foraging habitat.	non-native annual and perennial grassland, freshwater pond, river, and agriculture (alfalfa fields)

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Elanus leucurus white-tailed kite	– / FP / –	Typically found in undisturbed, open grassland, meadows, agricultural land, and emergent wetlands. In CCV, strongly associated with alfalfa fields (Pandolfino et al. 2011). Not usually found in urbanized areas or areas of extensive agriculture. Uses trees with dense canopy cover that are near foraging habitat for nesting. Inhabits herbaceous and open stages of most habitats mostly in cismontane California (California Department of Fish and Wildlife 2014).	Present. Suitable habitat exists throughout the project area. The project site contains large areas of Valley grassland intermixed with Valley riparian woodland habitats, including cottonwood, oak, and willow tree species. Agricultural land is within and adjacent to the project area.	non-native annual and perennial grassland, freshwater emergent wetland, freshwater pond, agriculture (alfalfa fields)
Falco columbarius merlin	– / WL / –	Frequents coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stages. Rarely found in heavily wooded areas, or open deserts. Ranges from annual grasslands to ponderosa pine and montane hardwood-conifer habitats. Uncommon winter migrant and does not breed in California. Frequents open habitats at low elevation near water and tree stands (California Department of Fish and Wildlife 2014).	Present. Suitable habitat exists throughout the project area and surrounding area. Uncommon winter migrant and does not breed in California. The nearest CNDDB record of this species is approximately 3.5 miles southeast of the project area. A merlin was observed within the project area on November 18, 2020.	non-native annual and perennial grassland, freshwater pond, Valley foothill riparian, Valley oak woodland
Haliaeetus leucocephalus bald eagle	– / E;FP / –	Requires large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches. Foraging areas typically occur in open areas with easily approachable hunting perches. Hunting perches are high in large, stoutly limbed trees, on snags or broken-topped trees, or on rocks near water. Often chooses largest tree in a stand on which to build stick platform nest (California Department of Fish and Wildlife 2014).	Present. Bald eagles have been recently documented in in and adjacent to the project area. The bald eagles in the area are typically observed over 0.5 mile northeast of the project area near a large freshwater pond. No active bald eagle nests are within 0.5 mile of the project area. The eagle's winter near the project area, so it is unlikely eagles will be present during the project.	freshwater ponds, Valley foothill riparian, river

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Icteria virens yellow-breasted chat	– / SSC / –	Occupy early successional riparian habitats with well-developed shrub layer and an open canopy. Requires riparian thickets of willow and other brushy tangles near watercourses for cover. Nesting habitat typically is confined to the narrow borders of stream, creeks, sloughs, and river and seldom forms extensive tracks. Often use taller trees, such as cottonwood for song perches (Dunn and Garrett 1997). This species presence is negatively correlated with livestock grazing.	Possible. The nearest CNNDB occurrence of this species is approximately 2.20 miles northeast of the project area. Suitable habitat is present throughout the project area, especially along the Merced River and the freshwater pond adjacent to the eroded bank. The Valley foothill riparian habitat in the project area is dominated by willow species and contains lots of Himalayan blackberry.	Valley foothill riparian
Pandion haliaetus osprey	– / WL / –	Requires large trees, snags, and dead-topped trees in open forest habitat near large bodies of water. Typically use large snags and open trees for cover and nesting. Nests are usually within 400 meters of fish-producing water (Airola and Shubert 1981). Nests on platform of sticks at the top of large snags, dead-topped trees, on cliffs, or man-made structures.	Present. Several ospreys and active nests have been identified near the project area. Suitable habitat exists in the Merced River and in the two freshwater ponds adjacent to the project area.	riverine, freshwater pond, Valley foothill riparian, Valley oak woodland,

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Vireo bellii pusillus Least Bell's vireo	E / E / CH	Occupies thickets of willow and other low shrubs that provide nesting and roosting cover. Nesting typically occurs in early seral to mid-seral stage riparian vegetation, which provides dense shrub cover for hiding the nest and foraging within the structurally diverse canopy (Howell et al. 2010). Typically found near water, but also inhabits thickets along dry, intermittent streams. Usually associated with willow, cottonwood, baccharis, wild blackberry, or mesquite in desert localities.	Not expected. The Least Bell's Vireo was once common in the CV before 90 percent of the riparian habitat was removed. Prior to the observations of breeding and nesting in 2005 at the San Joaquin River Wildlife Refuge, no nesting pairs had been documented in the CV in over 50 years (Kreitinger and Wood 2005). Critical Habitat for this species does not exist in or near the project area. The remaining Critical Habitat in California occurs in small patches and is in the southwest portion of the state. The most recent CNDDB record near the project area was in 1915 and is approximately 2.50 miles from the project area. No Least Bell's Vireo were detected during the 2004 Yosemite Transect Resurvey. Suitable habitat exists along the Merced River banks, but it is unlikely this species will be encountered.	valley foothill riparian

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Antrozous pallidus –pallid bat	/ SSC / –	Found in a wide variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. This species is most common in open, dry habitats with rocky areas for roosting. near water. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Roost must protect bats from high temperatures. Bats move deeper into cover if temperatures rise. Night roosts may be in more open sites, such as porches and open buildings. Few hibernation sites are known, but probably uses rock crevices (California Department of Fish and Wildlife 2014).	Possible. This species has been documented using the SR 59 bridge as maternity roosting habitat in the early 2000's. The bridge now has synthetic foam material that blocks the cracks and crevices of the bridge, so bat use is not likely in the bridge. Suitable habitat exists primarily on the outer edges of the project area in the Valley oak woodland areas. The Valley foothill riparian area does not contain many large trees with suitable bat roosting habitat. The project area does provide many acres of suitable bat foraging habitat, especially along the river.	SR 59 bridge, Valley oak woodland, Valley foothill riparian, river, freshwater pond
Corynorhinus townsendii Townsend's big-eared bat	– / SSC / –	Cave dwelling bat species that is sometimes found in buildings and is often associated with desert scrub and pinyon-juniper habitats. Prefers mesic habitat and gleans from brush or trees or along habitat edges. Favor habitat near riparian vegetation and tend to avoid open grassland.	Not expected. There have been no recent observations of this species in or near the project area. No suitable roosting habitat for this species is present in or near the project area. Suitable foraging habitat exists throughout the project area, especially along the river.	Valley foothill riparian – foraging habitat None – roosting habitat

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Eumops perotis californicus western mastiff bat	– / SSC / –	Typically roosts in crevices of cliff faces, cracks in boulders, and occasionally buildings. Most often found foraging over desert washes, grasslands, or meadows, but will also feed above the forest canopy.	Possible. This species has been documented using the project area during surveys conducted in early the 2000's. No suitable roosting habitat is present in or near the project area, but Valley foothill riparian habitat along the river provides suitable foraging habitat.	Valley foothill riparian – foraging habitat None – roosting habitat
Lasiurus blossevillii Western red bat	– / SSC / –	Typically roosts in forests and woodlands between sea level and mixed coniferous forests. Preferred roost sites are in edge habitat adjacent to streams, fields, or urban areas. Western red bat is most associated with riparian habitat consisting of cottonwood and willow species.	Possible. This species has been documented using the project area during surveys in the early 2000's. The Valley foothill riparian (willow and cottonwood) and Valley oak woodland habitats in the project area provide significant roosting and foraging habitat for reproductive female bats in the summer.	Valley foothill riparian – roosting and foraging habitat

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Sylvilagus bachmani riparius riparian brush rabbit	E / E / –	Habitat for the riparian brush rabbit consists of riparian communities dominated by willow thickets (*Salix* spp.), California wild rose (*Rosa californica*), Pacific blackberry (*Rubus vitifolius*), wild grape (*Vitis californica*), Douglas' coyote bush (*Baccharis douglasii*) and various grasses (USFWS 2007).	Not expected. Suitable habitat for this species exists along the Merced River corridor, especially in areas with dense blackberry understory. The only known native populations of this species are at Caswell National Memorial State Park on the Stanislaus River and along an overflow channel of the San Joaquin River (U.S. Fish and Wildlife Service 2007). This species is unlikely to be in or near the project area. Surveys in the early 2000's did not detect the presence of this species within the project area.	Valley foothill riparian dominated by *Salix* spp. In the understory and significant ground cover includes Himalayan blackberry.
Taxidea taxus American badger	– / SSC / –	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils. Most often associated with open grasslands but can be found in mountains and desert regions. Badgers dig burrows in friable soil for cover.	Possible. Suitable habitat is present in and near the project area. The nearest CNNDB occurrence of this species is approximately nine miles northwest of the project area. Based on recent surveys no suitable burrows or signs of this species have been recorded in or near the project area.	Non-native annual and perennial grasslands

Species	Fed/State/CH	General Habitat	Potential to Occur in the Project Area	Type of Suitable Habitat within the Project Area
Vulpes macrotis mutica San Joaquin kit fox	E / T / RA	Historically, preferred semi-arid regions of Central Valley California and associated foothills. Because of agricultural and urban development kit fox are now primarily found in grassland and scrub habitats in the southern San Joaquin Valley. In the central portion of the CCV, the kit fox is associated with Valley Sink Scrub, Interior Coast Range Saltbush Scrub, Upper Sonoran Subshrub Scrub, Annual Grassland and the remaining native grasslands. Agriculture dominates this region where kit foxes mostly inhabit grazed, nonirrigated grasslands, but also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (Endangered Species Recovery Program 2006).	Not expected. Suitable habitat for kit fox is not present in the project area. The nearest and most recent CNDDB occurrence of this species was approximately 8.85 miles from the project area and was recorded in 1999. The kit fox habitat that remains in eastern Merced County is marginal and is highly fragmented (Cyper et al. 2013). Based on recent surveys no suitable burrows or signs of this species have been recorded in or near the project area.	Non-native annual and perennial grassland, agriculture

Legal Status Definitions:
E – Species listed as Endangered under the Federal or California Endangered Species Acts
T – Species listed as Threatened under the Federal or California Endangered Species Acts
C – Candidate Species for listing under the Federal or California Endangered Species Acts
FP = Fully protected under California Endangered Species Act
SSC – Species of Special Concern under the California Endangered Species Act
WL Species that were previously designated as "Species of Special Concern" but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.
– No listing under the Federal or California Endangered Species Act, and no Critical Habitat or Recovery Areas.
CH – Critical Habitat
RA - Recovery Area
Sources: California Department of Fish and Wildlife 2019, U.S. Fish and Wildlife Service 2020, California Department of Water Resources 2020

3.4.2 Discussion

a) Less-than-significant With Mitigation Incorporated

Biological Resources

The proposed project could substantially adversely affect several special-status plant and wildlife species that potentially occur in the project area. Project activities, including vegetation removal, temporary channel construction, river channel excavation, floodplain erosion repair, collector ditch construction, and gravel augmentation all could have potential adverse effects on special-status wildlife species. These potential adverse effects and mitigation measures to reduce these adverse effects to less-than-significant are discussed in the following sections.

Adverse effects on special-status plant and wildlife species could result from accidental spill or leakage of toxic substances (fuel, oil and lubricants, solvents, and detergents) in the Merced River, riparian habitat, and the associated floodplain. Refueling, operation, and maintenance of the construction equipment and materials could result in accidental release of these pollutants. This potential contamination within plant and wildlife habitat could result in a significant impact. However, implementation of Mitigation Measure HAZ-1 would reduce this potential impact to less-than-significant.

Adverse effects could also result from ground-disturbing activities, vehicle strikes, disturbance from noise, dust, vibration, or through the alteration or loss of habitat. These adverse effects on special-status plant and wildlife species would be potentially significant. Implementation of the worker's environmental awareness training and general plant and wildlife protection measures included in the Mitigation Measure BIO-1 would reduce these potential impacts on all plant and wildlife species that might be present in the project area to less-than-significant.

Mitigation Measure BIO-1: **Avoid or Minimize Impacts to Biological Resources.**

- Prior to the start of construction activities, all construction personnel will participate in mandatory worker environmental awareness training conducted by a qualified biologist. Construction personnel shall be informed about the identification, potential presence, life history, habitat requirements, legal protections, avoidance and minimization measures, and applicable mitigation measures for all special-status species identified in this document as having potential to be adversely affected by this project. Construction personnel will also be informed of the procedures to follow should a special-status species be encountered within the project area during construction.

DWR will implement general plant and wildlife protection measures during construction that will include, but may not be limited to, the following:

- All work would take place within one-half hour of both sunrise and sunset each day. These work times may be extended into the evening or weekend during key points of the construction phase, as needed.

- Clearly delineate the project area limits by using fencing, flagging, or other means prior to the start of construction activities.

- Avoid wildlife entrapment by completely covering, or providing escape ramps for, all excavated steep-walled holes or trenched more than two feet deep at the end of each workday.

- Inspect the work area and any equipment or material left on-site overnight for special-status wildlife species prior to the start of construction activities each day.

- Observe posted speed limit signs on local roads and observe a 15-mph speed limit along existing and temporary access routes.

- Dispose of food-related garbage in wildlife-proof containers and remove the garbage from the construction area daily during construction activities.

- Retain a qualified biological monitor to be present or on call during construction activities with the potential to affect sensitive biological resources. The biological monitor will be on-site during initial ground-disturbing activities, dewatering, in-water work, and vegetation removal. The biological monitor will ensure that any construction or exclusion fencing is maintained. The biological monitor shall have the authority to stop work if a special-status wildlife species is encountered within the project area during construction, and the appropriate regulatory agencies shall be notified. Construction activities shall cease until it is determined that the species will not be harmed or that it has left the construction area on its own.

Special-status Fish Species, Critical Habitat, and Essential Fish Habitat

Less-than-significant Impact with Mitigation Incorporated. The proposed project could substantially adversely affect several special-status anadromous and riverine fish species if present during construction activities. Anadromous species include the federally-listed CCV steelhead and State species of special concern CV fall-run Chinook salmon, Pacific lamprey, river lamprey, and Kern brook lamprey. Riverine species include State species of special concern Central California roach, hardhead, and riffle sculpin. The proposed project could also substantially adversely affect CH for CCV steelhead and EFH for CV fall-run Chinook salmon. Substantial adverse effects to special-status fish species, CH for CCV steelhead, and EFH for CV fall-run Chinook salmon and the mitigation measures to reduce these effects to less-than-significant are discussed below.

Water Quality Effects

Heavy equipment (i.e., loader, dozer, excavator, scraper, and dump trucks) will be operated within the dewatered channel, wetted channel, and floodplain to complete the project as designed. The use of heavy equipment to complete the project construction activities could potentially introduce hazardous materials into waters that support special-status and native fish species. Hazardous materials would primarily include petroleum-based fuels and lubricants for the operation of heavy equipment. Without rapid containment and cleanup, these hazardous materials can kill fish and other aquatic organisms.

To prevent or minimize the effects caused by the introduction of hazardous materials, Mitigation Measures HAZ-1a would be implemented, which includes preparing and implementing a Spill Prevention and Response Plan. Mitigation Measures BIO-1 and BIO-2 would also be implemented to minimize or avoid substantial impacts caused by introduction of hazardous materials.

Construction activities include excavating and transporting sediment from the river channel, riverbank, and floodplain; and will introduce sediment into receiving waters that support special-status fish species. Introducing high concentrations of suspended sediment into the Merced River could have substantial adverse effects on special-status fish species including salmonids, if they are present (Sigler et al. 1984; Servizi and Martens 1992; Newcombe and

Jensen 1996). Increased hydrologic turbidity and suspended sediments may affect salmonids and other special-status fish species by altering their physiology, behavior, and habitat, all of which may lead to physiological stress and reduced survival rates (Bash et al. 2001).

Hydrologic turbidity will be temporarily increased during the construction activities of the temporary channel, channel excavation, floodplain erosion repair, collector ditch, and gravel augmentation. The temporary channel is being implemented to reduce impacts to water quality by dewatering the main channel within the footprints of the channel excavation, eroded bank, and floodplain erosion repair. Increases in suspended sediments within the main channel are expected when constructing the upstream and downstream plugs of the temporary channel and during the initial water flows through the temporary channel. Suspended sediment increases are also expected when removing the temporary channel and restoring flows within the main channel where the channel excavation, eroded bank, and floodplain erosion repairs occurred. The placing of spawning sized gravel within the river at the gravel augmentation sites will also temporarily increase suspended sediments within the river.

Turbidity and suspended sediment levels are not expected to reach levels associated with direct injury or fish mortality; however, they may cause behavioral changes in fish, such as interruption of feeding, seeking refuge, or temporarily migrating away from the construction area until turbidity and suspended sediment levels decrease. These behavioral changes would be temporary, resulting in less-than-significant effects on affected species. Temporary impacts from increased sedimentation are not expected to impact sensitive eggs or alevin, but rather young fish and adults, which are less sensitive to these impacts. Turbidity and sedimentation are expected to be reduced or returned to normal with completion of this restoration project.

Instream construction activities would occur in summer months outside spawning periods for special-status fish species and during low-flow conditions (July 1–September 30).

Implementation of Mitigation Measure GEO, which includes preparing and implementing an SWPPP to prevent or minimize the introduction of contaminants into surface waters and Mitigation Measures BIO-1, BIO-2, and HYDRO would reduce these substantial adverse effects to less-than-significant.

The transport or introduction of non-native aquatic species is another potential impact that could result from the project construction activities. According to the USGS Nonindigenous Aquatic Species viewer, four records of New Zealand mudsnail (*Potamopyrgus antipodarum*) have been documented within the Merced River and one was immediately within the project area. New Zealand mudsnails easily attach to boots, waders, watercraft, aquatic vegetation, equipment, and can go easily unnoticed due to their very small size. High density mudsnail populations can have substantial negative impacts on fisheries by outcompeting and replacing preferred macroinvertebrate prey species of predatory special-status fish species (Hall et al. 2006). The use of construction equipment within the dewatered and wetted channel of the Merced River has the potential to spread New Zealand mudsnails to other areas within and outside the project area. To prevent the spread of New Zealand mudsnails and other invasive aquatic organisms Mitigation Measure BIO-1, and BIO-2 will be implemented to reduce this potentially significant impact to less-than-significant.

Noise Effects

During project construction, heavy equipment is expected to create visual, noise, vibration, and water surface disturbances that could substantially adversely affect special-status fish species. Noise and water surface disturbances could also result from adding sediment to the main channel of the Merced River to construct the temporary channel upstream and downstream plugs and gravel augmentation. Increased underwater noise could adversely affect special-status fish species by causing behavioral changes, injury in the form of tissue damage of both auditory and non-auditory tissues, and direct mortality (Popper and Hastings 2009). The temporary channel upstream and downstream plugs would be constructed from locally sourced earthen materials or non-erodible material, such as sheet piles, or geotextile fabric. The loudest noise generated by instream construction activities could be the installation of sheet piles if used to construct the downstream and upstream plugs of the temporary channel. If sheet piles are not used to construct the plugs, excessive underwater noise would not be expected. Noise from construction activities will be limited to daylight hours (sunrise to sunset) when juvenile salmonids are not as active (Chapman et al. 2013; Dauble et al. 1989; Gaines and Martin 2001). During non-work and low-light hours, fish could migrate upstream or downstream through the temporary channel. The eroded bank, channel excavation, and floodplain erosion repair construction activities will be completed while the main channel is inactive and dewatered, so underwater noise impacts to fish would be minimal. Implementation of Mitigation Measures-BIO-1, BIO-2, and NOI would reduce impacts to special-status fish to less-than-significant.

Instream Construction Effects

Instream construction activities, including the operation of heavy equipment to complete the construction of the temporary channel upstream and downstream plugs, floodplain erosion repairs, collector ditch, and gravel augmentation could cause the temporary displacement of fish and other aquatic organisms from preferred habitat. Instream construction activities will occur July 1 through September 30 to avoid spawning seasons of special-status fish species and when juvenile fall-run Chinook salmon are at their lowest abundance, so impacts would be significantly less. Direct mortality of fish and other aquatic organisms could result from the operation of heavy equipment within the dewatered and wetted channel of the Merced River.

Instream construction activities of the eroded bank, channel excavation, and floodplain erosion repair will occur while the main river channel is dewatered. Most of the construction activities for the floodplain erosion repair will occur within floodplain and not along the bank or within the main channel of the river. Dewatering the river channel will increase the risk of fish being stranded within small pools of remaining water within the dewatered channel. Stranding of fish can result in mortality by suffocation, desiccation, or physical injury during dewatering or fish rescue efforts. Dewatering is expected to be done at a slow rate to reduce the risk of fish or other aquatic organisms from being stranded. A fish rescue and dewatering plan would be developed and implemented in coordination with NMFS and CDFW.

Adequate fish passage would be maintained within the project area through the temporary channel. Fish could migrate to suitable habitat upstream or downstream of the project area through the temporary channel. Migration through the temporary channel could increase the chance of predation of fish because of the lack of cover within the temporary channel. Mitigation Measures BIO-1 and BIO-2 would reduce these potential significant impacts caused by instream construction activities to less-than-significant.

Habitat Modification Effects

Implementation of the temporary channel to dewater approximately 3200 feet of the Merced River could temporarily alter or displace habitat for special-status and native fish species, including EFH for CV fall-run Chinook salmon and CH for CCV steelhead. Construction activities of the proposed project could result in temporary impacts to these habitats by impairing water quality and removing mature riparian vegetation that provides shade to special-status fish species habitat. The riparian vegetation being removed is dominated by non-native London plane tree. These non-native tree species would be replaced with native species such as (western sycamore, box elder, Oregon ash, Fremont cottonwood, Black cottonwood, willow spp.).

Instream construction activities are expected to result in permanent habitat modifications that will enhance CCV steelhead CH biological features and CV fall-run Chinook salmon EFH habitat areas of particular concern. Freshwater spawning and rearing habitat, and migration corridors for special-status fish species, would be temporarily displaced during the construction activities of the temporary channel, channel excavation, eroded bank, and gravel augmentation construction activities. The temporary channel would provide fish passage to suitable habitat upstream and downstream of the dewatered portion of the Merced River. To avoid and minimize substantial adverse effects to juvenile CV fall-run Chinook salmon and other special-status fish species, the instream construction activities would occur July 1 through September 30, outside the spawning seasons of the potential special-status fish species.

Temporary impacts to CCV steelhead CH and CV fall-run Chinook salmon EFH would be minimal compared to the expected long-term beneficial effects that these habitat modifications will provide. Stabilizing the eroded bank is expected to prevent future high-flow events from further eroding the bank and depositing excessive amounts of fine sediment within the Robinson Reach of the Merced River, which could degrade the CH and EFH habitat for special-status anadromous and riverine fish species. Completion of the channel excavation and floodplain components of the project will improve channel and floodplain connectivity and improve migratory fish passage in the Merced River. Channel excavation and the gravel augmentation activities would temporarily displace habitat for special-status fish species but is expected to provide higher quality and quantity of spawning and rearing habitat in both the near and long term. The terrace created on the right bank point bar would become an upstream sediment source to be mobilized to restore spawning beds downstream with the river's rise and fall. A biological assessment has been prepared to address potential impacts to EFH and designated critical habitat, and ESA and Magnuson-Stevens Fishery Conservation and Management Act consultation will occur with NMFS. Implementation of Mitigation Measures BIO-1, BIO-2, BIO-8, BIO-9, BIO-10, GEO, HAZ-1a, HYDRO would reduce the impacts caused by habitat modifications to less-than-significant.

Mitigation Measure BIO-2: Avoid or Minimize Impacts to Special-status Fish Species, Critical Habitat, and Essential Fish Habitat.

- Instream work will occur no earlier than July 1 and no later than September 30, to avoid impacts to spawning CCV steelhead, CV fall-run Chinook salmon, Pacific lamprey, river lamprey, Kern brook lamprey, Central California roach, hardhead, and

riffle sculpin. DWR will complete all in-channel construction activities during low-flow conditions, typically July 1 through September 30.

- The alluvial material used for gravel augmentation will include spawning-sized gravels sourced from the Merced River channel. Cobble used in the construction of the eroding bank will be sourced from the Merced River Ranch, which is locally sourced from the Merced River floodplain.

- The alluvial material used for gravel augmentation will include spawning sized gravels sourced from the Merced River channel.

- Impacts to habitat conditions (i.e., decrease in floodplain connectivity, removal of riparian vegetation, decrease in the quality of rearing habitat, etc.) will be analyzed in consultation with NMFS as part of the biological assessment to be prepared pursuant to Section 7 of the ESA, due to the potential to impact anadromous salmonids.

- Riparian vegetation disturbance will be avoided or minimized to the extent feasible. Riparian vegetation would be replanted in consultation with CDFW, resource agencies, and permit requirements.

- To prevent or minimize the potential for fish mortality during the dewatering of the channel excavation portion of the Merced River, a fish rescue and dewatering plan will be developed in consultation with NMFS, USFWS, and CDFW. The fish rescue and dewatering plan will include dewatering rates methods for capturing, handling, and relocating special-status fish species. A qualified biologist will be on-site during all dewatering activities.

- Heavy equipment will utilize vegetable-based fluids and lubricants during construction activities both within the dewatered and wetted channel.

- To prevent the spread of New Zealand mudsnails construction, specifications shall include construction equipment to be stream cleaned immediately following construction activities of the project and before being used in other water bodies.

Special-status Plant Species

Less-than-significant Impact with Mitigation Incorporated. The non-native annual grassland within the floodplain and adjacent upland, and the riparian habitat have low to moderate potential of supporting special-status plant species (Table 7). None of these species were observed in the area during the MRSHEP-Robinson and it is unlikely they are in the project area. Adverse effects to special-status plant species could occur as a result of ground-disturbing activities, dust generation, accidental leaks or spills of fuel or oil, or the accidental introduction of invasive plant species. These construction-related effects on special-status plant species would be potentially significant. Substantial adverse effects to special-status plant species and the mitigation measures to reduce the effects to less-than-significant are discussed below.

Construction activities in floodplain and riparian habitat could potentially adversely affect special-status plant species by loss of individual plants and their associated habitat. The adverse impacts to special-status plant species will be less-than-significant with implementation of Mitigation Measures BIO-1 and BIO-3.

The proposed project area was surveyed for special-status plant species in March, April, May, and June 2020, following the most recent USFWS, CDFW, and CNPS botanical survey guidelines. Surveys were conducted to determine the environmental effects the proposed project would have on all botanical resources, including special-status plants (rare, threatened, and endangered plants) and plant (vegetation) communities. Surveys occurred at the proper times of year when special-status and locally significant plants were both evident and identifiable. Additional surveys were going to take place in July, August, and September until summer water releases from the upstream dam inundated the entire project area. No special-status plant species have been observed in the project area to date and additional botanical surveys will be completed prior to construction.

Mitigation Measure BIO-3: Avoid or Minimize Impacts to Special-status and Rare Plants.

- Preconstruction surveys will be completed for special-status and rare plant species. If any special-status plant species are observed during pre-construction botanical surveys, they will be flagged and avoided to the extent manageable. Locations of special-status plant populations will be clearly identified in the field by staking, flagging, or fencing a no-disturbance buffer around them before the commencement of activities that may cause disturbance. No activity shall occur within the buffer area, and worker awareness training and biological monitoring will be conducted to ensure that avoidance measures are being implemented. If avoidance is not manageable, additional mitigation measures shall be approved by the appropriate regulatory agencies before the project can proceed.

- USFWS and/or CDFW will be consulted to determine appropriate compensation measures for the loss of special-status plants, as appropriate.

- Appropriate mitigation measures may include the creation of off-site populations through seed collection or transplanting, preservation and enhancement of existing populations, restoration or creation of suitable habitat, or the purchase of credits at an approved mitigation bank. If off-site compensation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan. The plan will include information on responsible parties for long-term management, holders of conservations easements, long-term management requirements, and other details, as appropriate, for the preservation of long-term viable populations.

<u>Valley Elderberry Longhorn Beetle (VELB)</u>

The presence of VELB within the project area is still unknown after 15 years of monitoring elderberry mitigation plantings as requirements of the USFWS Biological Opinion 1-1-01-F-0024 for the Merced River Salmon Habitat Enhancement Project Robinson Reach. Potential habitat exists within the project area but should not be altered or disturbed during project

activities. Elderberry shrubs occur along the existing and new temporary access routes that would be used for construction access and occur in low numbers near some of the project elements. Project-related adverse effects to VELB and mitigation measures to reduce effects to less-than-significant are discussed below.

Construction activities could increase dust levels and potentially cause significant effects to elderberry shrubs and VELB. Heavy equipment used for construction activities could cause noise and vibration disturbance to nearby VELB. The activities of this project could result in injury or morality of individual VELB. By implementing Mitigation Measures AQ, BIO-1, BIO-3, and BIO-4 these potentially significant impacts to VELB would be reduced to less-than-significant.

Mitigation Measure BIO-4: **Avoid or Minimize Impacts to VELB.**

- Temporary dirt access roads and disturbed areas within 100 feet of elderberry shrubs will be watered, as needed, to minimize dust emissions.

- Prior to conducting all project-related activities, a qualified biologist will identify any elderberry shrubs within and near the footprint, and a no-disturbance buffer shall be established. The qualified biologist will survey potentially affected shrubs for VELB exit holes in stems greater than 1 inch in diameter.

- If elderberry shrubs with stems greater than 1 inch in diameter are removed during construction activities, mitigation or compensation for these shrubs will be determined in consultation with USFWS, CDFW, and regulatory agencies.

- If elderberry shrubs are found on or adjacent to the site, a 20-foot wide avoidance buffer (measured from the dripline of the plant) will be established around all elderberry shrubs with stems greater than 1-inch diameter at ground level and will be clearly identified in the field by staking, flagging, or fencing. No construction activities involving mechanized equipment will occur within the buffer areas. Human access may be permitted in the buffer if it does not cause disturbance to the shrubs. Elderberry shrubs cannot be used as an anchor for any in-channel project equipment. Project workers shall receive training before installing any such equipment to identify and avoid elderberry shrubs.

<u>Western Pond Turtle (WPT)</u>

WPTs and potential aquatic and upland habitats are within and adjacent to the project area. Observations of WPT have been recorded in the CNDDB and during 2020 biological surveys. The population of WPT in the project area is unknown but is expected to be in low numbers and confined to the freshwater pond immediately north of the eroded bank element of the project. Suitable upland habitat for nesting is present in the areas proposed for Staging Area 1 and Stockpile Area 1. The proposed project could result in substantial adverse effects to WPT and their associated habitat, and these effects could be potentially significant.

Construction activities could alter or modify nearby aquatic and upland nesting habitat of WPT and could result in mortality of individual WPT. By implementing Mitigation Measures BIO-1 and BIO-5, substantial adverse effects to WPT would be reduced to less-than-significant.

Mitigation Measures BIO-5: **Avoid or Minimize Impacts to WPT.**

- Pre-construction surveys for WPT shall be conducted by a qualified biologist 14 days before and 24 hours before the start of ground-disturbing activities where suitable habitat exists (e.g., along riparian areas and freshwater emergent wetlands).

- If WPT or their nests are observed during pre-construction surveys, a qualified biologist shall be on-site to monitor construction in suitable WPT habitat. WPT found within the construction area will be allowed to leave on its own volition, or it will be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat immediately downstream from the project site.

- If WPT nests are identified in the work area during pre-construction surveys, a 300-foot no-disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a qualified biologist.

Special-status and Common Bird Species

Special-status bird species such as Swainson's hawk, bald eagle, white-tailed kite, merlin, osprey, and northern harrier are present in the project area. Historically, Swainson's hawk and ospreys have nested north of the project area in large cottonwoods and artificial platform nests. During protocol-level Swainson's hawk surveys conducted in 2020, three osprey nests, seven red-tailed hawk, and one great horned owl nests were identified. Swainson's hawk, white-tailed kites, and bald eagles were observed, but no nests of these species were observed within 0.5 mile of the project area. Special-status birds species identified in Table 3.4.1 as having low potential to occur, including golden eagle, mountain plover, burrowing owl, and Least Bell's vireo, will not be impacted. In addition to special-status bird species, many common bird species protected under the Migratory Bird Treaty Act are present and have the potential to nest in the proposed project area. Potential impacts to special-status and common bird species and mitigation measures for avoiding or minimizing those impacts to less-than-significant are discussed below.

Project activities are occurring during nesting season (February 1–September 1) and could result in substantial adverse effects to special-status and common bird species by disturbing nesting behaviors caused by construction noise and traffic. Disturbing nests could cause adult nest abandonment, eggs or young to be crushed, and/or reproductive failure. Project activities, including the removal of vegetation, could remove suitable or potential nest trees for bird species. The use of heavy equipment during construction activities and the removal of vegetation could result in injury or mortality of individual birds. Project activities could also temporarily displace suitable foraging habitat for all bird species potentially in the project area. Implementation of the Mitigation Measures BIO-1 and BIO-6 would reduce these substantial adverse effects to special-status and common bird species to less-than-significant.

Mitigation Measure BIO-6: Avoid or Minimize Impacts to Nesting Birds.

- Since project activities will be completed during nesting season (February 1–September 1), surveys using the Swainson's Hawk Technical Advisory Committee 2000 guidelines (Swainson's Hawk Technical Advisory Committee 2000), or current guidance, will be completed during the nesting season to identify any active nests within 0.5 mile of the project area. If nests within 0.5 mile are identified as Swainson's hawk, bald eagle, or white-tailed kite, an Incidental Take Permit will be obtained as required for permits.

- If removal of riparian vegetation and trimming or removal of trees during nesting season (February 1–September 1) cannot be fully avoided, a qualified biologist will conduct preconstruction surveys within two weeks of the initiation of project activities or following any construction breaks of two weeks or more.

- If nesting Swainson's hawk, bald eagle, or white-tailed kites do not occur within 0.5 mile, and nesting birds and raptors do not occur within 250 feet and 500 feet of proposed project area, respectively, no further action is required if construction begins within two weeks.

- If active nests are identified during preconstruction surveys, qualified biologists will determine if the project construction activities could result in substantial adverse effects to the nesting bird species. The following minimization and avoidance measures may be implemented based on the qualified biologist determinations and regulatory agency consultations.

- If project construction activities are determined to not result in substantial adverse effects to active nests, activities may occur without restriction; however, a qualified biologist will monitor the nest regularly to ensure no substantial adverse effects are occurring. If a qualified biologist observes changes in courtship, mating, feeding, and rearing behaviors as a result of project construction activities, no-disturbance and avoidance buffers will be implemented in consultation with USFWS and CDFW and until the qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

- Factors to be considered for determining buffer size will include the following: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. If any of these no-disturbance buffers are not feasible during project activities, DWR will consult with regulatory agencies to determine appropriate compensation measures for impacts.

- If potential Swainson's hawk, bald eagle, and white-tailed kite nest trees are removed during construction activities, DWR will develop a plan to replace known nest trees in consultation with USFWS and CDFW.

<u>Special-status Mammals</u>

The following special-status mammal species are known or have the potential to occur in the project area: pallid bat, Western red bat, Western mastiff bat, big brown bat (*Eptesicus fuscus*), Hoary bat (*Lasiurus cinereus*), Western pipistrel (*Pipistrellus Hesperus*), Mexican free-tail bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), Yuma myotis (*Myotis yumanensis*), and American badger. Pallid bats and Yuma myotis have used the SR 59 bridge as a summer maternity roost, and the adjacent Merced River riparian corridor served as summer foraging habitat (Pierson 2000). However, since the interstitial spaces of the SR 59 bridge have been blocked with synthetic foam, it no longer provides suitable summer roosting habitat for pallid or Western mastiff bats. The riparian mixed woodland habitat downstream of the project elements may provide roosting and foraging habitat for reproductive female Western red bats during summer. Several bat houses and large cottonwood trees along the north access route near the walnut orchard provide suitable summer bat roosting habitat.

Project construction activities have the potential to impact roosting bats and denning badgers by extra noise and vibration from heavy equipment. The removal of trees and riparian vegetation could result in the loss of bat-roosting habitat. Project activities, including vegetation removal, could result in the direct loss of active bat maternity roosts. Vegetation removal, sediment removal, and stockpiling could result in loss of potential badger denning habitat. Construction activities could potentially result in mortality or injury of individual bats or badgers that may be displaced or disturbed from their roosting or denning habitat. Implementation of the Mitigation Measures BIO-1 and BIO-7 would reduce these substantial adverse effects to special-status and common bird species to less-than-significant.

Mitigation Measure BIO-7: **Avoid or Minimize Impacts to Special-status Mammals.**

- If suitable roosting habitat for special-status bats will be affected by project construction (e.g., removal of buildings and modification of bridges), surveys for roosting bats on the project site will be conducted by a qualified biologist. The type of survey will depend on the condition of the potential roosting habitat and may include visual surveys or use of acoustic detectors. Visual surveys may consist of a daytime pedestrian survey for evidence of bat use (e.g., guano) and/or an evening emergence survey for the presence or absence of bats. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required.

- If an active roost is present, a 100-foot, no-disturbance buffer will be implemented when feasible. DWR will consult CDFW to determine if smaller buffers would be sufficient to avoid potential adverse effects to roosting bat colonies.
- If roosts are determined to be present and must be removed, the bats would be excluded from the roosting site before the tree is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures would be developed in consultation with CDFW before implementation. Exclusion methods may include the use of one-way doors at roost entrances (bats may leave, but not reenter) or sealing roost entrances when a site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).

- The loss of each roost would be replaced, in consultation with CDFW, and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site. Roost replacement would be implemented before bats are excluded from the original roost sites. Once the replacement roosts are constructed, and it is confirmed that bats are not present in the original roost sites, the roosts may be removed.

- No less than two weeks and no more than 30 days before the beginning of ground disturbance and/or construction activities, DWR would conduct a survey to determine if American badger den sites are present at the site. If active dens are within 50 feet of the project work area, DWR would implement a 50-foot, no-disturbance buffer where feasible. DWR would consult with CDFW if the buffer cannot be maintained.

b) Less-than-significant Impact with Mitigation Incorporated

Riparian Habitat and Other Sensitive Natural Communities

Construction activities could temporarily or permanently impact approximately 20.48 acres of riparian habitat along the Merced River and associated floodplain. The 20.48 acres include the footprints of all project elements except for the existing stockpile, which is not considered riparian habitat. Potential impacts and mitigation measures for jurisdictional waters and wetlands are discussed separately in item (**c**) below. Temporary impacts to 13.70 acres of riparian habitat would be expected from the activities of the temporary channel, stockpile, and staging areas. The stockpile and staging areas would temporarily displace 6.83 acres of riparian habitat consisting of 3.93 acres of non-native annual and perennial grassland and 2.90 acres of barren habitat within the adjacent floodplain. The temporary channel footprint is approximately 4.80 acres and construction activities would temporarily displace or remove 0.04 acres of Valley oak woodland, 0.06 acres of riparian mixed scrub, 0.33 acres of riparian mixed woodland, 3.74 acres of non-native annual and perennial grassland, 0.60 acres of riverine, and 0.04 acres of barren habitats. Temporary impacts to 5.62 acres of the 7.01 acres of riverine habitat would result in dewatering the main river channel with implementation of the temporary channel (Table 4). An overlap of 0.36 acres would occur between the temporary channel and the permanent project elements of the floodplain erosion, channel excavation, and eroding bank.

Permanent impacts to 7.14 acres of riparian habitat would be expected from activities of the eroded bank, upper channel and floodplain, and gravel augmentation, including the removal of mature trees and shrubs. A majority of the permanent impacts would be within the channel and along the bank of the Merced River. The quality of riparian habitat on the project site is relatively low, due to disturbance from past mining activities and extensive distribution of non-native species, some of which are highly invasive. However, because riparian vegetation has been reduced to a fraction of its former extent along the Merced River, the remaining patches provide important habitat for wildlife populations that persist along the river. These riparian habitats will be replanted according to the revegetation plan for the project. While riparian habitats will be temporarily or permanently impacted during construction activities, the project is designed to restore and enhance anadromous salmonid habitat and will have a long-term beneficial impact to the riparian habitat. To avoid or minimize substantial adverse effects to the loss of riparian habitat Mitigation Measures BIO-1, BIO-2, and BIO-8 will be implemented.

Mitigation Measure BIO-8: **Avoid or Minimize Impacts to Riparian Habitat and Other Sensitive Natural Communities.**

- DWR conducted several project biological impact assessment surveys to identify areas that would be least impacted by project activities. Project element designs are being altered to minimize impacts to riparian habitat and other sensitive natural communities.

- DWR will develop and implement a revegetation and monitoring plan in coordination with CDFW, USFWS, and NMFS.

Potential to Spread or Distribute Invasive Plant Species

The project activities could increase the distribution of non-native and invasive plant species. Construction activities would include vegetation and sediment removal in areas with yellow star thistle, Himalayan blackberry, and floating water primrose. To prevent and reduce the spread of these invasive species Mitigation Measures BIO-1 and BIO-9 would be implemented.

Mitigation Measure BIO-9: **Avoid or Minimize Impacts Caused by the Spread of Invasive Plants.**

- To reduce the spread of invasive plants, imported erosion control materials will be weed-free certified.

- To limit or reduce the spread of invasive species within the project area, excavated fill contaminated with invasive plants would not be used in other areas.

- Construction equipment will be washed thoroughly before entering and exiting the project area. Equipment will also be inspected daily to ensure it is free of plant parts, soil, mud, or other debris that may transport weed seeds.

- The revegetation plan will include the use of locally-sourced native plant species.

c) Less-than-significant Impact with Mitigation Incorporated. Construction of the proposed project would result in temporary and permanent impacts to 16.47 acres of jurisdictional or potentially jurisdictional waters of the United States and State. The 16.47 acres include all the project footprints, except for the stockpile and staging areas located north of the eroded bank. These footprints are not considered to be jurisdictional or potentially jurisdictional waters of the United States or State because they exist outside the floodplain in typical years. An aquatic resources delineation will be completed at the request of federal or State regulatory agencies. The proposed project is to enhance the hydrologic functions of the floodplain and channel for salmonid habitat restoration.

Construction of the temporary channel would result in the excavation of materials temporarily placed as fill in the Merced River and on the associated floodplain. The temporary channel would temporarily divert the water flow around the construction footprints of the eroded bank, channel excavation, and the floodplain erosion repair near the bank of the river. Construction activities would result in permanent and direct modifications to the river channel through the

excavation and fill of channel sediment for completing the eroded bank, point bar terrace, floodplain erosion repairs, and gravel augmentation. Most excavation and fill activities for completing these project components will occur below the ordinary high-water mark but would not result in permanent loss of jurisdictional waters or the adjacent floodplain. The bank stabilization component would remove degraded riparian habitat that has established since the bank erosion during the 2017 flood events. Bank stabilization is being designed to prevent future erosion events from occurring during future high-flow events. The terrace being established on the right bank point bar will include the addition of fill (spawning sized gravel) along the bank of the river.

The design of the proposed project is expected to increase and not decrease the river channel capacity. Construction activities of the floodplain erosion repair would result in the fill and excavation of the side channel that has formed because of the 2017 flood events. The floodplain erosion repair is needed to prevent salmon and other native fish species from entering the floodplain at extremely low flows, potentially causing them to get stranded. Minor excavation and fill activities would occur during the construction of the collector ditch. The collector ditch would redirect low flows back to the main river channel to reduce or eliminate the low-flow sheet flows within the floodplain that are not desirable for fish migration. The two proposed gravel augmentation sites would result in fill within the river channel to enhance and increase the available spawning habitat for anadromous salmonids and riverine species. Construction activities could temporarily impact water quality within the river channel.

The simulated abandoned channels providing riverine habitat within the floodplain on both sides of the river would be avoided and should not be impacted by project activities. These simulated channels are sourced by the river during high flow events and nearby agricultural irrigation sources. The freshwater emergent wetland that was created during the MRSHEP-Robinson in 2001 as the backflow area could have temporary impacts to water quality while the temporary channel is in operation. Construction activities of this project would also result in permanent or temporary removal of vegetation within jurisdictional or potentially jurisdictional waters of the United States or State. To reduce these temporary substantial adverse effects to State and federally protected waters and wetlands to less-than-significant, Mitigation Measures GEO, HAZ-1a, BIO-8, BIO-9, and BIO-10 will be implemented. Overall, the proposed project should improve the hydrological functions of the Merced River and associated floodplain riparian habitat, including beneficial impacts to EFH for CV fall-run Chinook salmon and CH for CCV steelhead.

Mitigation Measure BIO 10: Obtain Permit and Compensate for Any Loss of Wetlands and Other Waters of the United States/Waters of the State.

- In coordination with USACE, the acreage of effects on waters of the United States and waters of the State will be determined for the proposed project.
- The proposed project will adhere to a “no net loss” basis for the acreage of wetlands and other waters of the United States and waters of the State that will be removed and/or degraded. Wetland habitat will be restored, enhanced, and/or replaced at acreages, types, and locations and by methods agreed on by USACE, USFWS, and the CVRWQCB, as appropriate, depending on agency jurisdiction.

- Section 404 and Section 401 permits will be obtained, and all permit terms complied with. The acreage, location, and methods for compensation will be determined during the Section 401 and Section 404 permitting processes.

d) Less-than-significant Impact with Mitigation Incorporated. Construction activities include a temporary low-flow culvert crossing within the temporary channel to provide heavy equipment access to both sides of the temporary channel and Merced River channel. The temporary culvert crossing could be driven across multiple times, daily, by heavy equipment to complete the proposed project design elements. All in-water construction activities will be completed between July 1 through September 30, to avoid impacts to spring and fall salmonid migrations. The temporary channel low-flow culvert crossing will be constructed before the main-channel flow is redirected into the temporary channel and removed after the main-channel flow is restored. This crossing will be active in mid- to late-summer during low-flow conditions and will remain in place long enough to complete the upstream end of the project's instream project components (eroded bank, channel excavation, and the floodplain erosion repair near the bank of the river), but not the downstream end work (riffle gravel injection). Since the temporary low-flow culvert crossing will be in place when the salmonid fish passage is not a concern, construction activities only need to minimize erosion, sediment delivery, and impact to surrounding riparian vegetation (National Marine Fisheries Service 2019). Project activities are occurring during bird nesting season (February 1–September 1) and could result in substantial adverse effects to special-status and common bird species by disturbing nesting behaviors caused by construction activities including vegetation removal. Implementation of Mitigation Measures BIO-1, BIO-2, and BIO-6 will avoid or reduce the potential impacts to the movement of any native resident or migratory fish species and nesting birds to less-than-significant.

e) No Impact. The proposed project's construction activities could impact wetlands, waters of the United States and State, and other riparian habitats. The proposed project is designed to improve or enhance hydrological conditions within the Merced River channel and the associated floodplain to benefit salmonid spawning and rearing habitat and improve the migration corridor. It aligns with Policy NR 1.17 Agency Coordination, which includes coordinating with private, local, State, and federal agencies to assist in the protection of biological resources and prevention of degradation, encroachment, or loss of resources managed by these agencies. This project also supports the General Plan Policy NR 1.19 Merced River Restoration Program Support by implementing Merced River's restoration efforts consistent with the Merced River Corridor Restoration Plan; therefore, there would be no impact.

f) No impact. The proposed project is not conflicting with provisions of any approved local, regional, or State habitat conservation plans, so there would be no impact. The objectives of this project are in support of the Merced River Corridor Restoration Plan, Central Valley Project Improvement Act, and the Delta Pumping Plant Fish Protection Agreement. This project also supports the Merced County General Plan Policy NR 1.19 Merced River Restoration Program Support by implementing Merced River's restoration efforts consistent with the Merced River Corridor Restoration Plan.

3.5 Cultural Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

Prehistoric Archaeological Context:

While there is recorded evidence of human occupation of the region dating back to several thousand years before present, structuring a working chronology has proven difficult. At time of writing, the accepted chronology was established by Rosenthal et al., who divided the archaeological context into five phases: the Paleo-Indian (11,550-8,8550 BC), Lower Archaic (8,550-5,550 BCE), Middle Archaic (5,550-550 BCE), Upper Archaic (550 BCE-1,100 CE), and Emergent (1,100 CE to Contact and post-Contact). Each of these phases can be observed as cultural reactions in response to shifting environments. By the time Spanish colonists arrived in the area, the region was at its most populous, with a diversity of subsistence strategies (hunting, fishing, reliance on acorns, and so on), an intricate trade network and a varied material culture of worked stone, including obsidian, bone, and basketry.

Historic Archaeological Context:

The first recorded European presence in the region is that of the Gabriel Moraga expedition who reached the Merced River sometime in 1806. The Spanish Mission system never reached the region, although five land grants were drawn up in modern Merced County. By 1852, a small but growing community was present. While the local region was referred to as Merced, it was originally part of Mariposa County when California became part of the United States of America in 1848, although this large area was eventually divided into twelve counties, including the current Merced County.

Regulatory Setting

CEQA provides a broad definition of what constitutes a cultural resource. Cultural resources can include traces of prehistoric habitation and activities, historic-era sites, historic-era built environment, and materials, and places used for traditional Native American observances or places with special cultural significance. In general, cultural resources professionals consider any trace of human activity more than 50 years in age as a potential cultural resource.

CEQA states that if a project would have significant impacts on important cultural resources, then alternative plans or migration measures must be considered. However, only significant cultural resources (termed “historical resources”) and unique archaeological resources need to be addressed. According to PRC Section 5024.1, a resource is eligible for historical resource status if it is eligible for listing or listed on the CRHR. A resource’s eligibility is judged by the following four criteria:

1. Association with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.

2. Is associated with the lives of persons important in our past.

3. Embodies the distinctive characteristics of a type, period, region or method of construction; or represents the work of an important creative individual; or possesses high artistic values.

4. Has yielded or is likely to yield, information important in prehistory or history.

Under Section 15064.5, the CEQA Guidelines also require consideration of unique archaeological resources. PRC Section 21083.2, unique archaeological resources are defined as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the three following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (California Office of Historic Preservation 1999:69–70).

Methods

A review of DWR records, a records search from the California Historical Resources Information System (CHRIS), consultation with Native American Tribes through the Assembly Bill 52 (AB 52) process, and a field survey were conducted in support of this project. An Archaeological Survey Report (ASR) was compiled by DWR archaeologist Daniel Jackson using the information provided by these sources.

The CHRIS’ Central Coast Information Center (CCIC) was contacted on November 5, 2019, with a request for a records search. Results were received on November 12, 2019. The CCIC’s

results had no record of any recorded cultural resources within the project footprint, although two historic-era resources were recorded near the Highway 55 bridge, and an historic district consisting of linear water conveyance features also covers the region. The historic water conveyance district boundaries are very large and include the current project area; however, no features associated with the district are present within the project area.

The NAHC was contacted on November 5, 2019, with a request for a Sacred Lands File (SLF) search request. The NAHC responded on November 15, 2019, with negative results. Nevertheless, following DWR's own Tribal Policy, consultation letters were sent to the Northern Valley Yokuts, who had requested consultation with DWR under AB 52. Notification letters were sent to the Southern Sierra Miwuk Nation and the Amah Mutsun Tribal Band, who had not requested AB 52 consultation. At time of writing, no response has been received from any of the contacted tribes.

The project footprint was visited twice by DWR staff. The first field survey was conducted on February 4, 2020, by Daniel Jackson (Environmental Scientist – Archaeology) and Sarah Heffner (Environmental Scientist – Archaeology) from the Division of Environmental Services (DES). They were accompanied by Alex Single (Environmental Scientist) and Andrew Isner (Senior Environmental Specialist) from the South Central Regional Office. The project footprint on the southern bank of the river was covered with an intensive pedestrian survey with transects of approximately 20 meters. No new cultural resources were recorded or identified during the field survey. The second survey was conducted on April 20, 2020. The field crew consisted of Jackson and Heffner as well as Monica Nolte (Senior Environmental Scientist – Specialist), also from DES. The project footprint on the northern bank was covered in a pedestrian survey with transects of 20 meters. No new cultural resources were recorded or identified during the survey.

On both field visits, attempts were made to locate the two historic-era resources southwest of the project area identified by the CCIC. No evidence of either resource was identified, and it is currently believed that both were removed during MRSHEP-Robinson completed in 2001 through 2002. The ASR for the proposed project is provided in Appendix C, "Cultural Resources Report".

3.5.2 Discussion

a) No Impact. The consultation, literature review, and field investigations undertaken for this project did not identify any historical resources in the project footprint. As a result, the proposed project construction would not impact any historical resources as defined under CCR § 15064.5.

b) Less-than-significant with Mitigation Incorporated. According to the records search and field survey, there are no recorded archaeological resources within the project area or the immediate vicinity. Since construction will take place in areas heavily disturbed by river flooding, the potential for the project to impact unidentified subsurface archaeological resources is very low. The risk of significant impacts to archaeological resources is further reduced through the incorporation of Mitigation Measure CULT-1.

Mitigation Measure CULT-1: Implement Procedures for Inadvertent Discovery of Cultural Material.

If potential historical or unique archaeological resources are discovered during construction, all work would temporarily cease in the immediate area until the findings can be assessed by a qualified archaeologist and an appropriate course of action can be determined. Work may continue on other parts of the proposed project while evaluation and mitigation take place (California Environmental Quality Act Guidelines §15064.5 [f]). If the find is determined to be a historical or unique archaeological resource, time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation must be available.

c) Less-than-significant with Mitigation Incorporated. No human remains have been identified within the project area. It is not anticipated that proposed project implementation would disturb any human remains, including those interred outside of formal cemeteries. The presence of human remains is unlikely due to the location of this project and the finding of no archaeological sites within the project area. The risk of significant impacts to human remains is further reduced through the incorporation of Mitigation Measure CULT-2.

Mitigation Measure CULT-2: **Implement Procedures for Inadvertent Discovery of Human Remains.**

If human remains are found, such remains would be subject to the provisions of California Public Resources Health and Safety Code Section 7050.5. The requirements and procedures would be implemented, including immediately stopping work in the vicinity of the find and notifying the County Coroner. A DWR archaeologist would also need to be contacted immediately. The process for notification of the California Native American Heritage Commission (NAHC) and consultation with the individual(s) identified by the NAHC as the "most likely descendent" is set forth in Section 5097.98 of the California Public Resources Code. Work in the vicinity of the find can restart after the remains have been investigated and appropriate recommendations have been made for their treatment and disposition.

3.6 Energy

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

3.6.1 Environmental Setting

Merced County has not implemented an energy action plan. However, the State's Commercial Motor Vehicle Idling Regulation and Off-Road Regulation requires that construction sites minimize idling and associated emissions, which also minimizes use of fuel. Specifically, during construction, idling of commercial vehicles and off-road equipment is limited to five minutes to comply with State requirements (California Code of Regulations (CCR), 2005. Title 13, Chapter 10, 2485, updated through 2014.).

Additionally, DWR has adopted the DWR Climate Action Plan-Phase I: GGERP, which details DWR's efforts to reduce its GHG emissions consistent with EO S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) (California Department of Water Resources 2012) (refer to Checklist Section VIII, *Greenhouse Gas Emissions*). Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project (Appendix B), (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation into the design of the project DWR's project level GHG emissions reduction strategies, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions reduction measures identified in the GGERP, and (5) determination that the project would not add electricity demands to the State Water Project (SWP) system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

3.6.2 Discussion

a) Less-than-significant. A full list of construction equipment anticipated to be used for the proposed project is included in Table 2.

Project implementation would not include wasteful or unnecessary consumption of energy resources, because it would be required to meet air quality and GHG emissions criteria that require the use of efficient equipment. In addition, project construction would be completed within the shortest period feasible, expected to be approximately six months.

A GGERP Consistency Determination Checklist documenting that the project has met each of the required elements is included in Appendix B**.** All BMPs required by the GGERP for a project of this nature are included in Section 3.8, "Greenhouse Gas Emissions". Therefore, impacts associated with construction of the proposed project would be less-than-significant.

b) No Impact. The project area is within the Merced River channel and floodplain and is surrounded by agricultural lands on either side of the river. The nature of the project is to restore salmon habitat in the channel and floodplain. There are no plans for renewable energy in the project area; therefore, there will be no impact from the implementation of the project.

3.7 Geology and Soils

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

3.7.1 Environmental Setting

The project area includes approximately 7,000 feet of the MRSHEP-Robinson constructed in 2001 and 2002.

The MRSHEP-Robinson begins approximately six and one-half miles below the Merced River's downstream-most dam, Crocker-Huffman, which diverts Merced River water into the Merced Irrigation District's Main Canal. Crocker-Huffman Dam is the end of the salmon migration range. Proximity to the dam makes the Robinson Reach important because it is so near the end of the spawning migration range, which makes this salmon habitat some of the last available habitat of its type.

Geology and soils in this area have been defined by the Merced River. Soils in alluvial fans and floodplains cover approximately 340 square miles. Soils in the project area include riverwash, open water, Tujunga sand channeled, and Terrace escarpments. These soils are slightly acid with the parent rock of alluvium from granite. The upper terrace areas contain Whitney fine sandy loams that are better used for irrigated pastures, orchards, and grain crops.

Both the Sierra and CV geologic provinces are subject to minor tectonic activity because they are part of the Sierra Nevada microplate, which is a component of a broad tectonically active belt that accommodates motion between the North American plate to the east and the Pacific plate to the west. There are no known faults or active faults in the surrounding areas; the nearest "active" fault (i.e., evidence of displacement during the Holocene epoch) is the Ortigalita Fault, located in the Coast Ranges to the west. The Ortigalita Fault runs in a northwest to southeast direction through the San Luis Reservoir, approximately 64 miles southwest of the project area (Jennings and Bryant 2010).

3.7.2 Discussion

a) No Impact. There are no known active faults in the project area that could be affected by the proposed restoration work. All work would be confined to the Merced River channel and floodplain and would not have the potential to directly or indirectly cause potential substantial

adverse effects from seismic shaking, ground failure, or liquefaction. Construction of the project elements would occur in areas that are topographically flat where there is no possibility of landslides; therefore, no impact would occur.

b) Less-than-significant Impact with Mitigation Incorporated. Project-related construction activities involving soil disturbance, channel alteration, excavation, cutting/filling, and grading could result in an increased volume of, or an accelerated rate of soil erosion and sedimentation. Furthermore, clearing vegetation (where necessary to construct the proposed elements) may also destabilize soils and result in inadvertent permanent soil loss. Loss of topsoil could also occur from wind erosion during summer. Therefore, this temporary construction-related impact would be potentially significant. DWR would implement Mitigation Measure GEO before, during, and after project construction to reduce this potential significant impact to less-than-significant.

Mitigation Measure GEO: Prepare and Implement a Stormwater Pollution Prevention Plan that Minimizes the Potential Contamination of Surface Waters and Complies with Applicable Federal Regulations during Construction Activities.

Construction activities may be subject to construction-related stormwater permit requirements of the Federal Clean Water Act's NPDES program. Any required permits through the CVRWQCB will be obtained by DWR before any ground-disturbing construction activity. A SWPPP will be prepared that identifies BMPs to prevent or minimize the introduction of contaminants into surface waters. BMPs for the proposed project could include, but would not be limited to, silt fencing, straw bale barriers, fiber rolls, storm drain inlet protection, hydraulic mulch, and a stabilized construction entrance. The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts on runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means.

The following BMPs shall be implemented during construction:

- Implement practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water.
- Straw waddles will be used to prevent any accidental fallback into the surface waters, if necessary.
- Implement wildlife-friendly practices to reduce erosion of exposed soil, including stabilization for soil stockpiles, watering for dust control, establishment of perimeter silt fences, and/or placement of fiber rolls.
- Implement practices to maintain water quality, including silt fences, stabilized construction entrances, and storm drain inlet protection.
- Where feasible, limit construction to dry periods.
- The performance standard for this mitigation measures is use of the best available technology that is economically achievable.

- Construction methods will incorporate appropriate erosion-prevention actions. This may include, but will not be limited to, reducing slope steepness as much as possible, re-vegetating slopes as appropriate, and directing surface drainage away from the tops of slopes. Actions shall be taken to compact fill soils uniformly.

The construction-related impact would be less-than-significant after mitigation because DWR would comply with permit requirements and implement BMPs that are specifically designed to control erosion and sedimentation from construction activities.

c) Less-than-significant Impact. The project is located within the river channel and floodplain; the work will not induce impacts in terms of unstable soil conditions from excavation, grading, or fill. One element of the project is to stabilize an eroding bank to help protect the adjacent farmland. This will be reinforced with rock slope protection and where feasible, areas will be seeded or planted with native riparian species. The project will not cause erosion impacts. Channel reconfiguration will not cause a change in topography; the impact of this work is less-than-significant.

d) No Impact. The soils in the river channel consist of cobbles, gravels, and some sand. No buildings will be constructed; all work proposed is to maintain the previous restoration project and to benefit salmon spawning habitat. There would be no impact to life or property under the Uniform Building Code (1994, as updated).

e) No Impact. The project would not require the development of wastewater disposal systems of any kind. Portable restrooms would be provided for construction workers. Thus, there would be no impact related to the ability of project area soils to support the use of septic systems.

f) No Impact. There are no known unique paleontological resources or sites or unique geologic features within the proposed project area that would be directly or indirectly impacted during construction activities of the project; therefore, no impact would result.

3.8 Greenhouse Gas Emissions

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

3.8.1 Environmental Setting

When sunlight reaches the earth's surface, shortwave energy heats the surface while longer-wave energy (infrared heat) is reradiated to the atmosphere. GHGs absorb this energy and trap the heat in the lower atmosphere.

Naturally occurring GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Synthetic GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). All of these GHGs, with the exception of water vapor, are targeted for reduction in AB 32, the California Global Warming Solutions Act of 2006. Nitrogen trifluoride (NF_3) was not initially listed in AB 32 but was subsequently added to the list via legislation.

While CO_2 occurs naturally in the atmosphere, human activities such as burning coal, oil, gas, and wood move carbon from solid storage to its gaseous state; thereby, increasing atmospheric concentrations.

Sources of CH_4 are both natural (through biological processes in low-oxygen environments) and artificial (through rice farming, cattle production, natural gas use, and coal mining). Sources of N_2O include agricultural and industrial processes, as well as vehicle emissions. HFCs and PFCs are synthesized compounds used as refrigerants or in manufacturing. SF_6 is a synthetic gas used in the electricity and magnesium industries. NF_3 is a chemical used in the manufacture of electronics.

Concentrations of CO_2, CH_4, and N_2O have increased greatly since 1750 (40 percent, 150 percent, and 20 percent, respectively) (Intergovernmental Panel on Climate Change 2014). The long-lived GHGs (CO_2, CH_4, N_2O, CFCs, HFCs, and SF_4) are considered to be the largest and most important anthropogenic drivers of climate change. Among long-lived GHGs, CO_2 is responsible for 64 percent of radiative forcing, which refers to a change in the earth's radiative balance resulting from an imbalance between incoming solar radiation energy and outgoing thermal infrared emission energy. CH_4 contributes approximately 18 percent of total radiative forcing. To analyze the warming potential of GHGs, GHG emissions are typically quantified and reported as CO_2 equivalents (CO_2e).

Climate change refers to changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system over a long period of time. In California, observations of climate change include the following: an increase in average annual air temperatures, a change in the trend toward more rain than snow, a change in runoff timing, an increase in extreme heat events, a decrease in winter chill times, a rise in sea level, and warmer conditions at higher elevations. Changes in climatic and environmental conditions can also strongly affect terrestrial, marine, and freshwater biological systems. Climate risk in the Sacramento River Hydrologic Region, within which the project area is located, includes stress on ecosystems and species resulting from increased temperatures, reduced reliability of water supplies caused by decreased snowpack storage, greater flood risks, and decreased water quality.

GHG Emissions Analysis

In May 2012, DWR developed the Greenhouse Gas Emissions Reduction Plan (2012 Plan) as the first phase of its Climate Action Plan to guide decision making related to energy use and GHG emissions. As it committed to in 2012, DWR developed and adopted the Greenhouse Gas Emissions Reduction Plan Update 2020 (Update 2020) in July 2020, to review its GHG reductions since the 2012 Plan, and to update strategies for further reduction consistent with legislative changes, including the GHG emissions reduction targets established in Senate Bill (SB) 32 (2016), SB 100 (2018), EO B-18-12 (2012), EO B-30-15 (2015), and EO B-55-18 (2018). For the purposes of the Update 2020, DWR prepared and adopted an addendum to the 2012 Plan initial study/negative declaration (IS/ND) pursuant to CEQA Guidelines Sections 15162(b) and 15164(b). In the addendum, DWR evaluated the changes to the 2012 Plan under this Update 2020, and changes in surrounding circumstances (including legislative, regulatory, and market changes), and concluded that these changes would not cause any new significant environmental impacts that would require preparation of a subsequent ND or an EIR. Both the GGERP and addendum of the IS/ND prepared for the GGERP (2012 Plan) are incorporated herein by the references (California Department of Water Resources 2012a; California Department of Water Resources 2020). DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines Section 15183.5. Section 15183.5 provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact, to a level that is not "cumulatively considerable" (see CEQA Guidelines, Section 15064, Subdivision [h][3]).

Section 15064 further states that "later project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (CEQA Guidelines Section 15183.5, Subdivision [b][2]).

Section 12 of the GGERP outlines five steps that each DWR project must take to demonstrate consistency with the GGERP:

1. Analysis of GHG emissions from construction of the proposed project.

2. Determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP.

3. Incorporation of DWR's project-level GHG emissions-reduction strategies into the design of the project.

4. Determination that the project does not conflict with DWR's ability to implement any of the "Specific-Action" GHG emissions-reduction measures identified in the GGERP.

5. Determination that the project would not add electricity demands to the SWP system that could alter DWR's emissions-reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

Consistent with these requirements, Appendix B, "Greenhouse Gas (GHG) Analyses GHG Consistency Determination (CD), GHG Emissions Inventory and Calculation Worksheet", demonstrates that the proposed project would meet each of the required elements and would be consistent with the GGERP.

3.8.2 Discussion

a) **Less-than-significant Impact.** Project construction activities would directly emit GHGs, but these emissions would be below the threshold of significance. This impact would be less-than-significant. In addition, DWR would implement project-level BMPs to reduce GHG emissions.

The proposed project would directly release GHG emissions produced by construction-related equipment operation. Construction-related equipment would include off-road construction equipment, on-road haul and delivery trucks, and construction worker commuting. As shown in Appendix B, "Greenhouse Gas (GHG) Analyses GHG Consistency Determination (CD), GHG Emissions Inventory and Calculation Worksheet", the annual GHG emissions during construction would be 1,421.3 $MTCO_2e$/year. The construction activities of this project, according to the 2020 Plan update, would not result in GHG emissions in excess of 12,500 $MTCO_2e$/year; therefore, is eligible for streamlined CEQA review.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in the attached Consistency Determination Checklist), DWR, as the lead agency, has determined that the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable; therefore, impacts would be less-than-significant. DWR would further reduce the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs by implementing DWR's project-level GHG emissions-reduction BMPs for construction activities. Implementation of these BMPs would reduce GHG emissions from construction projects by minimizing fuel usage by construction equipment and reducing fuel consumption for transportation of construction materials by using locally-sourced fill material.

All applicable Pre-construction and Final Design, and Construction BMPs from the GGERP were incorporated as Mitigation Measure GHG. Implementation of Mitigation Measure GHG would further reduce impacts that are expected to be less-than-significant.

Mitigation Measure GHG: Reduce and Minimize Impacts Related to GHG Emissions.

Pre-construction and Final Design BMPs

Pre-construction and Final Design BMPs are designed to ensure that individual projects are evaluated, and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the proposed project. The following BMPs will be evaluated to determine which would be appropriate for the proposed project and these BMPs would be implemented:

- Evaluate project characteristics, including location, project workflow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.

- Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

- Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

- Limit deliveries of materials and equipment to the site to off-peak traffic congestion hours.

Construction BMPs

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all construction BMPs unless a variance is granted by the Division of Engineering Manager, Division of Operation and Maintenance Manager, or Division of Flood Management Manager (as applicable), and the variance is approved by the DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions or characteristics make implementation of the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the GGERP:

- Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by California Code of Regulations, Title 13, Section 2485, the State's airborne toxics control measure). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

- Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.

- Implement a tire inflation program on the job site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction.

- Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

- Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

- For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay2 certified truck will be used to the maximum extent feasible.

- Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

The proposed project would result in a less-than-significant impact on GHG emissions without implementing the GHG BMPs identified above. With implementation of the GHG BMPs identified above, the proposed project's less-than-significant impact with respect to GHG emissions would be further reduced.

b**)** No Impact. DWR's GGERP is in compliance with all applicable plans and policies. The proposed project is consistent with the GGERP. Therefore, there would be no impact.

3.9 Hazards and Hazardous Materials

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

3.9.1 Environmental Setting

The project area is predominantly agricultural in nature, with large tracts of land on either side of the Merced River dedicated to cropland and agricultural infrastructure. Public health and safety issues associated with the agricultural character of the area include low-flying aircraft used for aerial spraying and the regular use, storage, and transportation of fuel, pesticides, herbicides, and fertilizers used for agricultural equipment and crops.

The Merced County General Plan shows no transfer stations for hazardous waste in the county although there are two solid waste disposal/landfill facilities owned and operated by the Merced County Regional Waste Management Authority. These landfills are the State Route 59 Landfill and the Billy Wright Landfill (County of Merced 2013).

The State Route 59 Landfill, located approximately six miles south of the project area and about two miles north of Bellevue and SR 59 in Merced, collects construction waste, such as tree stumps, tires, or other materials. The Billy Wright Landfill, located approximately 58 miles southwest of the project area in Los Banos, accepts uncontaminated green waste, concrete, wood, and fill material.

The project is in rural Merced County, approximately 2.5 miles from the nearest school. There are no public or private airstrips within two miles of the project.

There are no residential areas in the project vicinity; the closest residence to the project area is located approximately 0.50 miles away.

The project area does not have any record of historic hazardous materials from previous land uses as designated under Government Code Section 65962.5, as shown on the Hazardous Waste and Substances Sites "Cortese" List (California Department of Toxic Substances Control, 2020).

3.9.2 Discussion

a) Less-than-significant. The project would not cause any unusual risks associated with the transport and handling of hazardous materials. However, project construction could include the use of hazardous materials in varying amounts during construction and operation/maintenance activities, including fuels (gasoline and diesel), oils and lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents) commonly used in construction projects. Construction workers and others could be exposed to hazards and hazardous materials as a result of improper handling or use, transportation accidents, fires, explosions, or other accidental release. Operations and maintenance activities would be relatively minor, and impacts would be negligible.

The use, storage, and transport of hazardous materials are regulated by federal, State, and local agencies, and compliance with relevant laws is required during project construction and operation. Transportation of hazardous materials on area roadways is regulated by the California Highway Patrol (CHP) and Caltrans. Hazardous materials regulations, which are codified in CCR Titles 8, 22, and 26, and their enabling legislation set forth in the California Health and Safety Code (§ 25100 et seq.), were established at the State level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. These regulations must be implemented, as appropriate, and are monitored by the State (e.g., Cal/OSHA in the workplace, DTSC for hazardous waste, and California Air Resources Board for lead) and/or local jurisdictions (i.e., Merced County Department of Environmental Health). All construction would be required to comply with CalEPA's Unified Program; regulated activities would be managed by the Merced County Department of Environmental Health in accordance with their Unified Program (e.g., hazardous materials release response plans and inventories, and California Uniform Fire Code hazardous material management plans and inventories). Such compliance would reduce the potential for accidental release of hazardous materials during construction and improvement activities. As a result, compliance with Merced County's Unified Program would lessen the risk of exposure of construction workers and others to accidental release of hazardous materials.

Workplace regulations addressing the use, storage, and disposal of hazardous materials included in CCR Title 8 also would apply to project construction. Compliance with these regulations would be monitored by a local agency, such as the Merced County Department of Environmental Health, when they perform inspections for flammable and hazardous materials storage. Other mechanisms in place to enforce the Title 8 regulations include compliance audits and reporting to State and local agencies. Implementation of the workplace regulations would further reduce the potential for hazardous materials releases during project construction and improvement activities.

The project would implement and comply with federal, State, and local hazardous materials regulations monitored by the State (e.g., Cal/OSHA, DTSC, CHP) and/or local jurisdictions (e.g., Merced County Department of Environmental Health); therefore, impacts related to creation of substantial hazards to the public through routine transport, use, disposal, and risk of upset during project construction activities would be less-than-significant.

Because the project would implement measures to comply with federal, State, and local hazardous materials regulations, construction-related impacts related to creation of substantial hazards to the public through routine transport, use, disposal, and risk of upset would be less-than-significant.

Although these impacts would be less-than-significant, DWR would implement the following mitigation measures during construction to further reduce these potential impacts from any hazardous spills, exposure of workers to nearby aerial spraying, and/or herbicide use.

Mitigation Measure: HAZ-1a: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination During Construction Activities.

In addition to compliance with all applicable federal, State, and local regulations, DWR will implement the measures described below to further reduce the risk of accidental spills and protect the environment.

- **Prepare and Implement a Spill Prevention Control and Countermeasures Plan.** A written SPCCP will be prepared and implemented as needed. The SPCCP and all material necessary for its implementation will be accessible on-site prior to initiation of project construction and throughout the construction period. The SPCCP will include a plan for the emergency cleanup of any spills of fuel or other material. Employees/construction workers will be provided the necessary information from the SPCCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work will stop immediately and CDFW, CVRWQCB, USFWS, NMFS, and Merced County will be notified within 24 hours.

- **Dispose of All Construction-related Debris and Materials at an Approved Disposal Site.** All debris, litter, unused materials, sediment, rubbish, vegetation, or other material removed from the construction areas that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site.

- **Use Safer Alternative Products to Protect Streams and Other Waters.** Every reasonable precaution will be exercised to protect streams and other waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) will be used where feasible.

- **Prevent Any Contaminated Construction By-products from Entering Flowing Waters, and Collect and Transport Such By-products to an Authorized Disposal Area.** Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials will not be allowed to enter flowing waters and will be collected and transported to an authorized upland disposal area.

- **Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters of the State or and/or Waters of the United States.** Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, will be prevented from contaminating the soil and/or entering waters of the State and/or waters of the United States.

- **Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks and Remove and Repair Equipment/Vehicles with Leaks.** Construction vehicles and equipment will be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment will be checked daily for leaks. If leaks are found, the equipment will be removed from the site and will not be used until the leaks are repaired.

- **Refuel and Service Equipment at Designated Refueling and Staging Areas.** Equipment will be refueled and serviced at designated refueling and staging sites located outside the floodplain. All refueling, maintenance, and staging of equipment and vehicles will be conducted in a location where a spill will not drain directly toward aquatic habitat. Appropriate containment materials will be installed to collect any discharge, and adequate materials for spill cleanup will be maintained on-site throughout the construction period.

- **Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.** All heavy equipment, vehicles, and supplies will be stored at the designated staging areas at the end of each work period.

- **Install an Impermeable Membrane between the Ground and Any Hazardous Material in Construction Storage Areas.** Storage areas for construction material that contains hazardous or potentially toxic materials will have an impermeable membrane between the ground and the hazardous material and will be bermed, as necessary, to prevent the discharge of pollutants to groundwater and runoff water.

- **Use Water Trucks to Control Fugitive Dust During Construction.** Water (e.g., trucks, portable pumps with hoses) will be used to control fugitive dust during temporary access road construction.

- **Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms for Placement in Any Waters.** All materials placed in streams, rivers, or other waters will be nontoxic and will not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.

Mitigation Measure HAZ-1b: Coordinate with Landowners and Farm Managers.

The impacts from aerial spraying will be reduced by coordinating with landowners and farm managers to avoid scheduling conflicts between restoration and construction workers, and scheduled farm work, including aerial spraying, where feasible. Coordination will minimize conflicts between farm operations and restoration activities and prevent construction worker exposure to aerial herbicide/pesticide spray or drift.

b) Significant Impact with Mitigation Incorporated. The project area is not located within known hazardous materials sites, and a preliminary database search concluded that there were no known hazardous material sites in the immediate project area. However, there is potential that potentially hazardous materials such as gasoline, oil, and other lubricants necessary for operation of construction equipment would be present at the project site and could accidentally be released into the environment. This construction-related impact would be potentially significant**.** Implementation of Mitigation Measure HAZ-1a, will reduce impacts associated with accidental spill or discharge of hazardous materials to less-than-significant.

c) No Impact. There are no schools within 0.25 mile of the project area. The nearest school, Hopeton Elementary School (at 2241 Turlock Road in Snelling), is 2.5 miles northwest of the project area. Therefore, with construction of the proposed project, there will be no impact to an existing or proposed school.

d) No Impact. Government Code Section 65962.5(a)(1) states that DTSC shall compile and update, annually, all hazardous waste facilities subject to corrective action. In accordance with this code, there are no active listed hazardous materials sites in the EnviroStor database within the project area or within a 3-mile radius of the project area. The proposed project would not be located on a hazardous materials site. Therefore, there would be no impact.

e) No Impact. The proposed project is not located within an area covered by an airport land-use plan or within two miles of a public-use airport. Therefore, construction of the project would have no impact related to aircraft safety hazards.

f) No Impact. The Merced County General Plan (Merced County 2012) identifies emergency response and evacuation plans, including major thoroughfares used for such purposes. The proposed project would not affect any major thoroughfares that may be used as an evacuation route, nor does the project site contain any essential facilities for emergency response; therefore, there would be no impact. Please refer to Section 3.20, “Transportation and Transportation”, for a discussion of emergency access and travel.

g) Less-than-significant Impact. The proposed project is in the river channel and floodplain. There is very little vegetation growth within these areas and there are no structures in the

floodplain or channel. Potential impact to expose people or structures to a significant risk of loss, injury, or death involving wildland fires due to project activities is less-than-significant.

3.10 Hydrology and Water Quality

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☒	☐	☐
i) result in substantial erosion or siltation on- or off-site;	☐	☒	☐	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☐	☒
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
iv) impede or redirect flood flows	☐	☐	☐	☒
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

3.10.1 Environmental Setting

Surface Water Hydrology and Quality

The Merced River drains an area of approximately 1,273 square miles of a highly regulated watershed. As early as 1850, the hydrologic system within the watershed has been significantly altered for agriculture and municipal water supply, flood control, power generation, and mineral extraction operations. Upstream of the proposed project area, there are four impassable dams including the Exchequer Dam, (river mile 62), McSwain Dam (river mile 56), Merced Falls Dam (river mile 55), and Crocker-Huffman Dam (river mile 52).

Since completion of the MRSHEP-Robinson in 2002, the river has seen overbank floods with peak flows of 4,800 roughly every five years. This means that the high flows, which traditionally scoured and flushed vegetation from active gravel bars and banks and delivered coarse sediment, are all but absent. Flow regulation on the Merced River has also resulted in the loss of gravel recruitment in lower reaches of the river. In the absence of sufficient gravel recruitment, the channel scours and degrades, which when combined with reduced flow, can further narrow the channel and lead to the loss of active floodplains.

Sediment accumulation pattern observed in the upper-most Robinson Reach was punctuated by the magnitude and duration of the 2017 flood. That event eroded about one acre of bank and deposited substantial sediment downstream in the channel and on the floodplain. This deposition decreased the channel capacity and caused very low flows (less than 200 cfs) to overspill the banks and spread out on the floodplain.

Surface water quality in the proposed project area, which is in the San Joaquin River Basin, Merced River Subarea- McSwain Reservoir, to San Joaquin River Hydro Unit (535), is listed as impaired under Section 303(d) of the Clean Water Act (Environmental Protection Agency 2016; RWQCB 2018). Impairments to beneficial uses include cold freshwater habitat, commercial and sport fishing, migration of aquatic organisms, spawning/reproduction or early development, and warm freshwater habitat. Impairments to freshwater habitat are related to pesticides, water temperature, mercury, and toxicity. Agriculture and other unknown sources are probable contributors to these impairments identified in 2016. In accordance with CWA Section 303, water quality standards for this basin are contained in the Water Quality Control Plan for the San Joaquin River Basin (Regional Water Quality Control Board 2018).

In general, water temperatures at Crocker Huffman diversion dam (Merced River, river mile 52.0) range from approximately 8.0 to 17.0°C, annually, during wet and dry years (Federal Energy Regulatory Commission 2015). During the peak of the drought in 2014, daily average water temperatures exceeded 20°C, which prompted fish rescue efforts by CDFW of CCV steelhead within the Merced River below Crocker Huffman diversion dam (California Department of Fish and Wildlife 2014). Stream temperatures within the project area are known to commonly exceed the temperature limits for salmon in early fall and late spring; therefore, salmon must spawn later and leave earlier to be successful (Vogel 2007). During drought years, this window for completing the life cycle of a salmon is further reduced. In summer and fall 2011, dissolved oxygen levels immediately below Crocker Huffman Dam met the 8 mg/L objective immediately downstream of Crocker-Huffman diversion dam, at Snelling Bridge,

which is approximately two miles upstream from the proposed project area (Federal Energy Regulatory Commission 2015).

Groundwater Hydrology and Quality

The proposed project area is in the San Joaquin Valley Groundwater Basin – Merced (Bulletin 118 Basin Number 5-022.04) and Turlock (Bulletin 118 Basin Number 5-022.03) groundwater subbasins (California Department of Water Resources 2016). The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires the formation of local Groundwater Sustainability Agencies (GSAs) to oversee the development and implementation of Groundwater Sustainability Plans (GSPs), with the goal of achieving sustainable management of California's groundwater basins. The purpose of the GSPs are to bring the Merced and Turlock Groundwater Subbasins, both critically over drafted subbasins, into sustainable groundwater management by 2040. These subbasins are heavily reliant on groundwater, and users recognize the basin has been in overdraft for a long period of time.

The Merced River forms the northern boundary of the Merced Subbasin and divides the subbasin from the Turlock Subbasin. The proposed project area is in a groundwater divide, which is generally considered a barrier to groundwater movement from one basin to another for practical purposes. Groundwater divides have noticeably divergent groundwater flow directions on either side of the divide with the water table sloping away from the divide. The location of the divide may change as water levels in either one of the basins change, making such a divide less useful. Such a boundary is often used for subbasins (California Department of Water Resources 2003). The Merced Subbasin includes lands south of the Merced River between the San Joaquin River on the west and the crystalline basement rock of the Sierra Nevada foothills on the east. The subbasin boundary on the south stretches westerly along the Madera-Merced County line (Chowchilla River) and then between the boundary of the Le Grand-Athlone and Chowchilla Water District (WDs). The boundary continues west along the northern boundaries of Chowchilla WD and El Nido ID. The southern boundary then follows the western boundary of El Nido ID south to the northern boundary of the Sierra WD, which is followed westerly to the San Joaquin River (California Department of Water Resources 2004). The Turlock Subbasin lies between the Tuolumne and Merced Rivers and is bounded on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The northern, western, and southern boundaries are shared with the Modesto, Delta-Mendota, and Merced Groundwater subbasins, respectively. The subbasin includes lands in the Turlock ID, Ballico-Cortez WD, Eastside WD, and a small portion of Merced ID (California Department of Water Resources 2006).

Three principal aquifers have been identified in both Merced and Turlock subbasins. In the Merced Subbasin the three principal aquifers include an unconfined water body, a confined water body, and the water body in consolidated rocks. The unconfined water body occurs in the unconsolidated deposits above and east of the Corcoran Clay, which underlies the western half of the subbasin at depths ranging between about 50 and 200 feet (California Department of Water Resources 1981), except in the western and southern parts of the area where clay lenses occur, and semi-confined conditions exist. The confined water body occurs in the unconsolidated deposits below the Corcoran Clay and extends downward to the base of fresh water. The water body in consolidated rocks occurs under both unconfined and confined conditions. Five aquifer systems have been identified in the Merced Subbasin by the Merced

Groundwater Management Plan (AMEC 2008), including, in order of decreasing depth: a fractured bedrock aquifer, the Mehrten Formation, a confined aquifer, an intermediate "leaky" aquifer, and a shallow unconfined aquifer. These aquifer systems interact with each other throughout the basin, except where the Corcoran Clay exists (Woodard and Curran, 2019). The three principal aquifers in the Turlock Subbasin are the unconfined water body, the semi-confined and confined water body in the consolidated rocks, and the confined water body beneath the Corcoran Clay in the western subbasin.

The proposed project area is in the shallow unconfined aquifer and Mehrten Formations of both subbasins and lies outside the Corcoran Clay layer. The Mehrten Formation is composed of up to 800 feet of sandstone, breccia, conglomerate, tuff siltstone and claystone (Page 1973). The shallow unconfined aquifer within the project area is younger alluvium deposited above the shallow clay bed. Because of its shallow depth, few water supply wells are in the shallow unconfined aquifer within and near the project area.

Based on groundwater elevation models derived from the California Statewide Groundwater Elevation Monitoring Program, well data collected in spring 2017 and fall 2017 show the project area had groundwater elevations ranging from 0 to 40 feet in the fall and 40 to 60 feet in the spring. Spring 2017 and fall 2017 were the most recent seasonal high and low groundwater levels within the Merced Subbasin (Woodard and Curran 2019). In the Merced Subbasin outside the Corcoran Clay layer, groundwater primarily flows north from the center of the basin to the Merced River. There also appears to be localized highs and depressions without a dominant lateral gradient to the southern end of the aquifer region, possibly due to pumping or stream influences (Woodard and Curran 2019). In the proposed project area, the Merced River is higher than the groundwater and probably provides some recharge to the unconfined aquifer.

North of the Merced River, within the Turlock Subbasin, groundwater levels between 2010 to 2013 were between 170 and 190 feet based on static depth to water measurements recorded in Well Completion Reports for twelve wells constructed between May 2010 and June 2013. Currently, few groundwater wells are being monitored in the eastern part of the Turlock Subbasin, so current groundwater elevation conditions are not well known.

The Merced River is the primary renewable surface water supply in the Merced Subbasin and the Tuolumne River in the Turlock Subbasin. Groundwater recharge and discharge is driven by both natural and anthropogenic (human-influenced) factors. Deep percolation of irrigation water is the largest inflow into both the Merced and Turlock subbasins. Recharge sources also include infiltration of precipitation and discharges from the Merced and Tuolumne Rivers.

DWR has prioritized the Turlock and Merced subbasins as “high priority” based on groundwater reliability concerns (both current and projected) and documented overdraft issues in the subbasins. In addition to groundwater overdraft assessment in the subbasin, DWR has categorized both subbasins to have a very high potential for subsidence (California Department of Water Resources 2020). Groundwater sustainability planning in the project area is under the governance of the Merced Subbasin GSA and the East Turlock Subbasin GSA.

Groundwater within the Merced and Turlock subbasins contain both anthropogenic and naturally occurring constituents. While groundwater quality in both subbasins is often sufficient

to meet beneficial uses, it either currently impacts groundwater use within the subbasin or can impact it in the future. Depending on the water quality constituent, the issue may be widespread or more of a localized concern (Woodard and Curran 2019). The primary natural water quality constituents in the Merced and Turlock subbasins are arsenic and uranium. The primary water quality constituents of concern related to human activity include salinity, nitrate, hexavalent chromium, petroleum hydrocarbons (such as benzene and methyl tert-butyl ether), pesticides (such as 1,2-dibromo-3-chloropropane, ethylene dibromide, 1,2,3-trichloropropane), solvents (such as tetrachloroethene, trichloroethylene), and emerging contaminants (such as perfluorooctanoic acid, perfluorooctane Sulfonate). Of these issues, nitrate is the most widespread issue with a direct impact on public health. Salinity is also an issue due to the widespread nature of the problem and difficulty of management given increases in salinity because of both urban and agricultural use (Woodard and Curran 2019).

3.10.2 Discussion

a) Less-than-significant with Mitigation Incorporated. Construction activities of the proposed project could result in short-term, temporary increases in turbidity and total suspended solids levels during construction within the Merced River channel and associated floodplain. Project activities that could directly impact or degrade water quality include excavation and fill of sediment for completing the temporary channel, eroding bank, upper channel and floodplain repairs, installation of the collector ditch, and gravel augmentation.

Dewatering of the Merced River channel is necessary to avoid operating heavy equipment within a wetted channel and to avoid significant turbidity exceedances while recontouring the river channel. The upstream and downstream ends of the temporary channel berm will be used as access for construction equipment moving between the left and right banks of the river. Additional sediment could be introduced into the wetted and dewatered channels from the vibration and movement of construction equipment. Removal of the temporary channel could be just as impacting as its construction. These construction-related ground-disturbing activities could introduce sediment into the river and result in temporary increases in turbidity and total suspended solids. The initial flow in the temporary channel is expected to be turbid because of the transport of loose sediment within the newly constructed and unlined channel.

Water temperatures may temporarily increase while river flows are redirected around the instream construction areas; however, these increases are not expected to be significant. Completion of the proposed project is expected to improve water temperatures (decrease) due to increased depth and flow velocities within the main river channel. The gravel augmentation is expected to increase hyporheic exchange, where surface water enters the riverbed and flows along subsurface paths before returning to the main channel. Because this exchange promotes mixing of waters of different stages and temperatures, it can potentially buffer stream temperatures; thereby, reducing maximum temperatures in the river (Bibly et al. 1984; Merz and Setka 2004; White et al. 1987; Evans and Petts 1997; Hancock and Boulton 2005; Sliva and Williams 2005). Completion of the channel excavation and gravel augmentation components are expected to result in temporary increases in turbidity and total suspended sediments, but long-term should improve water quality by decreasing temperatures and increasing dissolved oxygen.

Construction of the collector ditch could result in short-term, temporary increases in turbidity in the river when excavating near the bank. Although these increases in turbidity and total suspended sediment levels would be short-term and temporary, the increases could potentially violate the San Joaquin Basin Plan objectives for turbidity and construction related impacts to water quality could be significant. Mitigation Measures GEO and HYDRO have been identified to reduce this impact to less-than-significant.

Construction activities of the proposed project could result in short-term, temporary increases in turbidity and total suspended solids levels following construction. The primary purpose of this project is to restore and stabilize an eroded bank, improve the salmon migratory path by addressing channel capacity and floodplain connection issues, and improve salmon spawning and rearing habitat by gravel augmentation. Completion of this project could result in beneficial impacts to the river by decreasing erosion along the banks within the Robinson Reach, and reducing the potential for high-flow events to result in the same impacts as in 2017.

Construction activities of this proposed project would temporarily increase turbidity and total suspended solid levels within the Merced River and the floodplain following construction. Turbidity and total suspended solid increases would occur when these recently disturbed areas are exposed to elevated river stages and high flows that spill over the banks of the river and inundate the floodplain. Additional short-term, temporary increases to turbidity and total suspended solid levels could occur after construction because of ground-disturbing activities, such as clearing, grubbing, and tree removal. In newly disturbed areas where erosion potential is high, erosion control measures would be implemented to reduce potential impacts to water quality.

Most of the project components would result in the temporary and short-term disturbance of soil and could expose disturbed areas to storm events. Rainfall of sufficient intensity could dislodge soil particles from the ground surface. If particles are dislodged and the storm is large enough to generate runoff, substantial localized erosion and sedimentation of nearby waters could occur. In addition, soil disturbance could result in substantial loss of topsoil from wind erosion. Implementation of Mitigation Measures GEO and HYDRO would reduce this impact to less-than-significant.

Construction activities of the proposed project could result in discharge of hazardous or deleterious materials into the Merced River and its associated floodplain. Hazardous materials (e.g., gasoline, oils, grease, and lubricants) from construction equipment could be accidentally discharged during construction. Accidental discharge of these materials into the river, floodplain, and adjacent surface waters could adversely impact surface and groundwater quality, endanger aquatic life, or result in a violation of water quality standards. These potential impacts could occur immediately if discharged into water during the construction activity or could be mobilized in the future during flood flows in the Merced River Corridor if discharged under dry conditions. This impact would be potentially significant. Mitigation Measure HAZ-1 would reduce potentially significant construction-related impacts to water quality from accidental spills of hazardous materials to a less-than-significant level because a SWPPP and BMPs specifically designed to minimize impacts would be implemented.

Mitigation Measures Hydro: Avoid and Minimize Impacts to Water Quality.

- To minimize or avoid substantial adverse effects on special-status fish species caused by in-water construction turbidity increases, DWR will implement a turbidity monitoring plan following the water quality turbidity objectives of The Basin Plan for the Sacramento River and San Joaquin River Basins.
- Turbidity curtains may be installed in the water around fill areas or downstream of fill areas to reduce turbidity. If turbidity curtains are used, they will be inspected and adjusted to meet the 2018 Basin Plan water quality turbidity objectives.

b) Less-than-significant. Implementing this project has minimal potential to alter or change the groundwater hydraulics within the boundaries of the proposed project area. The temporary channel will reroute main-channel flow through the left bank floodplain of the river and then back to the main channel; flows will continue to be hydraulically connected to the shallow groundwater aquifer. Following construction, the temporary channel would be removed, and flow restored to the main channel where hydrologic improvements were made. The proposed project would not result in disconnecting the Merced River flows from the associated shallow groundwater aquifer, floodplain, and adjacent seasonal wetlands. Therefore, the project would not substantially decrease groundwater supplies, interfere substantially with groundwater recharge, or impede sustainable management of the groundwater basin in the region.

c) Less-than-significant with Mitigation Incorporated. The proposed project would temporarily alter on-site surface flow within the main channel of the Merced River and the associated floodplain. The implementation of the temporary channel would alter the course of the stream for the purposes of dewatering the upper channel and eroded bank construction areas. Once construction activities within the dewatered channel have been completed, the temporary channel would be removed, and the existing flow in the Merced River would be restored.

Corrective actions need to occur at the eroding bank to manage future sediment influx from the bank and protect local infrastructure. Stabilization of the eroded bank with rock slope protection constructed of locally sourced cobble and sediment from within the Merced River channel will help fortify the bank. Taking no action to stabilize the bank is expected to result in more bank erosion and siltation downstream deposition during future floods. Implementation of the bank stabilization is considered a semi-porous barrier, and it will reduce the potential for erosions of the bank during future high-flow events.

Constructing the upper channel and floodplain components would restore channel capacity and enhance the hydraulic connectivity between the Merced River and associated floodplain caused by the 2017 high-flow event. Temporary siltation and erosion could occur when removing the temporary channel and restoring flows in the upper channel and eroded bank areas, but impacts will be short-term and temporary. Implementation of the collector ditch will help redirect the low-flow sheet flows within the floodplain back to the river channel. Gravel augmentation in the downstream injection sites could temporarily increase siltation within the channel.

The proposed project is not expected to result in any net loss of jurisdictional waters through creation of structures or obstructions to the channel or the conversion of channel waters to upland. Completion of this project would not substantially increase the rate or amount of surface runoff. This project would not create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage system; or provide substantial additional sources of polluted runoff.

Although the project site is mapped within a 100-year flood hazard zone and lies within a designated floodway, the project components would not increase the possibility of flooding or impede or redirect flood flows in a manner that would adversely affect flood risk at the project site or offsite. Further, the project would maintain the design channel capacity of the Merced River and would improve the channel and floodplain connectivity, and thereby, improve the ability of this reach to accommodate future high-flow events. The proposed project components would improve the existing drainage pattern of the Robinson Reach of the Merced River and the associated floodplain. Implementation of Mitigation Measures GEO and HYDRO would reduce the temporary siltation and erosion impacts to less-than-significant.

d) No Impact. Since the project site is many miles inland from the coast, the project site is not exposed to flooding risks from tsunamis. Additionally, the project site and surrounding areas are flat, which eliminates the potential for mudflows on the project site. The project site does not contain large bodies of standing water that could be subject to a seiche. There would be no impact.

e) No Impact. The proposed project would not conflict with or obstruct implementation of a water quality control plan, including the San Joaquin River Basin Water Quality Control Plan or a sustainable groundwater management plan because proposed project activities are limited in scope and duration. DWR will obtain and comply with a 401 Water Quality Certification from the State Water Board to ensure compliance with all applicable water quality standards, limitations, and restrictions.

3.11 Land Use and Planning

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XI. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

3.11.1 Environmental Setting

Land use in the project area consist of the river, floodplain, and agriculture. The river channel conveys flows throughout the year; when releases from the dam are increased due to flood releases or water deliveries, the floodplain becomes inundated. The flood season typically lasts from November 15 to June 15 of each water year, with rainfall contributing to higher flows during the early part of the flood season, and snowmelt contributing to flows during the latter part of the flood season. Riparian trees and shrubs have a patchy distribution along the channel and in the floodplain. Lands adjacent to the project area consists of orchards and croplands including irrigated hayfields, irrigated grain crops, and pasture.

The project area encompasses a portion of the Merced River and the Robinson Ranch property that contains a Conservation Easement with the CDFW and the landowner. As described in Section 1.3.2, CDFW holds two conservation easements allowing for restoration and the maintenance of restoration to occur on the property (Figure 3).

DWR employs a land classification system that includes four general categories of land uses: Agriculture, Native Classes, Urban, and Not Surveyed. The most recent DWR land use survey for Merced County was conducted in 2002 (California Department of Water Resources 2002). Based on the results of that survey, there are two DWR land use classifications in the project area — Agriculture and Native Classes — which are described below.

- **Agriculture** — This category consists of both agricultural and semi-agricultural classes. In mapping land uses, DWR groups agricultural land uses into a variety of subcategories and types. The subcategories consist of grain and hay crops (e.g., barley and oats); rice; field crops (e.g., cotton, corn, and beans); pasture (e.g., alfalfa); truck (e.g., onions and garlic), nursery, and berry crops; deciduous fruits and nuts (e.g., almonds and pistachios); citrus and subtropical (e.g., oranges); vineyards (e.g., table, wine, and raisin grapes); and idle areas (e.g., fallow fields). The “Agriculture” category, as defined by DWR, also includes semi-agricultural classes (e.g., dairies and livestock feed lots).

- **Native Classes** — This category consists of areas of native vegetation, surface water, and barren and wasteland areas. Vegetation includes forest land (e.g., oak woodland) and other types of native vegetation (e.g., grassland), riparian vegetation, surface water, and barren and wasteland areas (e.g., mine tailings).

The project area is designated by the *2030 Merced County General Plan* as Rural Agricultural and is zoned for agricultural use (Merced County 2013). Most of the Merced County land area within the San Joaquin Valley is designated as Rural Agricultural. The nearest urban centers are in Merced (approximately 12 miles to the south).

3.11.2 Discussion

a) No Impact. The project area is in an unincorporated, rural agricultural area of Merced County that includes the Merced River. Housing in the project vicinity is very limited. There are no houses in the area near where the project would be constructed; only a few, widely scattered rural residences are present to the southeast of the project area. Therefore, the

proposed project would not physically divide an established community, and there would be no impact.

b) No Impact. Project implementation would not alter the existing land uses in the project area. All the project elements would be consistent with the existing agricultural and open space land uses and zoning. From a planning perspective, the proposed project would be consistent with policies in the *2030 Merced County General Plan* related to land use, open space, and natural resources. Therefore, the proposed project would not entail activities that would conflict with an applicable land use plan, policy, or regulation, and there would be no impact.

3.12 Mineral Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

3.12.1 Environmental Setting

The Surface Mining and Reclamation Act of 1975 (SMARA), Public Resources Code Sections 2710-2796, provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized, and mined lands are reclaimed to a usable condition. SMARA is the primary California law concerning mineral resources, including sand, gravel, and building stone, which are important for commercial purposes. Because of the economic importance of mineral resources, SMARA limits new land uses in areas with significant mineral deposits. In compliance of SMARA, 1,929 square miles of land in Merced County were assigned mineral resource zone (MRZ) classifications by the California Geological Survey (CGS) to identify the presence or absence of significant mineral deposits. A brief description of the MRZs are provided in Table 9.

Table 9 California Geological Survey Mineral Resource Zone Classifications

MRZ-1	Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.
MRZ-2a	Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Land included in MRZ-2a is of prime importance because it contains known economic mineral deposits.
MRZ-2b	Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Further exploration could result in upgrading areas classified MRZ-2b to MRZ-2a.
MRZ-3a	Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories.
MRZ-3b	Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration could result in the reclassification of all or part of these areas into the MRZ-3a category or specific localities into the MRZ-2a or MRZ-2b categories.
MRZ-4	Areas of no known mineral occurrences but where geologic information does not rule out either the presence or absence of significant mineral resources.

Source: Clinkenbeard 1999.

More detailed descriptions of the MRZs can be viewed in the Mineral Land Classification of Merced County, California Survey Report by John P. Clinkenbeard (Clinkenbeard 1999). Letters such as SG following the MRZ classification denotes sand and gravel resources. Based on the 1999 survey report, four resource areas were classified as MRZ2a SG having a high likelihood of significant deposits of sand and gravel for concrete aggregate. The four resource areas identified were MRZ2a SG-1 - Los Banos Creek Fan, MRZ2a SG-2 - Central Merced River Area**,** MRZ-2a SG-3 - Merced River Dredge Tailings, and MRZ-2a SG-4 - Mariposa Creek.

The Central Merced River Area is the part of the channel and floodplain deposits of the Merced River between Snelling Road on the east and Oakdale Road on the west. The Merced River drains the Sierra Nevada to the east and its sediments are typically very hard and durable. The coarse fraction of these deposits is predominantly quartz-rich metasedimentary rocks and metachert with lesser amounts of quartz, quartzite, granitic, and volcanic rocks (Clinkenbeard 1999). The proposed project area is located within the Central Merced River Area, but most of the project area is classified as MRZ-1 because of previous mining activities that have been reclaimed into a CDFW Conservation Easement.

Currently, Central Valley Concrete Incorporation has an active sand extraction mine (Division of Mine Reclamation Mine ID – 91-24-0051) located on 42 acres of land adjacent to the southwest corner of the project area. According to the 2009 Robinson Ranch Sand Mine Initial Study and Mitigated Negative Declaration, the mine is expected to extract approximately 2.2 million cubic yards of sand for construction aggregate uses. The mining and reclamation of these 42 acres were expected to occur in two phases over the course of approximately 10 years. Following mining and reclamation of this area, the site would return to agricultural uses (PBS&J 2009).

Although sand and gravel mining are the primary mineral resource within Merced County, a review of the California Division of Oil, Gas, and Geothermal Resources (DOGGR) data was performed to ensure local oil or gas resources were not going to be impacted by the proposed project. The DOGGR data identifies the Great Valley Development Company plugged oil well number 0404700003 as the closest oil or gas well resource, which is approximately 2.75 miles from the proposed project area. The next closest oil or gas well resource to the project area is approximately 3.75 miles and it is plugged and non-operational (California Division of Oil, Gas, and Geothermal Resources 2021).

3.12.2 Discussion

a) No Impact. The proposed project will occur within a CDFW Conservation Easement and will not result in the loss of availability of known mineral resources that would be of value to the region and the residents of the State. The primary purpose of the proposed project is to maintain the MRSHEP-Robinson joint salmon habitat restoration project between DWR and CDFW, completed in early 2002. The MRSHEP-Robinson was implemented to improve the ecological functions of the Merced River degraded by mining activities. Most of the project area is classified as MRZ-1 because the available mineral resources have been extracted and the area has been reclaimed (Clinkenbeard 1999: Plate 3). The fill material for this project will be sourced from the on-site excavations within the CDFW Conservation Easement and from CDFW's MRR gravel screening operation, 6.5 miles upstream on the Merced River. The activities and completion of this restoration project will have no impact on the known mineral resources.

b) No Impact. The purpose of this project is to restore and enhance anadromous salmonid habitat within the Robinson Reach of the Merced River. The actions of this proposed restoration effort would not result in the loss of availability of locally important mineral resources delineated on a local general plan, specific plan, or other land use plan. According to the *Draft 2030 Merced County General Plan* (2013) *and 2030 General Plan Update Draft Program Environmental Impact Report* (Merced County 2012*),* the county designated mineral resources are the same as those identified in the CGS mineral land classification report prepared by Clinkenbeard (1999). Most of the project area is classified as MRZ-1 because the available mineral resources have been extracted and the area has been reclaimed (Clinkenbeard 1999: Plate 3). Therefore, there is little likelihood for the presence of significant mineral resources in the project area, and there would be no impact. Review of the CGS mineral land classification report indicates a small portion of the project area classified as MRZ2a SG-2, but this small portion lies within the CDFW Conservation Easement and is prohibited from mining. The CDFW Conservation Easement's primary purpose is to conserve, protect, and manage fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. The proposed project is to maintain or restore the salmon habitat within Robinson Reach of the Merced River, which is at the end of the CV Chinook salmons' migration range.

3.13 Noise

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIII. NOISE – Would the project:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels near the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.13.1 Environmental Setting

Noise generally can be defined as unwanted sound. Sound, traveling in the form of waves from a source, is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level (referred to as sound level) is the most common descriptor used to characterize the loudness of an ambient sound level. It is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

When assessing potential noise impacts, sound is measured in a manner corresponding to the human ear's greater sensitivity to mid-range frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted dB (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Table 10 summarizes some representative noise sources and their corresponding A-weighted noise levels.

Table 10 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
—	110	Rock band
Jet flyover at 1,000 feet	—	—
—	100	—
Gas lawnmower at 3 feet	—	—
—	90	—
Diesel truck at 50 feet at 50 mph	—	Food blender at 3 feet
—	80	Garbage disposal at 3 feet
Noise urban area, daytime	—	—
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	—	Normal speech at 3 feet
Heavy traffic at 300 feet	60	—
—	—	Large business office
Quiet urban daytime	50	Dishwasher in next room
—	—	—
Quiet urban nighttime	40	Theater, large conference room (background)
Quite suburban nighttime	—	—
—	30	Library
Quiet rural nighttime	—	Bedroom at night, concert hall (background)
—	20	—
—	—	Broadcast/recording studio
—	10	—
—	—	—
—	0	—

Notes:
dBA = A-weighted decibel scale
mph = miles per hour
Source: California Department of Transportation 2013

A key concept in evaluating potential noise impacts is the perceived effect of incremental increase in existing noise levels. Table 11 presents the effect of increasing noise levels. For example, the table shows that an increase of 3 dBA is barely perceptible, an increase of 5 dBA is noticeable, and an increase of 10 dBA would be perceived by someone to be a doubling of noise.

Table 11 Decibel Changes, Loudness, and Energy Loss

Sound Level Change (dBA)	Relative Loudness/Impact	Acoustical Energy Gain (%)
0	Reference	0
+3	Barely Perceptible Change	50
+5	Readily Perceptible Change	67
+10	Twice as Loud	90
+20	Four Times as Loud	99
+30	Eight times as Loud	99.9

Source: Federal Highway Administration 2011

Vibration

To assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions, typically in units of inches per second (in/sec). The PPV is defined as the maximum instantaneous peak of the vibration signal. Caltrans estimates that frequent generation of vibration at levels exceeding 0.3 in/sec can damage older residential structures and cause annoyance to humans (California Department of Transportation 2020).

Existing Noise and Vibration Sources

The existing noise and vibration environment near the project area is influenced by various transportation and non-transportation sources. Vehicular traffic would be the predominant source of transportation-related noise, and agricultural-related activities would be primarily responsible for non-transportation noises.

Transportation Sources

The project site is just off SR 59, so there is some existing transportation noise from the use of this road.

Non-transportation Sources

This section describes noise levels from non-transportation sources within the project area. The existing gravel mining operation, just downstream of the SR 59 bridge, would not contribute to the existing noise environment.

The predominant land use near the project site is related to agricultural activities. Activities associated with land preparation, and harvesting and transporting crops, would contribute to the existing noise and vibration environment near the project area. Typical heavy off-road equipment used for agricultural activities include tractors, harvesters, bailers, tillers, and seeders. Overflights from crop spraying also would occur over agricultural land uses.

Noise-sensitive Receptors

Generally, any place where quiet is an essential element of a land use’s intended purpose would qualify as a noise-sensitive receptor, such as concert pavilions and historic monuments with significant outdoor use. Places where people normally sleep, like residences, hotels, and hospitals, qualify as noise-sensitive receptors. The closest rural residence is approximately 0.5 miles to the north of the project area. Construction-related haul trucks using SR 59 and the access road for the project would not be traveling near this residence.

Applicable Noise Regulations - Merced County Code

Noise

DWR is not subject to local regulations unless expressly authorized by the Legislature. The Merced County Code (Section 10.60.030) sets sound level limitations for the County. The

noise control ordinance states that noise levels, when measured at or within the property line of the receiver, should not result in any of the following:

- Exceed the background noise level by at least 10 dBA during daytime hours (7 a.m. to 10 p.m.) and by at least 5 dBA during nighttime hours (10 p.m. to 7 a.m.).
- Exceed 65 dBA L_{dn} (day-night average noise level) on residential property or 70 dBA L_{dn} on nonresidential property.
- Exceed 75 dBA L_{max} (maximum noise level) on residential property or 80 dBA L_{max} on nonresidential property.

The county's ordinance exempts construction activities, "provided that all construction in or adjacent to urban areas shall be limited to the daytime hours between 7 a.m. and 6 p.m., and all construction equipment shall be properly muffled and maintained" (Section 10.60.030(B)(5)). Operation of construction equipment outside of these daytime hours or at any time on a weekend day or legal holiday is prohibited. (Merced County 2017a.)

Vibration

Section 18.41.090 of the Merced County Code states that no use shall create any disturbing ground vibration based on typical human reaction beyond the boundaries of the site (Merced County 2017b).

Construction noise was predicted using equations and guiding principles from the Federal Highway Administration Roadway Construction Noise Model. The types of construction equipment that could be used during the construction of the project, the percentage of time that the equipment would operate at full power (usage factor) during an hour, and each piece's maximum noise level are presented in Table 3.10-3. Construction equipment is anticipated to operate primarily during weekdays and during daylight hours to the extent feasible.

In addition to noise, construction activities have the potential to produce vibration that may be annoying or disturbing to humans and may cause damage to structures. Highest levels of vibration from construction projects are caused by soil compacting, jack hammering, and demolition. Table 3.10-4 presents the PPV in inches per second for typical construction equipment as published by the Federal Transit Administration (Federal Transit Administration 2006).

Table 12 Construction Equipment Types and Noise Levels

Equipment Type	Estimated Usage Factor	L_{max} at 50 Feet
All Other Equipment Greater than 5 hp	50%	85
Backhoe	40%	78
Compactor (ground)	20%	83
Crane	16%	81
Dozer	40%	82
Dump Truck	40%	76

Equipment Type	Estimated Usage Factor	L_{max} at 50 Feet
Excavator	40%	81
Flat Bed Truck	40%	74
Front End Loader	40%	79
Generator	50%	81
Grader	40%	85
Pickup Truck	40%	75
Pumps	50%	81
Tractor	40%	84

Notes:
hp = horsepower
L_{max} = maximum noise level measured during a monitoring period
Source: Federal Highway Administration 2006

Table 13 Construction Equipment Types and Vibration Levels

Equipment Type	PPV at 25 feet (in/sec)
Large Bulldozer	0.089
Loaded Trucks	0.076
Caisson Drilling	0.089

Source: Federal Highway Administration 2006

3.13.2 Discussion

a) Less-than-significant Impact with Mitigation Incorporated. The project would include stabilizing 700 feet of eroded bank, improving the channel by excavating sediment deposits, installing a temporary channel, and augmenting spawning habitat in the river. Residences closest to project construction are approximately 2,640 feet north of the river. The Merced County noise ordinance exempts weekday construction activities between 7 a.m. and 6 p.m. from its sound level limitations. Additionally, all construction equipment would be properly muffled and maintained, weekday construction activities would be consistent with the Merced County noise ordinance, and the impact would be less-than-significant.

Construction work times may be extended into the evening or weekend during key points of the construction phase, as needed. One residence is within 2,640 feet of the project. If construction extends into the evening or weekend on a regular basis during the construction season, noise impacts could be potentially significant.

DWR would implement Mitigation Measure NOI during project construction to reduce this potential construction-related noise impact.

Mitigation Measure NOI: Implement Measures During any Weekend and Night-time Construction to Reduce Temporary and Short-term Noise Levels from Construction-related Equipment Near Sensitive Receptors.

DWR will ensure that the following noise-reduction protocol measures are implemented during any construction activities that occur on weekends or between the hours of 6 p.m. and 7 a.m. to reduce temporary and short-term construction-related noise impacts near sensitive receptors:

- Construction equipment will be used as far away as practical from noise-sensitive uses.
- Construction equipment will be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, and wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded.
- Construction site and haul road speed limits will be established and enforced.
- The use of bells, whistles, alarms, and horns will be restricted to safety and warning purposes only.
- Construction equipment will not idle for extended periods of time when not being used during construction activities.

Implementing Mitigation Measure NOI would reduce construction-related noise to a less-than-significant impact.

b) Less-than-significant Impact. Groundborne vibration from construction activities on the project site would produce negligible vibration. Construction equipment associated with the project include excavators, backhoes, generators, trucks, and impact drivers. This type of equipment is not identified by Caltrans (2020) or the FTA (Federal Transit Administration 2018) as associated with generation of notable vibration. Vibration attenuates rapidly with distance and would be imperceptible at the distances to the closest sensitive receptors. Therefore, vibration associated with proposed project would result in less-than-significant impacts.

c) No Impact. The project site is not located within 2 miles of a public or private airport. Therefore, there would be no exposure of people residing or working in the project area to excessive noise levels from aircraft activities. There would be no impact.

3.14 Population and Housing

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIV. POPULATION AND HOUSING – Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

The project area is predominantly agricultural in nature, with large tracts of land on either side of the Merced River dedicated to cropland and agricultural infrastructure. The proposed project includes work on an existing Conservation Easement that does not allow for the development of the floodplain land. The nature of the project is to restore and maintain a portion of the Merced River to benefit salmon habitat.

3.14.2 Discussion

a-b) No Impact. The project area is in a rural agricultural area of Merced County and is a habitat restoration project. Implementing the proposed project would not induce unplanned population growth, displace any homes or people, and would not require the construction of replacement housing. Thus, there would be no impact.

3.15 Public Services

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XV. PUBLIC SERVICES –				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

3.15.1 Environmental Setting

Fire Protection

Fire protection services in the project area are provided by the Merced County Fire Department. The Merced County Fire Department provides emergency services to unincorporated areas of the county through a network of fire stations, personnel, and equipment. Fire suppression personnel are provided through a contract with the California Department of Forestry and Fire Protection, and support personnel are Merced County employees. Fire stations are staffed 24 hours a day by a full-time fire captain or fire apparatus engineer and augmented by over 300 paid or volunteer on-call firefighters. The on-call firefighters are organized into engine companies according to the station's response area. The closest fire station to the project site is Fire Station #65 located at 15974 Highway 59 in Snelling, approximately 3.25 miles to the northeast.

In addition to fire protection, the Merced County Fire Department provides first response emergency medical services, control and mitigation of hazardous material spills, and mutual aid to fire/rescue/Emergency Medical Services cooperating agencies. The department participates in statewide fire and rescue mutual aid systems and other non-fire emergencies such as floods, earthquakes, and other disasters (Merced County 2016).

Law Enforcement

Law enforcement services in the project area are provided by the Merced County Sheriff's Department. The Merced County Sheriff's Department coverage area includes all

unincorporated areas of the county. The department maintains stations and smaller Community Law Enforcement Office stations in locations spread throughout the county. The Merced County Sheriff's Department maintained as of 2013, a ratio of approximately one officer per 1,000 residents in unincorporated areas of the county, with an average response time of less than 10 minutes on emergency calls, increasing to approximately 30 minutes for non-emergency calls. The California Highway Patrol handles all traffic enforcement and automobile accident investigations for the unincorporated parts of the county (Merced County 2013).

Emergency Response

The Merced County Office of Emergency Services is operated under the direction of the Merced County Fire Department. The coverage area encompasses all of Merced County and involves the support of federal, State, and local law enforcement agencies including the following: fire departments, hospitals, ambulance services, and the Merced County Health Department.

Schools

The areas surrounding the project area are served by multiple school districts within Merced County; however, there are no schools near the project site. The nearest school, Snelling-Merced Falls Elementary School (at 16099 Highway 59, Snelling), is 6.1 miles northeast of the project area.

3.15.2 Discussion

a) Fire and police protection: Less-than-significant Impact. Construction activities required for project implementation could increase short-term demands on emergency services, including fire protection and law enforcement to respond to potential construction accidents. However, this increase would not be expected to require new or altered emergency services facilities in the project area given that fire protection, law enforcement, and other emergency services currently are provided at acceptable levels in the project area. In addition, construction activities in the project area would comply with industry safety regulations required by the California Labor Code (Title 8, California Code of Regulations), which would help to reduce the likelihood of construction accidents. This impact would be less-than-significant.

Schools: No Impact. The proposed project would not provide any new housing or employment opportunities. Therefore, the proposed project would not generate new students or increase the demand on the local school systems. Additionally, the nearest school, Snelling-Merced Falls Elementary School (at 16099 Highway 59, Snelling), is 6.1 miles northeast of the project area. Therefore, construction and operations and maintenance of the proposed project would have no impact on an existing or proposed school.

Parks: No Impact. The proposed project would not provide any new housing or employment opportunities that would generate new residents who would require new or expanded park facilities. Thus, there would be no impact to parks.

Other public facilities: No Impact. No other public facilities would be affected by construction or operation of the proposed project. Therefore, there would be no impact to other public facilities.

3.16 Recreation

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. RECREATION				
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?	☐	☐	☒	☐

3.16.1 Environmental Setting

The adjacent river property along both sides of the project area is privately owned, restricting public access to the river. If allowed by the landowner, most of the recreation taking place in the project area is onshore fishing, picnicking, and limited hiking. Within the project area, motorized boat access is difficult due to the shallow, moderately swift water and lack of boat launching and access facilities. Conditions are more conducive to canoeing, rafting, inner-tube floating and other non-motorized boating that does not require water depths greater than 2 feet.

3.16.2 Discussion

a) No Impact. The proposed project does not involve the construction of any new housing that would generate new residents who would increase the use of existing recreational facilities, thus, there would be no impact.

b) Less-than-significant Impact. The proposed project does not include or require the construction of new recreational facilities. The land surrounding the project area is privately owned and is maintained for agricultural purposes. There are no officially designated recreational opportunities in the project area; access is only allowed by permission of the landowner. If recreationists access the area via the river by canoe, kayak, or other rafts, they would not have access during construction through the summer months. Because this area is not designated for recreation, the proposed project would have a less-than-significant impact on recreation opportunities.

3.17 Transportation

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVII. TRANSPORTATION– Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict with or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

3.17.1 Environmental Setting

Main access to the project area is provided via SR 59 (a two-lane principal arterial) and multiple private dirt roads. There are no pedestrian or bicycle facilities in the project area. Car and truck traffic bringing workers and supplies to the project area would increase during construction activities. Once brought to the project area, most of the construction equipment would remain within the project area for the duration of the project schedule.

3.17.2 Discussion

a) Less-than-significant Impact. Direct impacts to the local circulation system would occur due to the temporary addition of project-related vehicles to local roadways over the 6-month construction time period. Implementation of the proposed project could temporarily increase the number of vehicles on local roadways due to the transport and delivery of construction equipment, daily worker commute trips over a 6-month period, and staff maintenance trips. All equipment and materials would be transported to the site on public highways, local roads, and private roads, using standard transport vehicles.

The delivery of construction vehicles and equipment to the sites is only expected to occur when the equipment is delivered to/from the sites (two one-way trips for all equipment). Most traffic impacts would occur from the daily arrival and departure of workers. A maximum of up to 20 workers would be required at the site per day. The addition of 40 worker round trips (20 one-way trips) along local roads would not substantially affect the circulation capacity; therefore, the trips would not substantially affect the capacity of the local roadways. Traffic control is not anticipated to be required along local roadways. DWR would coordinate with the appropriate property owners for all private road access. All worker parking would be accommodated at the staging area on-site; however, carpooling may be required if up to 20

workers are needed at any given time (which would reduce the number of overall trips). Project-generated traffic and operational maintenance would be temporary; therefore, would not result in any long-term degradation in operating conditions on local roadways used for the project. Impacts to the local circulation system would be less-than-significant.

Further, the proposed project would not conflict with adopted policies, plans, or programs related to public transit or alternative modes of transportation. The project would not decrease the performance or safety of these facilities. Project activities would not disrupt services along local public transit, bicycle, or pedestrian routes. No impact would occur.

b) No Impact. "Vehicle miles traveled" refers to the amount and distance of automobile travel attributed to a project. A maximum of 20 workers would be required during various proposed project activities. These trips would be temporary over the approximately 6-month construction period and would not result in any perceivable increase in vehicle miles traveled that would exceed a county threshold of significance. There are no new permanent vehicle trips associated with the proposed project other than routine maintenance. As a result, the proposed project would be consistent with CEQA Guidelines Section 15064.3 subdivision (b), and no impact would occur.

c) No Impact. The proposed project would be implemented entirely within the Robinson Reach of the Merced River on private property and within the CDFW Conservation Easement. The proposed project does not include the construction or design of any roadway infrastructure that would cause a safety risk to vehicle operations. The proposed project would not adversely alter the physical configuration of the existing roadway network serving the area and would not introduce unsafe design features associated with large equipment transport. In addition, the proposed project would not introduce uses (types of vehicles) that are incompatible with existing uses already served by the area's road system. There would be no impact.

d) No Impact. The proposed project would temporarily add vehicles to the local roadway and circulation system. However, no lane or road closures would be required. All project-related activities would occur on-site. The proposed project would not interfere with emergency response access; therefore, no impact to long-term emergency access would occur.

3.18 Tribal Cultural Resources

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES – Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) 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	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.18.1 Environmental Setting

This section provides an assessment of potential impacts related to tribal cultural resources that could result from implementation of the proposed project. “Tribal cultural resources” are defined as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” that are either included or determined to be eligible for inclusion in the California Register or included in a local register of historical resources, or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant (Public Resources Code subdivision 21074(a)). A cultural landscape that meets these criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. A historical resource, unique archaeological resource, or non-unique archaeological resource may also be a tribal cultural resource if it meets these criteria. Archaeological resources and human remains are frequently also tribal cultural resources; therefore, many of the identification efforts described under Section 3.5, “Cultural Resources”, also apply to the identification of a tribal cultural resources.

The analysis in this section is based, in part, on the results of an SLF search from the NAHC, AB 52, DWR's Tribal Engagement Policy, and the California Natural Resources Agency's Tribal Consultation Policy outreach with California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the proposed project is located and who have requested in writing to be informed by the lead agency.

The NAHC maintains a confidential file, which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on November 5, 2019, to request a search of the SLF. The NAHC responded to the request in a letter dated November 15, 2019. The results of the SLF search conducted by the NAHC indicate that Native American cultural resources are not known to be located within the project area (Gonzalez-Lopez 2019).

Pursuant to AB 52, which requires government-to-government consultation within the CEQA process, DWR contacted one California Native American Tribe who have previously requested, in writing, to be informed by DWR through formal notification of proposed projects within the geographic area in which each tribe is traditionally and culturally affiliated pursuant to PRC Section 21080.3.1(b). Pursuant to DWR's Tribal Engagement Policy, outreach to tribes identified through the NAHC process were also contacted. The tribe contacted pursuant to AB 52 was the North Valley Yokuts Tribe and through the Tribal Engagement Policy, the Amah Mutsun Tribal Band and the Southern Sierra Miwuk Nation were contacted. On June 25, 2020, DWR sent letters to the Honorable Katherine Perez, chairperson of the North Valley Yokuts Tribe; the Honorable Valentin Lopez, chairperson of the Amah Mutsun Tribal Band; and the Honorable William Leonard, chairperson of the Southern Sierra Miwuk Nation. The letters included a description of the proposed project and provided a figure depicting the proposed project location.

To date, DWR has received no responses to the notification letters. The tribal outreach letters are provided within Appendix A., "Cultural Resources Report".

3.18.2 Discussion

a-i) Less-than-significant with Mitigation Incorporated. No tribal cultural resources have been identified within the project area. However, it is recognized that not all tribal cultural resources that are archaeological in nature are visible on the soil surface, and there is the potential for uncovering previously unknown resources during proposed project construction. If encountered, such resources may be determined to be tribal cultural resources eligible for listing in the California Register, or in a local register as defined in PRC Section 5020.1(k). If project construction activities were to affect them in a manner that would damage their cultural value, a significant impact could result. In the unlikely event that tribal cultural resources are identified during proposed project construction, implementation of the protection measures included in Mitigation Measures CUL-1 and CUL-2 (see Section 3.5, "Cultural Resources") would reduce potential impacts to less-than-significant with mitigation incorporated.

a-ii) Less-than-significant with Mitigation Incorporated. No tribal cultural resources have been identified within the project area. However, as noted above, it is recognized that tribal cultural resources that are archaeological in nature could be encountered during proposed project construction. If encountered, such resources may be 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 PRC Section 5024.1. If project construction activities were to affect them in a manner that would damage their cultural value, a significant impact could result. In the unlikely event that tribal cultural resources are identified during proposed project construction, implementation of the protection measures included in Mitigation Measures CUL-1 and CUL-2 (see Section 3.5, "Cultural Resources") would reduce potential impacts to less-than-significant with mitigation incorporated.

3.19 Utilities and Service Systems

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

3.19.1 Environmental Setting

The proposed project is in Merced County surrounding by agricultural land. The focus of the project is to maintain and restore previous restoration work for salmon enhancement conducted in the river channel and floodplain in 2001. Portions of the project are in the channel and in an area that is in a Conservation Easement between the CDFW and the landowner.

There are no utilities or service systems in the proposed project area.

3.19.2 Discussion

a) No Impact. The proposed project would involve the employment of construction workers throughout the approximately 6-month construction schedule. The proposed project may require limited use of potable water during construction activities. No water or wastewater treatment facilities would be installed as part of the proposed project and there are no proposed project activities that would require new electric power, natural gas, or telecommunications facilities.

The proposed project would not substantially alter the local drainage pattern of the project sites. The proposed project does not include the construction of large structures or impervious surfaces that would substantially alter or change the rate or amount of surface runoff from the project site. Therefore, the proposed project would not require the construction or expansion of new storm water drainage facilities. There would be no construction of utility infrastructure associated with the proposed project; there would be no impact.

b) Less-than-significant Impacts. Water may be needed temporarily during implementation of the proposed project. Water for dust suppression would be sourced by the contractor; the construction contractor would pay for water to be used on the project for dust suppression and any other required use. Water demand for dust suppression would be temporary, and no new or expanded entitlements would be required. Therefore, potential impacts associated with availability of water supplies would be less-than-significant.

c) No Impact. The proposed project would result in the generation of wastewater associated with temporary use of portable toilets. During project implementation, the contractor will have portable toilet facilities available on-site temporarily for use by construction workers. Given the relatively small construction workforce on-site daily for the 6-month construction period, this amount of waste would be minimal. Once construction activities are concluded, such portable facilities would be removed, and the wastewater properly handled and disposed of in accordance with all applicable laws and regulations. Therefore, the proposed project does not require a wastewater treatment provider to serve the project. No impact would occur.

d) No Impact. Implementation of the proposed project would result in nominal solid waste, limited to trash and other construction-related materials. All waste materials would be disposed of appropriately and in accordance with all laws and regulations. There would be no impact.

e) No Impact. As stated above, implementation of the proposed project would result in nominal solid waste. Statewide policies regarding solid waste have become progressively more stringent, reflecting AB 939, which requires local government to develop waste reduction and recycling policies and meet mandated solid waste reduction targets. For the minor amount of solid waste anticipated to be produced by the proposed project, DWR would be required to comply with all laws and regulations related to the disposal and recycling of waste. There would be no impact.

3.20 Wildfire

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

3.20.1 Environmental Setting

Fire protection responsibility for the project area falls to a Local Responsibility Area (LRA) under CAL FIRE. The LRA for the project area is designated as moderate (California Department of Forestry and Fire Protection LRA mapping 2007).

3.20.2 Discussion

a) No Impact. Implementation of the proposed project is not anticipated to substantially impair an adopted emergency response plan or evacuation plan. Implementation of the proposed project would not interfere with emergency response access to the project vicinity and no impact would occur.

b) No Impact. The project area is located within an LRA moderate fire hazard severity zone. The project area does not include slopes that are susceptible to prevailing winds. Further, the surrounding vegetation and land use types have a low potential for fires. As a standard DWR safety practice, all vehicles and equipment would have fire prevention equipment on-site, including fire extinguishers and shovels, if a fire were to occur. Therefore, construction of the proposed project is not expected to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Further, the project does not involve operation of facilities that would exacerbate fire conditions within the area or require permanent workers or occupants at the project sites. As a result, no impact would occur.

c) No Impact. The proposed project includes restoration activities. Any roads maintained for the project would be temporary in nature. The proposed project would not require the installation or maintenance of infrastructure that would exacerbate wildfire risks. Therefore, there would be no impact.

d) No Impact. All construction activities for the proposed project will be limited to the river channel and adjacent floodplain and would include repairing some areas of erosion. The proposed project would not result in increased drainage or runoff that could contribute to landslide or flooding impacts. No impact would occur.

3.21 Mandatory Findings of Significance

Environmental Issue	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE – Would the project:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, 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?	☐	☐	☐	☒

3.21.1 Discussion

a) Less-than-significant with Mitigation Incorporated. As discussed in Section 3.4, "Biological Resources", and Section 3.5, "Cultural Resources," any potentially significant impacts related to plant, fish, or wildlife habitat or populations, special-status species, and important historical or cultural resources would be reduced to a less-than-significant level through implementation of mitigation measures. No known cultural resources would be affected by the proposed project and if unidentified resources are encountered during construction, impacts would be less-than-significant with mitigation incorporated.

The proposed project would enhance the habitat of fish and wildlife, by improving fish passage, as well as spawning and rearing habitat for salmonid species within the Robinson Reach of the Merced River and its associated floodplain. Temporary and short-term impacts are expected but would result in beneficial impacts to the area.

b) No Impact. The proposed project would not have any mandatory findings of significance as the project would not have the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

The proposed project is to restore the MRSHEP project completed in 2002. The MRSHEP project was a joint salmonid habitat restoration project between DWR and CDFW that restored salmonid habitat in the Robinson Reach of the Merced River that was highly degraded by instream gravel mining activities. The proposed project would restore the habitat of fish and wildlife and improve the hydrological processes within the Merced River and associated floodplain. Temporary and short-term adverse impacts during construction would occur; however, long-term benefits to the environment are expected.

Similar completed projects between the project area and Crocker-Huffman Dam, including the Henderson Park Restoration Project, the Merced River Ranch Salmonid Habitat Restoration Project, and the Merced Irrigation District's Merced River Instream and Off-Channel Habitat Rehabilitation Project, are salmonid restoration efforts. These occur within only 3 miles of each other, and their relative connection provides further habitat benefit to that achieved by the individual projects alone. The accumulating impacts of those completed projects, this proposed project, and other current or future projects will continue to provide further habitat benefits.

c) No Impact. The proposed project would improve the environmental conditions in the area by reducing erosion potential of the riverbank and enhancing salmonid fish passage, spawning, and rearing habitat within the Merced River and its associated floodplain. There would be no impact to human beings.

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Chapter 4. List of Preparers

The following is a list of individuals who authored chapters or sections of this IS/EA, provided significant technical advice in their area of expertise, provided project description engineering details, and/or participated in document review.

Lead CEQA Agency: California Department of Water Resources

Name	Title/Role
Karen Dulik	Environmental Program Manager / Environmental Compliance Manager
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Laurence Kerckhoff	Attorney IV/Senior Legal Counsel

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