Sherman and Twitchell Islands Fish Screen Project

Initial Study/Proposed Mitigated Negative Declaration

February 2016

California Department of Water Resources
1416 Ninth Street
Sacramento, CA 95814

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Proposed Mitigated Negative Declaration

Project: Sherman and Twitchell Islands Fish Screen Project

Lead Agency: California Department of Water Resources (DWR)

Availability of Documents:

Project Location: The project area spans the northwestern levee of Sherman Island in the Antioch North 7.5 minute USGS quadrangle and the southern levee of Twitchell Island in the Jersey Island 7.5 minute USGS quadrangle in Sacramento County.

Project Description: DWR proposes to place five self-cleaning, retractable fish screens at the waterside termini of five DWR-owned intake siphons located on Sherman Island and Twitchell Island in order to reduce potential entrainment of Delta Smelt and other fish species by agricultural diversions on state-owned lands. Each installation will require modification of the existing intake siphon to accommodate attachment of the self-cleaning fish screen, construction of a structural steel access walkway, generator-powered winch retrieval track, and additional steel piles to support the structure.

Findings: An Initial Study (IS) has been prepared to assess the proposed project's potential effects on the environment and the significance of those effects. Based on the IS, it has been determined that the proposed project would not have any significant effects on the environment because environmental commitments and mitigation measures would be implemented to reduce impacts to a less than significant level. This conclusion is supported by the following findings:

1. The proposed project would not impact cultural resources, land use and planning, mineral resources, population and housing, public services, recreation, or utilities and service systems.
2. The proposed project would have a less than significant impact to aesthetics, agriculture and forest resources, geology and soils, greenhouse gas emissions, hydrology and water quality, noise, and transportation and traffic.
3. Mitigation has been adopted by DWR to reduce potentially significant impacts related to air quality, biological resources, and hazards and hazardous materials.

Environmental Commitments and Mitigation Measures:

Environmental Commitments

General Plant and Wildlife Avoidance and Protection Measures

The following avoidance and protection measures are intended to prevent significant adverse effects to plant and wildlife species that have the potential to occur within the project area, and will be implemented as part of the project.

- A qualified biologist will conduct seasonally appropriate botanical surveys of the impacted area within 1 year prior to project commencement. These surveys will follow protocols established by the CDFW (2009) and CNPS.
- A qualified biologist will conduct pre-construction surveys no more than 14 days prior of the start of construction for any special status wildlife that have the potential to occur within the project area.
- A qualified biologist shall conduct a training session for all construction personnel prior to the start of work. At a minimum, the training shall include a description of species that have the potential to occur (western pond turtle, giant garter snake, nesting birds, burrowing owl, western red bat, hoary bat, San Joaquin pocket mouse, North American green sturgeon, Sacramento perch, delta smelt, steelhead Central Valley DPS, Sacramento splittail, longfin smelt, Bolander's water-hemlock, Delta button-celery, delta mudwort, Sanford's arrowhead, Suisun Marsh aster, woolly rose-mallow, Delta tule pea, and Mason's lilaeopsis), a discussion of the importance of avoiding impacts to these species, the general measures that are being implemented to conserve these species as they relate to the project and project area, and procedures to follow should sensitive plants or wildlife be encountered during work.
- A qualified biologist will be present during all ground disturbing activities and activities that have the potential to adversely affect sensitive plants or wildlife, should they be present in the project area.
- Any observations of federally or state-listed species will be reported to the Service and the CDFW within three (3) working days of the observation and CNDDB forms will be submitted to CDFW within 60 days of the sighting.
- All federally and state-listed species encountered within the project site will be allowed to leave the project area on their own, unless it can be determined that moving the

animal poses a lesser risk to the animal. The on-site biologist will determine whether activities must cease in order to ensure their protection.

- Project activities shall be performed during daylight hours only.
- All project personnel and construction vehicles will observe a 15 mph speed limit on access roads within the project site where it is safe to do so. Otherwise, posted speed limits will be followed.
- All fueling and maintenance of vehicles or other equipment shall occur on established access roads or staging areas and at least 50 feet away from aquatic sites.
- Motorized equipment will be kept clean and in good working condition and will not be left idling while not in use.
- Absorbent materials will be available on site. Any accidental leaks or spills will be immediately cleaned up, and any leaking equipment will not be allowed to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.
- All trash shall be properly contained, removed from the work site, and disposed of to prevent attracting predators.

<u>In-Water Work Restrictions to Protect Sensitive Fish Species</u>

In-water work, defined as all construction activities which take place below the high tide line will be restricted to the Delta Smelt in-water work window of August 1 through November 30, which has been designated by the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) as a time period when Delta Smelt and other sensitive fish species, including Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon and Central Valley steelhead are least vulnerable to in-channel activities (USFWS 2004, DFG 2005).

Work conducted over the water such as walkway construction, electrical set-up, and concrete foundation construction at the crest of the levee will not be restricted to the Delta Smelt work window. Welding over or in the waterway will not be permitted without proper protection measures at any time. Protection measures will include the use of tarps or shields to prevent slag or other debris from falling into the water.

<u>Landside Work Restrictions to Protect Giant Garter Snake</u>

The chosen sites on Sherman and Twitchell Islands are located within the vicinity of multiple giant garter snake occurrences and appropriate habitat is considered potentially occupied by the species. Therefore, in order to reduce potential adverse effects on giant garter snake, the

proposed project will incorporate the Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake (*Thamnophis gigas*) Habitat, which are listed in Appendix C of the Programmatic Consultation with the US Army Corps of Engineers for 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California, wherever feasible. These measures are listed below:

- Avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat. Confine movement of heavy equipment to existing roadways to minimize habitat disturbance.
- Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area should be avoided by all construction personnel.
- Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).
- 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the Service immediately by telephone at (916) 414-6600.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

- Following the conservation measures in Table 1 of the guidance, impacts to potential giant garter snake habitat, which will total less than 20 acres and will be temporary in nature, will be mitigated through restoration of the affected sites to pre-disturbance conditions.

Greenhouse Gas Reduction Plan

Greenhouse gas emissions (GHG) have the potential to adversely affect the environment because they contribute, on a cumulative basis, to global climate change. In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Reduction Plan (GGERP). According to the GGERP, all DWR projects are expected to implement all construction Best Management Practices (BMPs) outlined in the plan unless a variance is approved by the DWR CEQA Climate Change Committee. Therefore the proposed project will incorporate the following BMPs to avoid and minimize impacts related to greenhouse gas emissions:

- Evaluate project characteristics, including location, project work flow, 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.
- Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.
- Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
- Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.
- Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure Cal. Code of Regs.,

tit. 13, §2485). 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 jobsite 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 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.
- Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.
- Develop a project specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste.
- 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.

<u>Air Quality Basic Construction Emission Control Practices</u>

The proposed project is located within the Sacramento Valley Air Basin, Sacramento Metropolitan Air Quality Management District (SMAQMD, the District). In order to comply with the District's construction thresholds for NOx and particulate matter, the following Environmental Commitment measures will be implemented.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt from adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

<u>Traffic Control Plan</u>

- DWR's contractor will be required to prepare and adhere to a Traffic Control Plan which will ensure that vehicle access along county roads will be maintained at all times during construction.

<u>Sacramento County Noise Ordinance Compliance</u>

- This project will comply with the restrictions set forth in the Sacramento County Code related to the County Noise Ordinance which allows exemptions for noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including

seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner

Mitigation Measures

Mitigation Measure BIO-1: Avoid and minimize impacts to special status plants

For work on land, a botanist will conduct pre-construction surveys for special status plants. If any are identified (i.e., Bolander's water-hemlock, woolly rose-mallow, Delta tule pea, Mason's lilaeopsis, delta mudwort, Sanford's arrowhead, or Suisun Marsh aster), they will be flagged and avoided to the greatest extent feasible. If individuals cannot be avoided, CDFW will be consulted to determine if transplanting is warranted, and if advised, DWR will attempt to transplant them via a CDFW approved method.

Mitigation Measure BIO-2: Avoid and minimize underwater sound pressure due to pile driving

Underwater sound monitoring shall be performed during pile-driving activities. A qualified biologist or natural resource specialist shall be present during such work to monitor construction activities and compliance with terms and conditions of permits.

Underwater sound reduction measures shall be employed, as needed, to ensure that levels do not exceed the threshold levels established by USFWS and NMFS for fish greater than 2 grams.

Peak pressure	=	206 decibel
Accumulated SEL	=	187 decibel

These underwater sound reduction measures shall include use of an impact hammer cushion block. Additionally, hammers shall be used only during daylight hours and initially shall be used at low energy levels and reduced impact frequency. Applied energy and frequency shall be gradually increased until necessary full force and frequency are achieved.

If necessary, one or more of the following may be implemented to further reduce sound:

- Pipe caissons shall be used to isolate the piles from waters to buffer underwater sound pressure levels if underwater sound monitoring indicates that underwater sound levels exceed threshold levels. The caissons shall be driven below the mud line using vibratory or hydraulic methods and the interior area dewatered before pipe piles are installed using impact methods.
- The use of a bubble curtain surrounding the pile to be driven.

Mitigation Measure BIO-3: Avoid and minimize impacts to special status wildlife

An environmental awareness training will be conducted by the environmental monitor for all construction personnel prior to commencement of construction. This training will include a brief overview of the life history of western pond turtle, giant gartersnake, Golden Eagle, Swainson's Hawk, White-tailed Kite, Loggerhead Shrike, Song Sparrow ("Modesto" population), western red bat, and hoary bat, their legal protections and penalties, and explain the relevant Environmental Commitments and Mitigation Measures. Pre-construction surveys will be conducted in an effort to determine whether sensitive species may be present within the work zone at the onset of construction activities. Additionally, the following species-specific mitigation measures will be implemented to ensure that potential impacts are less than significant.

- Western pond turtle: A pre-construction survey for western pond turtles will be conducted immediately prior to construction. Construction personnel will be alerted during a tailgate meeting that western pond turtles may be present in the area and should be avoided. If a western pond turtle is identified with in the work zone, work will not proceed until it has been determined that continuation of construction activity will not adversely affect the turtle.

- Giant garter snake (GGS): Standard construction BMP's such as limiting speeds on the project site will be implemented. Pre-construction surveys for GGS will occur 24 hours prior to construction activities and after any lapse in construction of two weeks or greater has occurred. Work within the irrigation or drainage ditches will be conducted between May 1 and October 1, during the snake's active season. An environmental monitor will either be present or on call during on-land work activities. If a giant garter snake is identified in the work zone, work will not proceed until the snake has moved out of the work zone and USFWS and CDFW have been consulted.

- Swainson's Hawk and other raptors, including Golden Eagle, Short-eared Owl, and White-tailed Kite: If work is to be conducted during the nesting season (February 1-August 31), pre-construction surveys will be completed no more

than 14 days prior to construction, within a radius of 1/2 mile of the project sites, to identify any active nests containing eggs or juveniles. Surveys will be completed in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SWHA TAC, 2000). If an active nest is identified, CDFW will be consulted to discuss whether work may take place without substantial disturbance to the nest. If it is determined that work may proceed before young have fledged, a qualified biologist will monitor the nesting pair for behavioral indications of disturbance during construction. Continuation of work may be postponed until chicks have fledged if activities appear to threaten the success of the nest.

- Burrowing Owl: Preconstruction surveys will be conducted for Burrowing Owl within 14 days prior to construction. If an active burrow is found during the breeding season (February 1 - August 31), markers will be used to clearly demarcate an avoidance buffer zone so that vehicles and workers at the project site will avoid disturbing the area. Buffer zones will be implemented following recommendations in the *CDFW Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Any active burrows will be monitored by a qualified biologist throughout the construction phase to determine the effectiveness of buffers, visual screens, or other measures, and to determine if the activity is jeopardizing an active nest. DWR shall consult with CDFW for assistance in developing site-specific solutions, as needed.

- Migratory birds, Loggerhead Shrike, and Song Sparrow ("Modesto" population): If work is scheduled to take place during the nesting season (April 1-August 31), a pre-construction survey for nests will be conducted within 250 feet of all activities. If active nests are found in the project area, an appropriate non-disturbance buffer will be established in consultation with CDFW and will depend on the species involved, site conditions, and the type of work proposed. No new project activity shall occur within the buffer zone until the young have fledged, until the nest is no longer active, or until a qualified biologist has determined in consultation with CDFW that reducing the buffer would not result in nest abandonment. Monitoring of the nest by a qualified biologist during construction shall be required to ensure that nests are not jeopardized.

- Western red bat and hoary bat: A qualified biologist shall conduct a pre-construction survey no more than 14 days prior to work commencing to determine if tree roosting bat species such as hoary bat may be present within the project site. If bats are found, a phased-disturbance approach may be implemented to minimize impacts to individual day-roosting bats. A phased disturbance approach would include initiating activity which does not include vegetation removal within the area 24-48 hours before beginning vegetation removal. Minor disturbance in the area is less likely to cause flushing of day-

roosting bats, but is thought to discourage bats from returning to the site to roost following nightly foraging. A qualified biologist will be present on site during all vegetation removal activities. If bats are observed or inadvertently injured during project activities, the biologist will determine if project activities must cease, CDFW will be notified immediately, and if necessary the individual will be taken to a suitable wildlife rehabilitation center such as the Lindsey Wildlife Museum.

Mitigation Measure BIO-4: Mitigate impacts related to the removal of riparian habitat or other sensitive natural communities.

- DWR will purchase mitigation credits at a ratio agreed upon with the regulating agencies in order to mitigate impacts to riparian habitat or other sensitive natural communities that may be affected by the proposed project.

Mitigation Measure BIO-5: Avoid and minimize impacts to jurisdictional waters of the United States

In order to minimize impacts to jurisdictional waters of the US, DWR shall implement the following measures:

- Minimize placement of structures in waters of the United States and waters of the state to the greatest extent feasible.
- Locate all staging areas, parking areas, equipment, and storage areas for fuel, lubricants, and solvents in areas away from waters of the United States and waters of the state.
- If deemed necessary by the USACE, mitigate for loss of waters of the U.S., including wetlands, through a mitigation bank or and equivalent means.

Mitigation Measure CULT-1: Mitigate impacts to archaeological resources

- If 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 takes place (CEQA Guidelines §15064.5 [f]). If the find is determined to be an 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: Mitigate impacts to 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.

Mitigation Measure CULT-3: Mitigate impacts to tribal cultural resources

- If prehistoric archaeological resources or human remains are discovered during construction, DWR will consult with tribal representatives identified by the Native American Heritage Commission to determine whether the find is a tribal cultural resource and to identify culturally appropriate treatment. This consultation will take place concurrently with mitigation measures CULT-1 and/or CULT-2, as appropriate.

Mitigation Measure HM-1: Minimize potential for hazardous materials spills

- All personnel involved in use of hazardous materials will be trained in emergency response and spill control. Diesel fuel and oil will be used, stored, and disposed of in accordance with standard protocols for the handling of hazardous materials. Contracts will require contractors to prepare and make available to DWR, for review and acceptance, a spill prevention and control plan.

Mitigation Measure HM-2: Mitigate impacts resulting from potential hazardous material spills

- Soils or water contaminated by any hazardous materials spills during construction would be excavated, removed, or mopped up from the site and disposed of at an appropriate regional landfill.

Mitigation Measure HM-3: Minimize potential for fires resulting from construction activity

- The project contractor will be required to develop a fire protection and prevention plan which incorporates fire safety measures (e.g., spark arrestors,

mufflers) on all equipment with the potential to create a fire hazard and staging areas and access roads will be managed for vegetation to the maximum extent practicable to minimize the potential for vehicle-ignited fires. The plan will ensure that fire suppression equipment is maintained on site and that all construction employees have received appropriate fire safety training.

Statement of No Significant Effect:

DWR prepared an Initial Study in support of this Mitigated Negative Declaration. Copies of the Initial Study/Mitigated Negative Declaration (IS/MND) were provided to the State Clearinghouse on December 21, 2015, initiating the 30-day public review period which ends on January 19, 2016.

Pursuant to Section 21082 of the California Environmental Quality Act, DWR has independently reviewed and analyzed the IS/MND for the proposed project and finds that the IS/MND reflects the independent judgment of DWR. As the lead agency for the project, DWR further finds that the project mitigation and conservation measures will be implemented as stated in the MND. With implementation of these mitigation and conservation measures, the proposed project as modified would have no significant effect on the environment.

I hereby approve this project:

_____ _____

Jeanne Kuttel
Chief, Division of Engineering
California Department of Water Resources

Date

INITIAL STUDY: Sherman and Twitchell Islands Fish Screen Project

1. Project Title:	Sherman and Twitchell Islands Fish Screens Project
2. Lead Agency Name and Address:	California Department of Water Resources
3. Contact Person and Phone Number:	Jeanne Kuttel; Chief, Division of Engineering California Department of Water Resources Jeanne.Kuttel@water.ca.gov (916) 653-3927
4. Project Location:	The project area spans the northwestern levee of Sherman Island in the Antioch North 7.5 minute USGS quadrangle and the southern levee of Twitchell Island in the Jersey Island 7.5 minute USGS quadrangle in Sacramento County
5. Project Sponsor's Names:	California Department of Water Resources
6. General Plan Designation:	Sherman Island– Special Management Area – Agriculture area subject to flooding, Preservation Strategies by a State Agency. Land use – Open Space, Resource Conservation Area, Recreation. Twitchell Island– Open Space Agricultural area subject to flooding. Land use – Open Space, Agricultural Cropland
7. Zoning:	Agricultural (AG-80), Delta Waterways, and Residential (RD-1).

8. **Description of Project:** The California Department of Water Resources (DWR) proposes to place self-cleaning, retractable fish screens at the waterside termini of five DWR-owned intake siphons located on Sherman Island and Twitchell Island in order to reduce entrainment of Delta Smelt and other fish species by agricultural diversions on state-owned lands. Each installation will require modification of the existing intake siphon to accommodate the attachment of the fish screen, construction of a structural steel access walkway and control platform, portable generator powered winch retrieval track, hydraulic system, and additional steel piles to support the structure.

9. **Surrounding Land Uses and Setting:** Sherman Island is located in southwestern unincorporated Sacramento County. The Sacramento River borders Sherman Island to the north and northwest. Threemile Slough is on the east and the San Joaquin River on the southeastern, southern, and western banks. The proposed project will take place within the Sacramento River. The DWR owned intake pipes (Sites 1 and 2) chosen for this project are generally used to irrigate pastures. Recreationally, this island is used primarily for fishing and wind surfing. Permanent housing as well as temporary camping facilities exist on this island.

   Twitchell Island is also located in Sacramento County, immediately east of Sherman Island. Twitchell Island is surrounded by Threemile Slough to the west, Sevenmile Slough to the north and east, and the San Joaquin River to the south. The three sites chosen for Twitchell Island (Sites 3, 4, and 5) are located on the San Joaquin River. These siphons service lands used to grow row crops that include rice, corn, and alfalfa and support wetland restoration sites.

10. **Other Public Agencies whose Approval Is Required:** U.S Army Corps of Engineers (USACE) Nationwide Permit 3 (Clean Water Act Section 404), US Fish and Wildlife Service (USFWS) (Endangered Species Act consultation), National Oceanic and Atmospheric Administration National Marine Fisheries Administration (NMFS) (Endangered Species Act consultation), California Department of Fish and Wildlife (CDFW) (Streambed Alteration Agreement, Fish and Game Code 1601 and California Endangered Species Act consultation), Central Valley Flood Protection Board (Encroachment Permit), Regional Water Quality Control Board (RWQCB) (Clean Water Act Section 401 Permit), US Coast Guard (Navigation Safety Authorization), State Lands Commission.

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1 INTRODUCTION

1.1 Background

In a press conference held on July 17, 2007, then-governor Arnold Schwarzenegger and the Department of Water Resources' (DWR's) Director, Lester Snow, outlined immediate action steps that DWR would take to improve conditions in the Sacramento-San Joaquin Delta as part of the Governor's $5.9 billion dollar water supply plan (DWR, 2007).

The proposed Interim Delta Actions were designed to (1) help protect and restore Delta habitat and species, (2) improve our ability to respond to catastrophic Delta failures, and (3) help water users cope with supply interruptions. These actions were not intended to replace recommendations from ongoing Delta planning efforts, but rather they were intended to make incremental improvements until long-term plans are in place. Immediate directives to protect the Delta were issued to DWR. Among these actions were the following:

- Screen Delta agricultural intakes to protect Delta Smelt. Install California Department of Fish and Wildlife (CDFW) and National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) approved fish screens on existing diversions to protect the smelt when water is diverted from the Delta to irrigate State-owned lands on Sherman and Twitchell islands.

- Prevent the spread of invasive species. Invasive species like the Quagga mussel (*Dreissena rostriformis bugensis*) and zebra mussel (*Dreissena polymorpha)* compete with native species like the Delta Smelt (*Hypomesus transpacificus*).

In 2008, DWR circulated a CEQA document and pursued permits from the regulatory agencies for a project proposing to screen ten existing agricultural siphons to fulfill former governor Arnold Schwarzenegger's directive to screen Delta agricultural intakes on Sherman and Twitchell Islands to protect Delta Smelt and other sensitive fish species; however, the project was put on hold prior to submitting a CEQA Notice of Determination or finalizing permits due to unresolved internal disagreements.

DWR is again proposing to undertake a modified version of this fish screening project, this time including only five of the original ten sites, as five sites were removed from the current project due to changes in present and planned future land use practices. Because a significant amount of time has passed since the original CEQA document circulation and there are modifications in the project scope, DWR has prepared a new CEQA document for circulation and review which reflects the currently proposed activities and discusses potential environmental impacts to the existing conditions at the project sites.

1.2 Project Purpose

The proposed fish screening project was identified in 2007 as a measure which would contribute to the Department's goals in meeting the Interim Delta Actions. Specifically, installing fish screens on DWR owned agricultural siphons would address Interim Delta Action 3, by helping to protect and restore Delta habitat and species.

Direct entrainment by State and Federal water export facilities has been cited by the United States Fish and Wildlife Service (USFWS) as one of four significant threats to Delta Smelt (USFWS, 2013); but, as discussed by DWR's then-director, Lester Snow, in the 2007 press-conference, the impact of over a thousand small water diversions in the Delta has long been overlooked. DWR is proposing to place CDFW and NOAA Fisheries approved fish screens (DFG 2000b; NOAA 1996) on five DWR-owned Delta intake siphons on Sherman and Twitchell Islands, thereby reducing entrainment of Delta fish on state lands and eliminating the potential adverse effects on sensitive fish species due to agricultural water diversions. In addition, the fish screens will be built to minimize the risk of attachment of invasive mussels through a desiccation and self-cleaning process (See Section 2.2.3 for fish screen criteria information).

1.3 Site Selection

Site selections around both Twitchell and Sherman Islands were based on the "Screen Delta Intakes Sherman and Twitchell Islands-Fish Screens, Preliminary Design, Draft Summary Report" (2008) as prepared by the General Engineering Section of the Department of Water Resources. Site selection of the original ten locations was based on the following criteria:

- The diversion must be owned by DWR
- The diversion is an offshore, mid-channel intake
- The diversion is a larger intake in relation to other potential DWR-owned intakes
- Delta smelt are present or are likely to be present

The five sites that have been retained in the current project were chosen based on current and future agricultural practices and expected water use.

1.4 Project Location

Sherman and Twitchell Islands are located in the southwestern portion of Sacramento County. Sherman Island is located west of Twitchell Island and the two islands are separated by Threemile Slough. The Sacramento River runs along Sherman Island's northern shore, Twitchell Island is bounded on the north by Sevenmile Slough, and the San Joaquin River borders both islands on their southern shores.

Project sites 1 and 2 are located on the northwestern levee of Sherman Island in the Antioch North 7.5 minute USGS quadrangle in Sacramento County; Township 3 North, Range 2 East, Sections 28 and 32; and Township 2 North, Range 2 East, Section 8. Sites 3, 4, and 5 are located on the southern levee of Twitchell Island in the Jersey Island 7.5 minute USGS quadrangle in Sacramento County; Township 3 North, Range 3 East, Sections 16, and 17 (Figure 1).

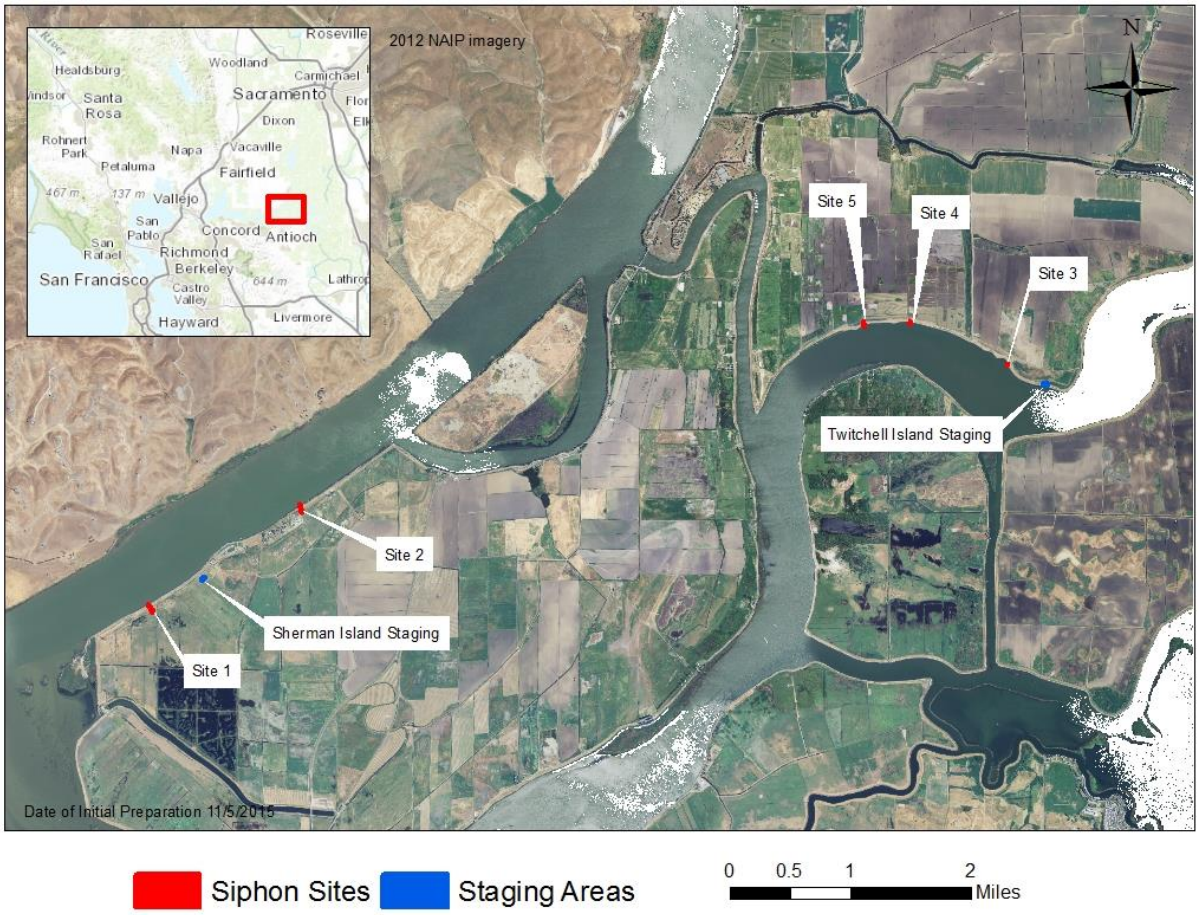

Figure 1- Site Locations

1.5 Environmental Setting

The Delta region of California is characterized by a Mediterranean climate, with cool, wet winters and hot, dry summers, and temperatures that are somewhat moderated by onshore flows from the Pacific Ocean.

Like many islands in the Delta, Sherman and Twitchell are mostly riprapped on the waterside to prevent levee erosion. Riparian vegetation, including willows, walnut trees, Himalayan blackberry, tules, and rare plant species such as Mason's lilaeopsis, Delta tule pea, and Suisun Marsh aster can also be found on the banks. Many native and non-native fish species such as

Chinook Salmon, Delta Smelt, Green and White Sturgeon, Striped Bass, and Small- and Largemouth Bass are found within adjacent waterways. Waterside levees and island interiors support birds and other wildlife such as Red-winged Blackbird, Song Sparrow, Northern Harrier, river otter, western pond turtle, and coyote, in habitat that is predominantly non-native grassland and agricultural.

The island interiors are drastically subsided (up to 19 feet below river level in some areas) due to oxidation of the peat soils which make up the soil substrate.

Sherman Island is used primarily for pastureland and recreation. Recreational activities include fishing, hunting, and water sports such as windsurfing and kite boarding at the Sherman Island County Park along the Sacramento River and the Lower Sherman Island Wildlife Area which includes the flooded western portion of the island known as Sherman Lake. There are several permanent residences on this island as well as camping facilities.

Twitchell Island is still extensively farmed with rice fields and row crops such as corn and alfalfa; however, parts of it are used for research on wetland restoration and organic carbon management. Recreation near this island is primarily fishing. There are a few permanent residences on this island.

Sherman and Twitchell Islands are included within the statutory Sacramento-San Joaquin Delta or "Legal Delta" boundary as described in California Water Code Section 12220, as well as the Delta Primary Zone which is subject to the Delta Protection Act of 1992 and the Land Use and Resource Management Plan developed by the Delta Protection Commission. The mission of the Delta Protection Commission is to adaptively protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment consistent with the Delta Protection Act and the Land Use and Resource Management Plan for the Primary Zone. This includes, but is not limited to, agriculture, wildlife habitat, and recreational activities through orderly, balanced conservation and development of Delta land resources and improved flood protection.

2 PROJECT DESCRIPTION

DWR proposes to place five self-cleaning, retractable fish screens at the waterside termini of five DWR-owned intake siphons located on Sherman Island and Twitchell Island in order to reduce potential entrainment of Delta Smelt and other fish species by agricultural diversions on state-owned lands.

Each installation will require modification of the existing intake siphon to accommodate attachment of the self-cleaning fish screen, construction of a structural steel access walkway, electric powered winch retrieval track, and additional steel piles to support the structure.

2.1 Site Access

Both islands can be reached via State Highway 160, off of State Highway 12. Sherman Island can be entered from West Sherman Island Road via State Highway 160. Sherman Island sites 1 and 2 are located to the north of West Sherman Island Road, a paved two-lane county road.

Twitchell Island can be entered through West Brannan Island Road off of State Highway 160. This levee road along Sevenmile Slough shall be utilized because the levee road along Threemile Slough has a private gate. Twitchell Island Ferry Road, near San Joaquin River Station 240+00 will be used to reach sites 3, 4, and 5. These sites are located along mostly unpaved Reclamation District (#1601)-owned roads.

2.2 General Construction Methodology

In general, each site will utilize piles as the foundation for supporting the framework for a self-cleaning, retrievable fish screen system. The system will consist of a cylindrical drum-shaped screen with internal and external brushes that will clean the screens. The brushes will be powered by a propeller drive system that rotates the brushes whenever water flows through the screen. The screens are retrievable through a track and winch system which will be powered by a portable generator. This will allow for screen maintenance and will also serve to dry out the screen in a desiccation process focused on preventing the attachment and spread of invasive mussels. The control structure will be accessible via a walkway supported by concrete footings at the edge of the levee road. The descriptions below address the standard construction plans for the sites.

Due to the variable conditions at each site, some modifications to the general design will need to be made to accommodate specific circumstances. Modifications to the standard design and construction will be discussed in Section 2.4 below.

2.2.1 Intake Siphon Modification/Replacement

Terminal sections of the intake siphons at each of the five DWR-owned sites will need to be modified in order to extend the pipe farther into the channel and at an appropriate angle to allow for fish screen attachment and appropriate submersion depth. Extension of intake pipes will utilize additional pipe length which will match in diameter and be welded to the existing waterside siphon. Additional piles will be needed to support the pipe extension and the number of piles necessary for each site will vary based on the extension length.

2.2.2 Pile Driving

Installation of steel pipe piles will be required to support the siphon, screen, and associated structure. 18-inch diameter steel piles, approximately 50-70 feet long, will be driven by diesel impact hammer into the riverbed, approximately 7-15 feet apart. The embedment depth of the piles will be approximately 55 feet at the Sherman Island sites and approximately 45 feet at the Twitchell Island sites, based on the interpolated water levels which were derived from the DSM2 modeling studies that were developed for the Bay Delta Conservation Plan. The mean water levels for sites on Sherman and Twitchell Islands are shown in Table 1 below.

Table 1- Water Levels Used for Engineering

	Mean High High Water Level (MHHW)	Mean Low Low Water Level (MLLW)
Sherman Island	+5.75 feet (NAVD 88)	+1.25 feet (NAVD 88)
Twitchell Island	+5.40 feet (NAVD 88)	+1.92 feet (NAVD 88)

Each site will utilize eight piles to support a control structure and a varying number of piles to support the intake pipe ranging from four to sixteen piles depending on siphon length, diameter, terrain, and avoidance activities. Sites 1 and 2 on Sherman Island are located on a USACE federally authorized civil works project levee ("project levee"). At these sites, any piles located within 15 feet of the theoretical levee prism will be pre-drilled prior to pile driving.

Pile driving will be performed mainly from barges (approximately 150-foot vessel) utilizing a crane set-up. Up to two barges may be used simultaneously to hold and drive the pilings. The barges may be self-propelled or maneuvered into place using a tugboat. During project activities, the barges are expected to be anchored with spuds without the engine idling. If a tugboat is used, the tugboat will remain tethered to the barge while the barge is on-site. The crane is expected to idle throughout the day during project activities. A land-operated crane may also be used where a barge-operated crane has difficulty maneuvering. Field welding of

steel piles with extra pile sections may be necessary in order for the piles to acquire the designed support capacity. If field welding or cutting is necessary, the contractor will be required to use tarps or shields to prevent slag or other debris from falling in to the water.

In-water pile driving will be restricted to the Delta Smelt in-water work window of August 1 through November 30, which has been designated by the USFWS and CDFW as a time period when Delta Smelt and other sensitive fish species are least vulnerable to in-channel activities. Pile driving will be conducted between the hours of 6am and 6pm, Monday through Friday, or between the hours of 7 am and 6 pm on weekends, in order to comply with Sacramento County noise ordinances.

2.2.3 Fish Screen Criteria

The criteria for choosing the fish screens for this project were selected based on the requirements set forth by the California Department of Fish and Game's "Fish Screening Criteria" (2015) and the National Marine Fisheries Service-National Oceanic and Atmospheric Administration (NMFS) Screen Criteria for Juvenile Salmonids (1995), with the addendum – Juvenile Fish Screen Criteria for Pump Intakes (1996).

Based on the design criteria and configuration of the project sites, cylindrical submerged fish screens with a self-cleaning brush system will be used for this project. The self-cleaning brush system was chosen because use of the brushes to clean debris and potential invasive mussels from the fish screen surface was determined to be more effective than the other systems evaluated in DWR's document "Screen Delta Intakes, Sherman and Twitchell Islands – Fish Screens Preliminary Design" (2008). Additionally, the system has been demonstrated to work well under Delta region conditions, and the product and technology are already approved by NMFS (DWR, 2008).

2.2.4 Fish Screen Assembly

The fish screen assembly, including the screen, steel pipe retrieval track, and supporting components will be constructed off-site by the manufacturer and will be assembled on-site. The fish screens will require the use of divers for installation. Bolted flange connections will be used to attach the screen to the siphon. Wire cables and winches may be used by a crane during installation to aid the screen's maneuverability.

2.2.5 Access Platform and Control Structure Construction

Each control structure will consist of an approximately 25 by 13 foot platform and retrieval winch surrounded by an 8 foot tall chain link enclosure with barbed wire along the upper fence line and manual entry gate, and an access platform with guardrail, supported by structural steel

framing and reinforced concrete footing. Each access platform and control structure will require the installation of eight 18-inch diameter steel support piles.

2.2.6 Spoil Sites, Staging Areas, and Road Maintenance

Existing levee roads will be used to access any construction operations occurring outside of the waterside construction area. Any spoils that may be generated by this project would be associated with the reinforced concrete footing construction and landside pipe replacement work, which includes excavation on the levee road and the land at or adjacent to the levee toe. Excavated material will be temporarily stored near the siphon pipelines until it can be re-placed or disposed of at an appropriate disposal facility.

Each island will have a staging area located on property that is DWR-owned. Both the Sherman and Twitchell Island staging areas will be 100 feet by 200 feet in area.

The contractor hired by DWR to complete project work will be responsible for repairing roadway surfacing if the roadway is damaged by construction operations within the project area. Roadway excavation will be necessary at Sites 2 and 4 in order to replace landside pipes. Site 2 is located along an asphalt paved road, and Site 4 crosses a graded road with aggregate base overlay. Roadway repairs will be restricted to the existing road surface.

2.3 Construction Equipment

Anticipated construction equipment includes two crane-mounted barges (each ~150 ft. long) for pile driving and for all work taking place within the waterways, including placement of the fish screen and platform construction. A land-operated crane may also be used where a barge-operated crane has difficulty maneuvering. A small truck-mounted auger will be used for drilling holes during concrete foundation placement. A concrete mixer/concrete truck will unload approximately one cubic yard of concrete at each site for the concrete pillar foundation at the edge of each levee. A crane, backhoe, excavator, or bobcat will be mobilized during pipe removal and replacement activities. A dump truck may be utilized to hold or transport excavated material taken from the levee and levee toe areas. One or more water trucks will be mobilized to minimize fugitive dust during activities along unpaved roadways, levees, and levee toe roads. Construction crews will likely drive to the islands using personal vehicles.

2.4 Site Specific Activities

Due to variables in the existing site locations, some modifications will need to be made to the general design and construction plans to accommodate site specific conditions. These modifications are discussed in greater detail for each site in the following sections.

2.4.1 Site 1

Site 1 is located on the northwestern side of Sherman Island at 121°46'34. 588"W, 38°3'52. 96"N, west of Site 2 along the Sacramento River. The existing 16-inch gravity flow siphon connects to a covered stand pipe on the land side. The stand pipe has one out flow valve from which the tenant digs a "V" ditch to irrigate pasture or to provide a source of drinking water for cattle. Approximately 260 feet of land side pipe will be replaced under the Sherman Island "Little Baja and Manzo Ranch" Fish Release Sites Project which began construction in 2015, and is expected to be completed and functional by the time this project is scheduled to go to construction.

The existing water side portion of the siphon will be cut and replaced with a new pipe section which will extend approximately 72 feet into the channel from the levee road centerline to achieve an appropriate submersion depth for the fish screen. Fourteen piles will be installed at this site, six of which will support the pipe extension, associated screen, and retrieval track, and eight to support the control structure. This site is located on a Corps "project levee", and all 14 of the proposed pilings fall within 15 feet of the theoretical levee prism and will therefore need to be pre-drilled prior to pile driving.

Other in-water and landside work at this site will conform to the general construction methodology in Section 2.2.

2.4.2 Site 2

Site 2 is located on the northwestern side of Sherman Island at 121°45'11.412"W, 38°4'35.549"N, along the Sacramento River. This 18-inch siphon is a gravity flow siphon which connects to a covered stand pipe on the land side. The stand pipe has an outflow valve connected to a buried pipeline that feeds into an open ditch and distributes water to pasture ground.

At this site, the entire intake siphon pipeline from the waterside to the landside outfall will be realigned in order to avoid construction impacts to willow and walnut trees which are growing above the existing pipeline. The existing water side portion of the siphon will be cut and replaced with a new pipe section which will extend approximately 170 feet into the channel from the levee road centerline to achieve an appropriate submersion depth for the fish screen. Twenty-four piles will be installed at this site, 16 of which will support the pipe extension, associated screen, and retrieval track, and eight to support the control structure. This site is also located on a Corps "project levee", and eight of the 24 proposed pilings fall within 15 feet of the theoretical levee prism and will therefore need to be pre-drilled prior to pile driving.

The landside realignment will be achieved by installing the new pipe and stand pipe approximately ten feet east of the existing pipe. An existing fence will be removed and replaced following realignment. The existing stand pipe and remaining siphon pipeline will be abandoned in place after filling with controlled low strength material (CLSM) slurry. Trimming and/or removal of vegetation including Himalayan blackberry (*Rubus armeniacus*) brambles, a walnut tree (*Juglans hindsii* x), and small sandbar willow (*Salix exigua*) from up to fifteen feet on either side of the existing siphon at the waterside will be necessary at this site in order to provide equipment access.

Other in-water and landside work at this site will conform to the general construction methodology in Section 2.2.

2.4.3 Site 3

Site 3 is located on the southern side of Twitchell Island at 121°38'43.998"W, 38°5'36.065" N, along the San Joaquin River. This 24-inch gravity flow siphon discharges into an open ditch system used to irrigate row crops.

The existing waterside portion of the siphon will be cut and replaced with a new pipe section which will extend approximately 118 feet into the channel from the levee road centerline to achieve an appropriate submersion depth for the fish screen. Eighteen piles will be installed at this site, ten of which will support the pipe extension, associated screen, and retrieval track, and eight to support the control structure.

Other in-water and landside work at this site will conform to the general construction methodology in Section 2.2.

2.4.4 Site 4

Site 4 is located on the southern side of Twitchell Island at 121°39'37.512"W, 38°5'54.296" N, along the San Joaquin River. This 18-inch gravity flow siphon discharges into an open ditch on the land side.

At this site, the waterside siphon pipe, the through-levee section, and approximately 66 feet of the adjacent landside pipeline will be replaced. The new waterside pipe section will extend approximately 94 feet into the channel from the levee road centerline to achieve an appropriate submersion depth for the fish screen. The through-levee section of pipe will be replaced due to deterioration of the pipe and to meet the Reclamation District's required standards. Additionally, the levee road surface will be raised approximately 1 foot over existing grade at the intake site using aggregate base road surfacing material and will be sloped to match existing grade at approximately 30 feet from the siphon centerline. Sixteen piles will be

installed at this site, eight of which will support the pipe extension, associated screen, and retrieval track, and eight to support the control structure.

Other in-water and landside work at this site will conform to the general construction methodology in Section 2.2.

2.4.5 Site 5

Site 5 is located on the southern side of Twitchell Island at 121°40'2.646"W, 38°5'53.103" N, along the San Joaquin River. This 16-inch gravity flow siphon discharges into an open ditch on the land side and is used to irrigate row crops.

At this site, the existing waterside portion of the siphon will be cut and replaced with a new pipe section which will extend approximately 65 feet into the channel from the levee road centerline to achieve an appropriate submersion depth for the fish screen. Twelve piles will be installed at this site, four of which will support the pipe extension, associated screen, and retrieval track, and eight to support the control structure.

Other in-water and landside work at this site will conform to the general construction methodology in Section 2.2.

2.5 Construction Schedule

This project is proposed to go to construction in 2017 and is expected to take two years to complete. Multiple sites on each island may be constructed concurrently.

2.6 Environmental Commitments

2.6.1 General Plant and Wildlife Avoidance and Protection Measures

The following avoidance and protection measures are intended to prevent significant adverse effects to plant and wildlife species that have the potential to occur within the project area, and will be implemented as part of the project.

- A qualified biologist will conduct seasonally appropriate botanical surveys of the impacted area within 1 year prior to project commencement. These surveys will follow protocols established by the CDFW (2009) and CNPS.
- A qualified biologist will conduct pre-construction surveys no more than 14 days prior of the start of construction for any special status wildlife that have the potential to occur within the project area.
- A qualified biologist shall conduct a training session for all construction personnel prior to the start of work. At a minimum, the training shall include a description of species

that have the potential to occur (western pond turtle, giant garter snake, nesting birds, burrowing owl, western red bat, hoary bat, San Joaquin pocket mouse, North American green sturgeon, Sacramento perch, delta smelt, steelhead Central Valley DPS, Sacramento splittail, longfin smelt, Bolander's water-hemlock, Delta button-celery, delta mudwort, Sanford's arrowhead, Suisun Marsh aster, woolly rose-mallow, Delta tule pea, and Mason's lilaeopsis), a discussion of the importance of avoiding impacts to these species, the general measures that are being implemented to conserve these species as they relate to the project and project area, and procedures to follow should sensitive plants or wildlife be encountered during work.

- A qualified biologist will be present during all ground disturbing activities and activities that have the potential to adversely affect sensitive plants or wildlife, should they be present in the project area.
- Any observations of federally or state-listed species will be reported to the Service and the CDFW within three (3) working days of the observation and CNDDB forms will be submitted to CDFW within 60 days of the sighting.
- All federally and state-listed species encountered within the project site will be allowed to leave the project area on their own, unless it can be determined that moving the animal poses a lesser risk to the animal. The on-site biologist will determine whether activities must cease in order to ensure their protection.
- Project activities shall be performed during daylight hours only.
- All project personnel and construction vehicles will observe a 15 mph speed limit on access roads within the project site where it is safe to do so. Otherwise, posted speed limits will be followed.
- All fueling and maintenance of vehicles or other equipment shall occur on established access roads or staging areas and at least 50 feet away from aquatic sites.
- Motorized equipment will be kept clean and in good working condition and will not be left idling while not in use.
- Absorbent materials will be available on site. Any accidental leaks or spills will be immediately cleaned up, and any leaking equipment will not be allowed to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.
- All trash shall be properly contained, removed from the work site, and disposed of to prevent attracting predators.

2.6.2 In-Water Work Restrictions to Protect Sensitive Fish Species

In-water work, defined as all construction activities which take place below the high tide line will be restricted to the Delta Smelt in-water work window of August 1 through November 30, which has been designated by the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) as a time period when Delta Smelt and other sensitive fish species, including Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon and Central Valley steelhead are least vulnerable to in-channel activities (USFWS 2004, DFG 2005).

Work conducted over the water such as walkway construction, electrical set-up, and concrete foundation construction at the crest of the levee will not be restricted to the Delta Smelt work window. Welding over or in the waterway will not be permitted without proper protection measures at any time. Protection measures will include the use of tarps or shields to prevent slag or other debris from falling into the water.

2.6.3 Landside Work Restrictions to Protect Giant Garter Snake

The chosen sites on Sherman and Twitchell Islands are located within the vicinity of multiple giant garter snake occurrences and appropriate habitat is considered potentially occupied by the species. Therefore, in order to reduce potential adverse effects on giant garter snake, the proposed project will incorporate the Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake (*Thamnophis gigas*) Habitat, which are listed in Appendix C of the Programmatic Consultation with the US Army Corps of Engineers for 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California, wherever feasible. These measures are listed below:

- Avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat. Confine movement of heavy equipment to existing roadways to minimize habitat disturbance.
- Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.
- Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area should be avoided by all construction personnel.

- Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).
- 24-hours prior to construction activities, the project area should be surveyed for giant garter snakes. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the Service immediately by telephone at (916) 414-6600.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.
- Following the conservation measures in Table 1 of the guidance, impacts to potential giant garter snake habitat, which will total less than 20 acres and will be temporary in nature, will be mitigated through restoration of the affected sites to pre-disturbance conditions.

2.6.4 Greenhouse Gas Reduction Plan

Greenhouse gas emissions (GHG) have the potential to adversely affect the environment because they contribute, on a cumulative basis, to global climate change. In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Reduction Plan (GGERP). According to the GGERP, all DWR projects are expected to implement all construction Best Management Practices (BMPs) outlined in the plan unless a variance is approved by the DWR CEQA Climate Change Committee. Therefore the proposed project will incorporate the following BMPs to avoid and minimize impacts related to greenhouse gas emissions:

- Evaluate project characteristics, including location, project work flow, 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.
- Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.
- Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
- Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.
- Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure Cal. Code of Regs., tit. 13, §2485). 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 jobsite 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 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.
- Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.
- Develop a project specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste.
- 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.

2.6.5 Air Quality Basic Construction Emission Control Practices

The proposed project is located within the Sacramento Valley Air Basin, Sacramento Metropolitan Air Quality Management District (SMAQMD, the District). In order to comply with the District's construction thresholds for NOx and particulate matter, the following Environmental Commitment measures will be implemented.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections

2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

2.6.6 Traffic Control Plan

- DWR's contractor will be required to prepare and adhere to a Traffic Control Plan which will ensure that vehicle access along county roads will be maintained at all times during construction.

2.6.7 Sacramento County Noise Ordinance Compliance

- This project will comply with the restrictions set forth in the Sacramento County Code related to the County Noise Ordinance which allows exemptions for noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner

3 ENVIRONMENTAL CHECKLIST

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

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

Determination:

On the basis of this initial evaluation:

☐ 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 to 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 an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Jeanne M. Kuttel — Signature

1-14-16 — Date

Jeanne M. Kuttel — Printed Name

For

3.1 Aesthetics

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	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 along a scenic highway?	☐	☐	☒	☐
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d.	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☒

3.1.1 Environmental Setting

The levees within the Sherman and Twitchell Islands project areas are man-made, rip-rapped embankments with some riparian vegetation including tules (*Schoenoplectus* spp.) and trees such as willows (*Salix* spp.), walnut (*Juglans* sp.) and cottonwood (*Populus fremontii*).

Each of the five sites currently consists of an intake siphon that ranges in diameter from 12 to 24 inches. The proposed project will add additional structures to the existing character of the levees within the Sacramento and San-Joaquin Rivers, including a fenced access platform and control structure, retrieval track, and elevated walkway, as well as a fish screen that will be underwater except during periodic drying to prevent potential colonization by invasive mussels.

Although the additional structures will be visible to the public and island residents from the levee roads as well as from the water, the structures will not obstruct views of the river from the levee. Additionally, these structures will be similar in nature and aesthetic impact to

existing levee structures which include other agricultural siphons and pumps, fish release structures, and boat docks. The levees themselves are man-made, with modest scenic value.

3.1.2 Discussion

a) Have a substantial adverse effect on a scenic vista?

Less than significant impact. Although the proposed structures will be visible to the public, they will not obstruct views of the river, and will be similar in nature and aesthetic impact to existing structures in the area and will not 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 along a scenic highway?

Less than significant impact. The stretch of Highway 160 from Highway 4 near Antioch to Sacramento is the nearest highway designated as eligible for listing as a Scenic Highway Route. None of the proposed sites are located adjacent to this route, but they may be visible in the distance. However, the structures will be similar in nature and aesthetic impact to existing structures. The proposed project will require the removal of a few riparian trees, but the ones to be removed are small (less than 30 feet tall) and do not contribute significantly to the overall aesthetic value of the area. Therefore the proposed project will not have a substantial adverse effect on a scenic vista.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than significant impact. The existing visual character of the area is defined by man-made levees, a highly altered river system, and agricultural lands. As this area is already highly manipulated by human activities and impacted by similar structures, the proposed project will not substantially degrade the existing visual character of the site.

d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

No impact. The proposed structures do not include additional lighting or highly reflective surfaces, and all work to construct the structures will take place during daylight hours and will not require night time lighting. Therefore the proposed project will not create a new source of substantial light or glare.

3.2 Agricultural & Forest Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	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 conflict with 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 that, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒

3.2.1 Environmental Setting

The project sites are located on lands that have been zoned as Agricultural (AG-80), Delta Waterways, and Residential (RD-1). Agricultural lands within the area have been designated as Prime Farmland, Farmland of Local Importance, Grazing Land, and Other Land in the California Department of Conservation's California Important Farmland Finder (http://maps.conservation.ca.gov/ciff/ciff.html 01/02/15).

Permanent structures associated with this project will be limited to the levee crowns, waterside slopes, and waterway, which are areas that are not actively used for planting or grazing.

3.2.2 Discussion

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?

No Impact. Despite the fact that some of the sites are located in areas mapped as Prime Farmland or Farmland of Local Importance, the permanent structures supporting the fish screens will be constructed on the water-sides of levees which are not suitable for grazing or agriculture. Additionally, the installation of the fish screens is proposed as a measure to reduce the environmental impact of water diversion used for agricultural purposes and will support the continued use of these properties for agriculture. Therefore, the project will not convert protected agricultural lands to non-agricultural use.

b) Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?

No impact. Construction sites for this project are located on lands which have been zoned for agricultural use. None of the properties have been enrolled in Williamson Act contracts. Additionally, this project is intended to mitigate the effects of agricultural water diversion, and will support the continued use of these properties for agriculture. Therefore, this project will not conflict with existing zoning or Williamson Act contracts.

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))

No impact. There are no forest land or timberland zones within or near the project site; therefore there would be no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No impact. For the reasons noted in (b) above, there would be no impact.

e) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

No impact. As discussed above, the installation of the fish screens is intended to reduce the environmental impact of agricultural diversion on special status fish species in the area and will therefore support the continued use of these properties for agricultural purposes. The project

will not result in the conversion of Farmland to non-agricultural use and there would be no impact.

3.3 Air Quality

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

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e.	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

The proposed project is located within the Sacramento Valley Air Basin, Sacramento Metropolitan Air Quality Management District (SMAQMD, the District). With the exception of ozone, coarse particulate matter (PM10), and fine particulate matter (PM2.5), Sacramento County is in attainment for all state and federal ambient air quality standards (AAQS). Sacramento County does not meet the air quality standards for ozone; Sacramento County as part of the larger Sacramento Federal Ozone Nonattainment Area (SFNA) is designated a "severe" nonattainment area for the federal eight hour ozone standard, and is designated a "serious" nonattainment area for the state one hour ozone standard. In 2013, Sacramento County was redesignated from a nonattainment area to attainment for the federal PM10 and PM2.5 standards, but has not yet met state PM10 and PM2.5 standards.

Construction activities have the potential to generate a substantial amount of air pollution. In some cases, the emissions from construction represent the largest air quality impact associated with a project. Even though the generation of construction-related emissions is temporary in nature, the emissions contribute to the inventory for Sacramento County. Under certain conditions, the increased pollution load can exceed California and National Ambient Air Quality Standards (AAQS) and/or expose nearby receptors to substantial pollutant concentrations. Criteria air pollutants (CAPs) and precursors of primary concern from construction activity in California include ozone precursors such as reactive organic gases (ROG) and oxides of nitrogen (NO_X), particulate matter with an aerodynamic resistance diameter of 10 microns or less (PM10), and fine particulate matter with an aerodynamic resistance diameter of 2.5 microns or less (PM2.5). Carbon monoxide, sulfur dioxide, and lead are of less concern because construction activities are not likely to generate substantial quantities of these CAPs.

The emissions generated from common construction activities include:

- Exhaust emissions of particulate matter (PM) and NO_X from fuel combustion for mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, material delivery trucks, and worker commute trips;

- Fugitive PM dust from soil disturbance and demolition activity;

- Evaporative emissions of ROG and volatile organic compounds from paving activity and the application of architectural coatings. The application of architectural coatings is typically the largest source of ROG emissions during construction activity. The District addresses construction-related emissions of ROG through the implementation of District Rule 442, which regulates ROG emissions from architectural coatings.

The SMAQMD has established a screening level to assist project proponents in determining if emissions will exceed the District's construction thresholds for NOx and PM. Construction of a project that does not exceed the screening level, meets all of the screening parameters, and implements the District's Basic Construction Emission Control Practices will be considered to have a less than significant impact on air quality. The District does not expect construction activity to generate high concentrations of other CAPs (e.g., NO_2, SO_X, CO) and, therefore, does not recommend evaluation of their concentrations. The District does not expect that, at the local level, CAPs other than PM will expose nearby sensitive receptors to substantial pollutant concentrations that will violate an air quality standard or contribute substantially to an existing or projected air quality violation.

In order to be considered to have a less than significant impact on air quality (NOx and PM) the project must be 35 acres or less in size, must not include buildings more than four stories tall, include demolition activities or significant trenching activities, have a construction schedule

that is unusually compact, fast paced or involve more than two phases (i.e. grading, paving, building construction, and architectural coatings) happening simultaneously, involve cut-and-fill operations, or require import or export of soil materials that will require a considerable amount of haul truck activity, or involve soil disturbance activity (grading) that exceeds 15 acres per day. Additionally, the project must adhere to the following Basic Construction Emission Control Practices:

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

- The following practices describe exhaust emission control from diesel powered fleets working at a construction site. California regulations limit idling from both on-road and off-road diesel powered equipment. The California Air Resources Board enforces the idling limitations.

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.
  Although not required by local or state regulation, many construction companies have equipment inspection and maintenance programs to ensure work and fuel efficiencies.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

The proposed project will not exceed the screening level, meets all of the screening parameters, and implements the District's Basic Construction Emission Control Practices as Environmental Commitments.

3.3.2 Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

No impact. The proposed project does not include a land use development proposal nor would the project be growth-inducing therefore there would be no impact.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than significant impact. The proposed project does not exceed the screening level set by the district and will include all of the Basic Construction Emission Control Practices as Environmental Commitments. Therefore, the project is considered to have a less than significant impact on air quality and will not violate air quality standards or contribute substantially to an existing or projected air quality violation.

c) Result in cumulatively considerable net increase of any criteria pollutant for with the project region is a non-attainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Less than significant impact. As the proposed project does not exceed the screening level established by the SMAQMD and includes the Basic Construction Emission Control Practices as Environmental Commitments, the project is not considered by the SMAQMD to exceed or contribute to the District's concentration-based thresholds of significance for emissions, and will therefore not result in cumulatively considerable net increases of criteria pollutants.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact. Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses or others who are especially sensitive to the effects of pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The project is not near any hospitals, schools, or convalescent facilities. Out of the five sites, Site 2 is located closest to residential housing (approximately 200 feet). Air quality pollutants from these construction activities would be short-term in nature and will not exceed the screening level set by the district. Additionally, the project will include all of the Basic Construction Emission Control Practices recommended by the SMAQCD as Environmental Commitments. Therefore, the project is considered to have a less than significant impact on air quality and will not expose sensitive receptors to substantial pollutant concentrations.

e) Create objectionable odors affecting a substantial number of people?

Less than significant impact. Human response to odors is subjective, and sensitivity to odors varies greatly. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestation of a person‘s reactions to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headaches).

A potential source of odor during construction activities is equipment exhaust. However, equipment exhaust would be localized and generally confined to the immediate area surrounding the proposed project site. The proposed project would use typical construction techniques, and the odors would be temporary and typical of most constructions sites. Operation of the proposed project would not have any significant odor sources. Therefore the project would not create objectionable odors that would affect a substantial number of people.

3.4 Biological Resources

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, 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

Like many islands in the Delta, Sherman and Twitchell are mostly riprapped on the waterside to prevent levee erosion. Riparian vegetation, including willows, walnut trees, Himalayan blackberry, tules, and rare plant species such as Mason's lilaeopsis (*Lilaeopsis masonii*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), and Suisun Marsh aster (*Symphyotrichum lentum*) can also be found on the banks. Many native and non-native fish species such as Chinook Salmon (*Oncorhynchus tshawytscha*), Delta Smelt (*Hypomesus transpacificus*), Green and White Sturgeon (*Acipenser medirostris* and *A. transmontanus*), Striped Bass (*Morone saxatilis*), and Small- and Largemouth Bass (*Micropterus dolomieu* and *M. salmoides*) are found within adjacent waterways. Waterside levees and island interiors support birds and other wildlife such as Red-winged Blackbird (*Agelaius phoenicius*), Song Sparrow (*Melospiza melodia*), Northern Harrier (*Circus cyaneus*), river otter (*Lontra canadensis*), western pond turtle (*Emys marmorata*), and coyote (*Canis latrans*), in habitat that is predominantly non-native grassland or agricultural.

Prior to conducting field surveys, DWR biologists compiled a list of sensitive species and plant communities that have the potential to occur in the project vicinity. The list was developed from a review of the California Natural Diversity Database (CNDDB), U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC), and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants for the following twelve US Geological Survey 7.5' Quadrangles: Denverton, Birds Landing, Rio Vista, Isleton, Honker Bay, Antioch North, Jersey Island, Bouldin Island, Clayton, Antioch South, Brentwood, and Woodward Island.

The complete list in Appendix B includes information on species status, habitat description, whether potential habitat occurs in the project area, and whether impacts to the species are expected as a result of the project. Expected species impacts were developed through a review of species life history information, CNDDB GIS records (Appendix B), and information collected during site-specific surveys for this and other projects in the area. Site visits for this project were conducted by DWR Environmental Scientists on February 4, 2015 and June 26, 2015.

3.4.1.1 Special Status Wildlife

As noted in Table 2, two species of reptile (western pond turtle, and giant garter snake), seven species of bird (Golden Eagle, Short-eared Owl, Burrowing Owl, Swainson's Hawk, White-tailed Kite, Loggerhead Shrike, and Song Sparrow "Modesto" population), two species of mammal (western red bat and hoary bat) have the potential to be impacted by project activities. Species accounts provided below discuss these potential effects with respect to species life histories.

Reptiles

Western Pond Turtle (*Actinemys marmorata*)

The western pond turtle is found in California north of San Francisco Bay and from the Great Central Valley north. It also ranges north of California into Oregon, Washington, and British Columbia and isolated populations occur in Susanville, CA and in Nevada. The western pond turtle is a small to medium sized dark brown to olive or blackish aquatic turtle with a low unkeeled carapace found in permanent or nearly permanent water in a variety of habitats, but preferring slow flowing or slack water aquatic habitats. It is often seen basking above water, but will quickly slide into the water when it feels threatened. The species is omnivorous and will eat aquatic plants, invertebrates, fishes, frogs and carrion. Western pond turtles are active from around February through November and may continue to be active year round in warmer locales. Hibernation in colder areas takes place underwater, often in muddy substrate. Aestivation during summer droughts is also common. Mating occurs in spring and egg deposition generally takes place between March and August. Eggs may be deposited in nests constructed in sandy banks along large, slow-moving streams or females may move considerable distances (up to several hundred feet) to find suitable nest sites. Nests must provide relatively high internal humidity for eggs to develop and hatch properly. Incubation duration is dependent upon temperature, but generally takes approximately 3 months. Hatchlings and juveniles may be preyed upon by a variety of vertebrate predators including certain fishes, bullfrogs, garter snakes, wading birds and some mammals. Western pond turtle is listed by the CDFW as a Species of Special Concern.

The closest recorded occurrence of western pond turtle is 0.7 miles south of Site 3 (CNDDB, 2015). The project sites which are located along the Sacramento and San Joaquin Rivers likely do not provide ideal habitat for this species due to the high flow velocity in the rivers, but as pond turtles are known from adjacent waterways and possibly use the rivers during periods of lower flow, project activities have the potential to disrupt their normal behavior if individuals are present within the area while work is underway. As ground disturbing activities are limited to areas that are already compacted, it is unlikely that turtle nests would be located within the project footprint, and impacts to nests are not expected.

Significance Determination: Pond turtles may occur in the project area but temporary disturbance caused by project activities on the levee and in open water are unlikely to cause substantial adverse effects to either individuals or the local population. Best management practices and mitigation measures will be employed during construction and no adverse impacts are expected due to operation of the fish screens. Therefore, impacts will be *less than significant with mitigation incorporated.*

Giant Garter Snake (*Thamnophis gigas*)

The giant garter snake (GGS) is one of the largest garter snake species, reaching lengths of at least 162 centimeters (USFWS 5 year review). The species is considered to be highly aquatic, though upland habitats are required for basking and hibernation. GGS inhabit natural and artificial wetlands, including irrigation and drainage canals, ricelands, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands within their current range, which extends from Glenn County to the southern edge of the San Francisco Bay Delta, and from Merced County to northern Fresno County. This current range is drastically reduced from their historical range that spanned the Central Valley from southern Butte County in the north to central Kern County in the south (CalHerps, 2015). Diet consists primarily of fish, amphibians, and amphibian larvae. Hibernation, which is more accurately called brumation in cold blooded animals, takes place during cold weather, with emergence from overwintering hibernacula in March. Mating takes place soon after emergence and females bear live young from July through September. GGS are listed as Threated under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA).

The closest recorded occurrence of GGS is 1.6 miles east of Site 2 (CNDDB). Few occurrences of this cryptic species had been recorded within the west Delta, and population viability in the area had previously been discounted; however, several GGS of varying sizes were recently found along West False River during monitoring activities conducted for DWR's Drought Barrier, lending support to the idea that a breeding population exists in this area. Although the potential for a significant west Delta population of GGS is appearing to be more valid, the project sites located along the Sacramento and San Joaquin Rivers are less likely to be used by the species due to lack of nearby marshlands and high flow rates within the waterways which would hinder aquatic movement.

Significance Determination: GGS have some potential to occur in the project area but are unlikely to be present within the project footprint due to habitat conditions which are unfavorable to the species. No adverse impacts are expected due to operation of the fish screens, but as there is some risk of take during construction activities, DWR will be requesting consultation with the USFWS through the Army Corps of Engineers under Section 7 of the ESA and will adhere to the recommended avoidance and minimization measures during construction and the Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat if take authorization is recommended under the Programmatic Biological Opinion for ACOE 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California. Therefore, impacts will be *less than significant with mitigation incorporated*.

Birds

Golden Eagle (*Aquila chrysaetos*)

Golden Eagles are found throughout North America, but are more common in the west. They are an uncommon permanent resident and migrant throughout California, except in the center of the Central Valley. Habitat typically includes rolling foothills, mountainous areas, sage-juniper flats, and desert. Golden Eagles require open terrain for hunting prey which consists primarily of lagomorphs and rodents, as well as other mammals, birds, reptiles, and carrion. Secluded cliffs with overhanging ledges or large trees may be used for cover. The species nests on cliffs of all heights and in large trees in open areas. Golden Eagles are protected by the CDFW as a Fully Protected Species and are protected under federal law by the Bald and Golden Eagle Protection Act and the MBTA.

The closest CNDDB nesting occurrence of Golden Eagle is located approximately 14 miles south of the Sherman Island sites. However, golden eagles have been observed foraging on the island, and there are trees within a ½ mile radius of the sites which may be suitable for nesting. Although this species, which tends to exhibit a high degree of nest-site fidelity, has not been found to nest in the project vicinity, the potential presence of Golden Eagle cannot be discounted.

Significance Determination: This project is not likely to adversely affect Golden Eagle because appropriate nesting habitat within the project area is limited and it is unlikely that a Golden Eagle nest will be located within a distance of the project area where activities are likely to cause disturbance. However, mitigation measures will ensure that the project impacts on Golden Eagle will be *less than significant with mitigation incorporated*.

Short-eared Owl (*Asio flammeus*)

The Short-eared Owl is found primarily in the Central Valley, in the western Sierra Nevada, and along the California coast. It is usually found in open habitats with few trees, such as grasslands, prairies, dunes, meadows, irrigated lands, and emergent wetlands. Hunting activity is mostly crepuscular, and diet consists primarily of voles and other small mammals, though birds, reptiles, amphibians, and arthropods may be taken as well. Dense vegetation such as tall grasses or brush are used for roosting cover, and nests are constructed on dry ground in a depression concealed by vegetation, and are lined with grasses, forbs, sticks and feathers. Breeding takes place from early March through July. Population declines are attributed to destruction and fragmentation of grassland and wetland habitats, grazing, and increased levels of predation. Short-eared owls are listed by the CDFW as a Species of Special Concern.

The closest CNDDB nesting occurrence of Short-eared Owl is located approximately 6.3 miles west of Site 1, at the Grizzly Island Wildlife Area. Thirty nine nests and 130 individuals were observed in this large marsh and grassland matrix during surveys conducted in 1987. Open grassland habitat on Sherman and Twitchell Islands may provide adequate nesting habitat for this species, but they are unlikely to occur within or near the small, disturbed footprints that will be affected by the proposed project.

Significance Determination: This project is not likely to adversely affect Short-eared Owl because appropriate nesting habitat within the project area is limited and it is unlikely that a Short-eared Owl nest will be located within a distance of the project area where activities are likely to cause disturbance. However, mitigation measures will ensure that the project impacts on Short-eared Owl will be *less than significant with mitigation incorporated*.

Burrowing Owl (*Athene cunicularia*)

Burrowing Owls are primarily a grassland species but also occur in desert habitat and open shrub habitats within pinyon-juniper and ponderosa pine habitats. They inhabit appropriate habitats throughout the state from sea level to approximately 5,300 ft. Unlike many sensitive species, Burrowing Owls persist and even thrive in some landscapes that are highly altered by human activity. The overriding characteristics of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation. Individuals in agricultural environments nest along roadsides and water conveyance structures. Occupancy of Burrowing Owl habitat is confirmed at a site when at least one Burrowing Owl, or its sign at or near a burrow entrance, is observed within the last three years. Burrowing Owls are more easily detected during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the Burrowing Owl breeding season extends from February 1st to August 31st (Haug et al. 1993, Thompsen 1971) with some variances by geographic location and climatic conditions. The Burrowing Owl is listed as a CDFW Species of Special Concern.

The closest CNDDB occurrence of Burrowing Owl is approximately 1.4 miles northwest of Site 5. Grassland habitat in the project area may be suitable to support Burrowing Owls, but none have been detected during previous surveys, potentially because high water tables in the area reduce the potential for burrowing mammals. Therefore, it is unlikely that Burrowing Owls will be found within the project footprint.

Significance Determination: This project is not likely to adversely affect Burrowing Owls because they are not known to occur in the project area despite the presence of grassland habitat. If owls are found, mitigation measures which include buffer distances recommended by the

CDFW, will be implemented. Therefore, the proposed project's impacts on Burrowing Owls are expected to be *less than significant with mitigation incorporated*.

Swainson's Hawk (*Buteo swainsonii*)

Studies conducted in 2005-2006 under the California Swainson's Hawk Inventory estimate the California population of Swainson's Hawk to be 2081 pairs, with 95% of that population nesting in the Central Valley. Although some individuals are year-round residents, the majority of the population migrates south in September and October to wintering grounds as far as South America. Breeding takes place in late March through late August. The species constructs nests on a platform of sticks, bark, and leaves, and typically nests in tree stands in juniper-sage flats, riparian areas, and oak savannah, and forages in adjacent grassland, pasture, or suitable grain or alfalfa fields. Diet consists primarily of mice, gophers, ground squirrels, rabbits, large arthropods, amphibians, reptiles, and rarely, fish. Swainson's Hawks are listed as threatened under CESA and are also protected under the MBTA.

The closest CNDDB occurrences of Swainson's Hawk is located approximately 1.5 miles south of Site 5. Trees of suitable size to provide nesting habitat for Swainson's Hawk are present in the project area, and the species may use grassland areas within the project footprint for foraging.

Significance Determination: This project is not likely to adversely affect Swainson's Hawk because appropriate nesting habitat within the project area is limited and it is unlikely that a Swainson's Hawk nest will be located within a distance of the project area where activities are likely to cause disturbance. Additionally, mitigation measures will be implemented to ensure that adverse impacts do not occur. Therefore this project's impacts on Swainson's Hawk will be *less than significant with mitigation incorporated*.

White-tailed Kite (*Elanus leucurus*)

White-tailed Kite are a common to uncommon resident in coastal and valley lowlands. They are rarely found away from agricultural areas, and forage in open grasslands, meadows, farmlands and emergent wetlands for voles and other small mammals, as well as occasional birds, insects, reptiles, and amphibians. Trees and dense canopies are used for cover, and nests are built near the top of dense oak, willow or other tree stands. White-tailed Kite are a CDFW Fully Protected Species.

The closest CNDDB nesting occurrence of White-tailed Kite is located approximately 4.6 miles southwest of Site 1. Trees in the project area may be suitable to support nesting of this species.

Significance Determination: This project is not likely to adversely affect White-tailed Kite because appropriate nesting habitat within the project area is limited and it is unlikely that a nest will be located within a distance of the project area where activities are likely to cause disturbance. Additionally, mitigation measures will be implemented to ensure that adverse impacts do not occur. Therefore this project's impacts on White-tailed Kite will be *less than significant with mitigation incorporated.*

Loggerhead Shrike (*Lanius ludovicianus*)

Loggerhead Shrike is a common resident and winter visitor in lowlands and foothills throughout California. The species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other suitable perches. Diet consist primarily of large insects, but the species is also known to take small birds, mammals, amphibians, reptiles, fish carrion, and other invertebrates. Food items are often cached by skewering prey on thorns, sharp twigs or barbed wire. Loggerhead Shrike is a solitary nester. Eggs are laid from March to May in nests constructed in densely foliaged shrubs or trees. Loggerhead Shrike is a CDFW Species of Special Concern.

The nearest CNDDB occurrence is 6.5 miles southeast of Site 2. Open habitat on the islands may provide suitable habitat for this species, and there is potential for them to occur in the area.

Significance Determination: Habitat on Sherman and Twitchell Islands may be suitable for Loggerhead Shrike, and there is some potential for them to nest in areas that may be disturbed by project activities, therefore, mitigation measures will be implemented to ensure that impacts will be *less than significant with mitigation incorporated*.

Song Sparrow ("Modesto" population) (*Melospiza melodia*)

The song sparrow ("Modesto" population) only occurs in the north-central portion of the Central Valley. Song Sparrows in the Delta are locally numerous along riparian corridors, such as the Cosumnes and Stanislaus Rivers, and sparse along vegetated irrigation canals and levees (Shuford et al. 2008). This species favors emergent freshwater marshes dominated by tules and cattails as well as riparian willow thickets. Breeding takes place from mid-March to early August. The Song Sparrow ("Modesto" population) is a CDFW Species of Special Concern.

The nearest CNDDB occurrence is approximately 0.5 miles south of Site 5, on Bradford Island which is much more densely vegetated than Sherman or Twitchell Islands. Small patches of marsh habitat near the project sites may provide suitable habitat for Song Sparrow.

Significance Determination: Marsh habitat within the proposed project footprint is of limited suitability because patch-size is small and sparsely vegetated; however, there is some potential for use and mitigation measures will be implemented. This project is not likely to adversely affect Song Sparrows and impacts will be *less than significant with mitigation incorporated*.

Mammals

Western red bat (*Lasiurus blossevillii*)

The western red bat is locally common in some areas of California, occurring from Shasta County to the Mexican Border, west of the Sierra Nevada and Cascade crest and deserts. Their winter range includes western lowlands and coastal regions south of San Francisco Bay. Western red bats are nocturnal and begin foraging 1-2 hours after sunset. They may forage throughout the night with a second peak of activity before sunrise. Diet consists mainly of moths, crickets, beetles and cicadas. Day roosting sites are primarily located in trees, less often in shrubs, often in edge habitats adjacent to streams, fields or urban areas. Family groups roost together and nursery colonies may be found with many females and their young. Red bats mate in late summer or early fall, females become pregnant in spring, and young are born following a gestation period of 80-90 days. Western red bats are a CDFW Species of Special Concern.

The closest CNDDB occurrence of western red bat is located more than 1.6 miles northwest of Site 5; however, western red bats often go unreported or undetected due to their habit of roosting solitarily or in small, inconspicuous groups. Riparian trees within and near the project area have the potential to provide roosting habitat for this species.

Significance Determination: Western red bats have the potential to use trees within the project footprint for roosting, but impacts to trees suitable for roosting will be small, and the likelihood of encountering bats in this area is low. However, as the potential presence of this species within the project site cannot be excluded, mitigation measures will be implemented to minimize impacts to the species, and impacts will be *less than significant with mitigation incorporated*.

Hoary bat (*Lasiurus cinereus*)

The hoary bat is the most widespread of all North American bats. This large, solitary species roosts primarily in the foliage of coniferous and deciduous trees, near the ends of branches, 3-12 meters above the ground. Roosting sites are often located near the edge of a clearing. Although they are thought to be highly migratory, wintering sites have not been well documented and no specific migration routes have been identified. Hoary bats usually emerge

late in the evening to forage, from one hour after sunset to just after midnight. Hoary bats have a strong preference for moths, but have also been known to eat beetles, flies, grasshoppers, termites, dragonflies, and wasps. Hoary bats mate in the fall and give birth to one to four pups in May through July. Offspring are fully flighted about a month later (Western Bat Working Group (WBWG), 2015). Hoary bats are listed on the WBWG's watch list as a species of medium level concern, but do not have any specific regulatory or conservation status, and are not listed under either the state or federal Endangered Species Acts.

The closest CNDDB occurrence of hoary bat is located more than 1.6 miles northwest of Site 5; however, hoary bats often go unreported or undetected due to their habit of roosting solitarily or in small, inconspicuous groups. Riparian trees within and near the project area have the potential to provide roosting habitat for this species.

Significance Determination: Hoary bats have the potential to use trees within the project footprint for roosting, but impacts to trees suitable for roosting will be small, and the likelihood of encountering bats in this area is low. However, as the potential presence of this species within the project site cannot be excluded, mitigation measure will be implemented to minimize impacts to the species, and impacts will be *less than significant with mitigation incorporated*.

San Joaquin pocket mouse (*Perognathus inornatus inornatus*)

The San Joaquin pocket mouse is found in dry, open grasslands or scrub on fine textured soils in the Central and Salinas Valleys. Diet includes mainly seeds as well as green vegetation and insects. The species is nocturnal and digs burrows for cover. Reproduction probably occurs in spring and early summer and young are born and raised in a nest within the burrow. The San Joaquin pocket mouse is listed by the Bureau of Land Management (BLM) as a sensitive species requiring conservation management on BLM lands. It does not have any additional regulatory requirements on non-BLM lands, and is not listed under either the state or federal Endangered Species Acts.

The closest occurrence of San Joaquin pocket mouse is located 7.6 miles south of Site 1. However, the project site includes appropriate habitat for San Joaquin pocket mouse and their presence cannot be ruled out. Ground disturbing activities have the potential to disturb individuals if they are present.

Significance Determination: Although the upland areas within the project footprint may provide suitable habitat for San Joaquin pocket mouse, they are unlikely to occur on the delta islands

due to their preference for dry grassland sites which are uncommon due to the high water table. Additionally, individuals of the species are not granted protections outside of BLM lands, and mitigation measures will reduce the potential for adverse impacts; therefore, the impacts of this project on San Joaquin pocket mouse are expected to be *less than significant*.

3.4.1.2 Special Status Fish

As noted in Table 2, North American green sturgeon, delta smelt, Central Valley steelhead, Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, and longfin smelt all have effects determinations of "not likely to adversely affect". Listed below are species accounts for all six special status fish species that have potential to be affected by project activities.

North American Green Sturgeon (*Acipenser medirostris*)

Green Sturgeon are long-lived, slow-growing fish. They are believed to spend the majority of their lives in near shore oceanic waters, bays, and estuaries. Adults typically migrate into fresh water beginning in late February; spawning occurs from March-July. Juvenile green sturgeon spend 1-4 years in fresh and estuarine waters before dispersal to saltwater (NMFS 2009). North American Green Sturgeon are listed as threatened under the ESA.

Although there are no CNDDB records nearby, the species appears to be poorly reported, and the waters off of Sherman and Twitchell Islands are within in the known range of the species. Pile driving and other in-water activities have the potential to impact this species if individuals are present during construction.

Significance Determination: This species is highly mobile and has the capability of leaving an area when pile driving or other in-water activity is occurring and returning when activities cease (CALTRANS 2009). Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. This project is not likely to adversely affect North American green sturgeon and impacts will be *less than significant with mitigation incorporated*.

Sacramento Perch (*Archoplites interruptus*)

The Sacramento Perch is the only native sunfish west of the Rockies. Its native range includes the Sacramento-San Joaquin River Delta, the Pajaro and Salinas River drainages, and Clear Lake in Lake County in habitat such as sloughs, sluggish rivers, and lakes with beds of submerged and emergent vegetation. Prior to spawning, males establish small territories in shallow cover and eggs are deposited in shallow depressions. Spawning is triggered when water temperatures reach 18-28 degrees Celsius, generally from the end of March through October. Sacramento perch are listed as a Species of Special Concern by the CDFW.

The closest CNDDB occurrence of Sacramento perch is located approximately 3 miles south of Site 1. As in-water activities are scheduled to take place during spring and summer, when other sensitive fish species are least likely to be present in the area, warm water temperatures during project activities may be suitable to induce spawning in Sacramento perch if individuals are present in the area. If nests are constructed in the vicinity of project activities, disturbance may impact Sacramento perch.

Significance Determination: Although the project sites are located within the historical native range of the species, flow velocities in the Sacramento and San Joaquin Rivers are likely to be unsuitable for supporting nesting for this species. Therefore, adverse impacts are not likely to occur, and impacts will be *less than significant with mitigation incorporated*.

Delta Smelt (*Hypomesus transpacificus*)

Delta Smelt are found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties. Their historic range is thought to have extended from Suisun Bay upstream to at least the city of Sacramento on the Sacramento River and Mossdale on the San Joaquin River. They used to be one of the most common pelagic fish in the upper Sacramento-San Joaquin Estuary (USFWS 2013). Delta Smelt are slender-bodied fish, approximately 2 to 3 inches (5-7 cm) long. They are a euryhaline species, tolerant of a wide salinity range. They have been collected from estuarine waters up to 14 parts per thousand (ppt) salinity. For a large part of their one-year life span, Delta Smelt live along the freshwater edge of the mixing zone or saltwater-freshwater interface, where the salinity is approximately 2 ppt (USFWS 2013). In September or October, Delta Smelt reach adulthood and begin a gradual migration back into freshwater areas where spawning is thought to occur. Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. They spawn in shallow, fresh, or slightly brackish water upstream of the mixing zone. Most spawning happens in tidally influenced backwater sloughs and channel edgewaters. Although spawning has not been observed in the wild, the eggs are thought to attach to substrates such as cattails, tules, tree roots and submerged branches. Because spawning has not been observed in the wild, information about spawning location and timing has been inferred from the collection of larvae in sloughs and shallow edge-waters of channels in the upper Delta and in Montezuma Slough near Suisun Bay. Spawning is believed to occur from late January through late June or early July. Most Delta Smelt die after spawning, but a small contingent of adults survives and can spawn in their second year. Delta Smelt are listed as threated under the ESA and Endangered under the CESA.

The closest CNDDB occurrence of Delta Smelt is located in the Sacramento River along the northwestern shore of Sherman Island, where fish were collected during surveys. Additionally,

both Sherman and Twitchell Islands are within the known range of the species and the project sites are located within Critical Habitat. In-water activities such as pile driving have the potential to impact smelt if they are present in the area during construction activities. Retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species.

Significance Determination: Although Delta Smelt and Delta Smelt critical habitat are present within the project area, in-water activities will not coincide with the time of delta smelt migration or spawning. The proposed project qualifies for coverage under the USFWS's Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat within the Jurisdiction of the Sacramento Fish and Wildlife Office of the US Fish and Wildlife Service, California (Delta Smelt Programmatic). By following the mitigation measures proposed in the Delta Smelt Programmatic, the project is not likely to adversely affect Delta Smelt. Additionally, by retrofitting agricultural siphons with screens that are proven to prevent entrainment, potential impacts of water diversion on sensitive fish species will be reduced. Therefore, project impacts on Delta Smelt will be *less than significant with mitigation incorporated*.

Steelhead-Central Valley Distinct Population Segment (DPS) (*Oncorhynchus mykiss*)

The Steelhead trout is an anadromous species of fish which migrates from natal freshwater rivers to the marine environment, where growth is faster, and Steelhead typically grow much larger than the related rainbow trout which stays in fresh water throughout its lifespan. Adult Steelhead will migrate back to fresh water to spawn, and unlike other Pacific salmonids, are iteroparous and can spawn multiple times (NOAA Fisheries, 2015). Habitat for the Central Valley Steelhead distinct population segment (DPS) includes the Sacramento-San Joaquin Delta and its tributaries (Federal Register Vol. 65 no. 32). Peak spawning occurs from December through April (McEwan, 2001). Spawning habitat will include shallow water depths (from 6-36 inches) with gravel sized material as spawning habitat (McEwan 2001). The Steelhead Central Valley DPS is listed as threatened by the federal government under the ESA.

The waters adjacent to the project sites do not provide quality spawning habitat because they lack the needed shallow water habitat and gravel; however, the waterways do provide potential migration routes throughout the Delta, and are considered part of the designated Critical Habitat for the species. In-water activities have the potential to impact Steelhead if they are present in the area during construction activities.

Significance Determination: Although Steelhead are known to occur in adjacent waterways, and Delta waterways, including the Sacramento and San Joaquin Rivers, have been designated as

Critical Habitat, project activities are unlikely to impact the species because in-water activities will be conducted during the season when Steelhead are least likely to be present. Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. Therefore, project impacts on Steelhead will be *less than significant with mitigation incorporated.*

Chinook salmon-Central Valley Spring-run Evolutionarily Significant Unit (ESU) and Winter-run ESU (*Oncorhynchus tshawytscha*)

Four distinct runs of Chinook Salmon spawn in the Sacramento-San Joaquin River system, each named for the season in which the majority of the run enters freshwater as adults. Spring-run Chinook enter the Sacramento River from late March through September. Adults hold in cool water habitats through the summer, then spawn in the fall from mid-August through early October. Spring-run juveniles migrate soon after emergence as young-of-the-year, or remain in freshwater and migrate as yearlings. Spring-run Chinook were historically the most abundant race in the Central Valley. Now only remnant runs remain in Butte, Mill, Deer, Antelope, and Beegum Creeks, which are tributaries to the Sacramento River. In the mainstem Sacramento River and the Feather River, early-running Chinook salmon occur, but significant hybridization with fall-run has occurred. Due to the small number of non-hybridized populations remaining and low population sizes, the Central Valley spring-run of Chinook Salmon are listed as threatened under the CESA and the ESA.

Even though there are no local CNDDB records of Central Valley Spring-run Chinook Salmon, waterways that surround Sherman and Twitchell Islands are within the known range of the population and designated Critical Habitat includes the portion of the Sacramento River which runs along the north side of Sherman Island. The proposed project sites have the potential to be used by Chinook salmon during migration. In-water activities such as pile driving have the potential to impact salmon if they are present in the area during construction activities.

Significance Determination: Although salmon have the potential to occur in the project area, and project sites on Sherman Island are located within designated Critical Habitat, the timing of in-water work will not coincide with migration through the area. Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. Therefore, construction of this project is not likely to adversely affect Chinook Salmon (Central Valley spring-run ESU) or Critical Habitat for the species, and impacts will be *less than significant with mitigation incorporated*.

Chinook salmon- Sacramento River Winter-run ESU (*Oncorhynchus tshawytscha*)

Adult winter-run Chinook Salmon migrate into San Francisco Bay from November through May, and pass into the Sacramento River from December through early August. Winter-run Chinook spawn in the upper mainstem Sacramento River from mid-April through August. Fry and smolts

emigrate downstream from July through March through the Sacramento River, reaching the Delta from September through June. Historically, winter-run Chinook spawned in the upper reaches of Sacramento River tributaries, including the McCloud, Pit, and Little Sacramento Rivers. Shasta and Keswick dams now block access to the historic spawning areas. The winter-run ESU of Chinook Salmon is listed as endangered under CESA and ESA.

Even though there are no local CNDDB records of Central Valley spring-run Chinook Salmon, waterways that surround Sherman and Twitchell Islands are within the known range of the population and the project sites on Sherman Island are located within designated Critical Habitat for this species. The proposed project sites have the potential to be used by Chinook Salmon during migration. In-water activities such as pile driving have the potential to impact Salmon if they are present in the area during construction activities.

Significance Determination: Although Salmon have the potential to occur in the project area, and project sites on Sherman Island are located within designated Critical Habitat, the timing of in-water activities will not coincide with migration through the area. Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. Therefore, construction of this project is not likely to adversely affect Chinook salmon (Central Valley spring-run ESU) or Critical Habitat for the species, and impacts will be *less than significant with mitigation incorporated*.

Sacramento Splittail (*Pogonichthys macrolepidotus*)

Sacramento Splittail are hardy minnows that are typically found in estuarine environments such as the Sacramento-San Joaquin Delta. They are well suited to slow-moving rivers, sloughs, and alkaline lakes. Prey items include clams, crustaceans, insect larvae, and other invertebrates. Sacramento Splittail live relatively long lives, from 5 to 7 years, or possibly longer. During winter and spring, adult Splittail move upstream to forage and spawn between late February and early July, with peak reproduction in March and April. Spawning is presumably triggered by day length, increased flows, and rising water temperatures. Fertilized eggs attach to flooded vegetation and hatch 3-7 days later. Sacramento Splittail are listed as a Species of Special Concern by the CDFW.

The closest CNDDB occurrences of Sacramento Splittail is located 13 miles west of Site 1, in Suisun and Grizzly Bays. However, they have also been recorded 15 miles upstream of the project site along the mainstem Sacramento River. This would indicate that the species has the potential to occur at the project sites, which are located within the historical range. In-water activities such as pile driving have the potential to impact this species if individuals are present in the area during construction activities.

Significance Determination: Although Sacramento Splittail are known to occur in adjacent waterways, project activities are unlikely to impact the species because in-water activities will be conducted during the season when Splittail are least likely to be present. Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. Therefore, project impacts on Sacramento Splittail will be *less than significant with mitigation incorporated*.

Longfin Smelt (*Spirinchus thaleichthys*)

Habitat for Longfin Smelt includes waterways slightly upstream from Rio Vista, including the Cache Slough region and Medford Island, downstream through Suisun Bay and Suisun Marsh. Most individuals live for only two years. They spend their adult life in bays, estuaries, and nearshore coastal areas, and migrate into freshwater rivers to spawn. Spawning occurs primarily from January through March after which most adults die. Longfin smelt are a candidate species under the ESA, threatened under the CESA and listed as a Species of Special Concern by the CDFW.

Longfin smelt have been reported in the CNDDB as occurring in all waterways surrounding Sherman and Twitchell Islands. Waters within the proposed project sites have the potential to be used by Longfin Smelt during migration and spawning. In-water activities such as pile driving have the potential to impact Longfin Smelt if they are present in the area during construction activities.

Significance Determination: Although Longfin Smelt have the potential to occur in the project area, the timing of in-water activities will not coincide with spawning or migration through the area. Additionally, retrofitting agricultural siphons with screens that are proven to prevent entrainment will reduce potential impacts of water diversion on sensitive fish species. Therefore, construction of this project is not likely to adversely affect longfin smelt, and impacts will be *less than significant with mitigation incorporated*.

3.4.1.3 Special Status Plants

There are seven special status plant species identified in Table 2 that have the potential to be adversely impacted by project activities. These are discussed below.

Bolander's Water-hemlock (*Cicuta maculata* var*. bolanderi*)

Habitat for this perennial herb includes coastal, fresh or brackish marshes and swamps. The blooming period is typically July-September (CNPS 2014). This plant is listed as a CRPR 2B.1 species.

The nearest CNDDB occurrence is approximately 3 miles west of Site 1. This plant has not been observed at any of the project sites, but there is potential habitat along the water side of the levee. Construction activities that disturb the waterside of the levee have the potential to impact this plant if present.

Significance Determination: This plant has the potential to occur at the project sites and if present, has the potential to be impacted by project construction; therefore, mitigation measures will be implemented to ensure that impacts will be *less than significant with mitigation incorporated*.

Woolly Rose-mallow (*Hibiscus lasiocarpos* var*. occidentalis*)

Habitat for this perennial rhizomatous herb includes marshes and swamps. The blooming period is typically June-September (CNPS 2014). This plant is listed as a CRPR 1B.2 species.

The nearest CNDDB occurrence is approximately 2.3 miles south of Site 3, and there are many other occurrences to the west of the project area. This plant has not been observed at any of the project sites, but there is potential habitat along the water side of the levee. Construction activities that disturb the waterside of the levee have the potential to impact this plant if present.

Significance Determination: This plant has the potential to occur at the project sites and if present, has the potential to be impacted by project construction; therefore, mitigation measures will be implemented to ensure that impacts will be *less than significant with mitigation incorporated.*

Delta Tule Pea (*Lathyrus jepsonii* var*. jepsonii*)

Habitat for this perennial herb includes marshes and swamps. The blooming period is typically February-May (CNPS 2014). This plant is listed as a CRPR 1B.2 species.

Three occurrences of delta tule pea have been recorded in the CNDDB along the northern Sherman Island levee. This plant has not been observed in the immediate vicinity of any of the project sites, but there is potential habitat along the water side of the levee. Construction activities that disturb the waterside of the levee have the potential to impact this plant if present.

Significance Determination: This plant has the potential to occur at the project sites and if present, has the potential to be impacted by project construction; therefore, mitigation measures will be implemented to ensure that impacts will be *less than significant with mitigation incorporated*.

Mason's Lilaeopsis (*Lilaeopsis masonii*)

Habitat for this perennial rhizomatus herb includes brackish or freshwater marshes and swamps, and riparian scrub. The blooming period is typically April-November (CNPS 2014). This plant is listed as a CRPR 1B.1 species and is classified as rare by the California Fish and Game Commission.

There is a CNDDB occurrence that runs along the northwestern Sherman Island levee, which was confirmed by DWR Environmental Scientists in June 2013, and there are many other occurrences in the vicinity. As placement of the proposed structures is dictated by the locations of existing siphons, impacts to Mason's lilaeopsis due to construction activities may be unavoidable.

Significance Determination: As this plant is known to occur within the project area, mitigation measures will be implemented; however, loss of individuals due to the placement of piles may be unavoidable. Based on local abundance of this plant species, the ephemeral nature of some individual occurrences, and the proximity of additional occurrences, impacts to the populations are expected to be *less than significant with mitigation incorporated*.

Delta Mudwort (*Limosella australis*)

Habitat for this perennial stoloniferous herb includes marshes and swamps. The blooming period is typically May-August (CNPS 2014). This plant is listed as a CRPR 2B.1 species.

There is a CNDDB occurrence that runs along the northwestern Sherman Island levee, and there are many other occurrences in the vicinity. As placement of the proposed structures is dictated by the locations of existing siphons, impacts to delta mudwort due to construction activities may be unavoidable.

Significance Determination: As this plant is known to occur within the project area, mitigation measures will be implemented; however, loss of individuals due to the placement of piles may be unavoidable. Based on local abundance of this plant species, the ephemeral nature of some individual occurrences, and the proximity of additional occurrences, impacts to the populations are expected to be *less than significant with mitigation incorporated*. Additionally, recent research suggests that delta mudwort is not native to California (Baldwin et. al. 2012) and protection measures may not be warranted.

Sanford's Arrowhead (*Sagittaria sanfordii*)

Habitat for this perennial rhizomatous herb includes marshes and swamps and assorted shallow freshwater. The blooming period is typically May-October (CNPS 2014). This plant is listed as a CRPR 1B.2 species.

The nearest CNDDB occurrence is approximately 5 miles north of Site 3. This plant has not been observed at any of the project sites, but there is potential habitat along the water side of the levee. Construction activities that disturb the waterside of the levee have the potential to impact this plant if present.

Significance Determination: This plant has the potential to occur at the project sites and if present, has the potential to be impacted by project construction; therefore, mitigation measures will be implemented to ensure that impacts will be *less than significant with mitigation incorporated*.

Suisun Marsh Aster (*Symphyotrichum lentum*)

Habitat for this perennial rhizomatous herb includes marshes and swamps. The blooming period is typically May-November (CNPS 2014). This plant is listed as a CRPR 1B.2 species.

There is a CNDDB occurrence that runs along the northwestern Sherman Island levee, which was confirmed by DWR Environmental Scientists in June 2013, and there are many other occurrences in the vicinity. As placement of the proposed structures is dictated by the locations of existing siphons, impacts to Suisun Marsh aster due to construction activities may be unavoidable.

Significance Determination: As this plant is known to occur within the project area, mitigation measures will be implemented; however, loss of individuals due to the placement of piles may be unavoidable. Based on local abundance of this plant species, the resiliency of individual plants to low level temporary disturbance, such as trampling, and the proximity of additional occurrences, impacts to the populations are expected to be *less than significant with mitigation incorporated*.

3.4.2 Discussion

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 or U.S. Fish and Wildlife Service?

Less than significant with mitigation incorporated.

Special Status Plants

Special status plants have been previously identified on the waterside of the levee at various locations along the project area and potential habitat exists for several other special status plants in the grassland and ditches on the land side portion of the project area. However, with

the incorporation of the Environmental Commitments and Mitigation Measure BIO-1, impacts would be reduced to less than significant.

Mitigation Measure BIO-1: Avoid and minimize impacts to special status plants

For work on land, a botanist will conduct pre-construction surveys for special status plants. If any are identified (i.e., Bolander's water-hemlock, woolly rose-mallow, Delta tule pea, Mason's lilaeopsis, delta mudwort, Sanford's arrowhead, or Suisun Marsh aster), they will be flagged and avoided to the greatest extent feasible. If individuals cannot be avoided, CDFW will be consulted to determine if transplanting is warranted, and if advised, DWR will attempt to transplant them via a CDFW approved method.

Special Status Fish

Impacts to fish will be avoided by restricting in-water work to August 1–November 30. This work period has been discussed with National Marine Fisheries Service for similar projects with in-water activities (pile driving and fish screen installation)(Personal Communication), and is outside of migration and spawning times for Delta Smelt, Steelhead – Central Valley DPS, Chinook Salmon- Central Valley spring-run ESU, Chinook Salmon-Sacramento river winter-run ESU, and Longfin Smelt.

Due to regulations in place to protect delta levees, piles will need to be driven with an impact hammer. As a result, associated underwater sound pressures could potentially result in direct impacts to fish. The Environmental Commitments addressed in section 2.6 and Mitigation Measure BIO-2 would reduce impacts to a less than significant level.

Mitigation Measure BIO-2: Avoid and minimize underwater sound pressure due to pile driving

Underwater sound monitoring shall be performed during pile-driving activities. A qualified biologist or natural resource specialist shall be present during such work to monitor construction activities and compliance with terms and conditions of permits.

Underwater sound reduction measures shall be employed, as needed, to ensure that levels do not exceed the threshold levels established by USFWS and NMFS for fish greater than 2 grams.

Peak pressure	=	206 decibel
Accumulated SEL	=	187 decibel

These underwater sound reduction measures shall include use of an impact hammer cushion block. Additionally, hammers shall be used only during daylight hours and

initially shall be used at low energy levels and reduced impact frequency. Applied energy and frequency shall be gradually increased until necessary full force and frequency are achieved.

If necessary, one or more of the following may be implemented to further reduce sound:

- Pipe caissons shall be used to isolate the piles from waters to buffer underwater sound pressure levels if underwater sound monitoring indicates that underwater sound levels exceed threshold levels. The caissons shall be driven below the mud line using vibratory or hydraulic methods and the interior area dewatered before pipe piles are installed using impact methods.
- The use of a bubble curtain surrounding the pile to be driven.

Special Status Wildlife

In addition to the Environmental Commitments addressed in Section 2.6, the incorporation of the Mitigation Measures BIO-3 will reduce impacts on sensitive wildlife species to a less than significant level.

Mitigation Measure BIO-3: Avoid and minimize impacts to special status wildlife

An environmental awareness training will be conducted by the environmental monitor for all construction personnel prior to commencement of construction. This training will include a brief overview of the life history of western pond turtle, giant gartersnake, Golden Eagle, Swainson's Hawk, White-tailed Kite, Loggerhead Shrike, Song Sparrow ("Modesto" population), western red bat, and hoary bat, their legal protections and penalties, and explain the relevant Environmental Commitments and Mitigation Measures. Pre-construction surveys will be conducted in an effort to determine whether sensitive species may be present within the work zone at the onset of construction activities. Additionally, the following species-specific mitigation measures will be implemented to ensure that potential impacts are less than significant.

- Western pond turtle: A pre-construction survey for western pond turtles will be conducted immediately prior to construction. Construction personnel will be alerted during a tailgate meeting that western pond turtles may be present in the area and should be avoided. If a western pond turtle is identified with in the work zone, work will not proceed until it has been determined that continuation of construction activity will not adversely affect the turtle.

- Giant garter snake (GGS): Standard construction BMP's such as limiting speeds on the project site will be implemented. Pre-construction surveys for GGS will

occur 24 hours prior to construction activities and after any lapse in construction of two weeks or greater has occurred. Work within the irrigation or drainage ditches will be conducted between May 1 and October 1, during the snake's active season. An environmental monitor will either be present or on call during on-land work activities. If a giant garter snake is identified in the work zone, work will not proceed until the snake has moved out of the work zone and USFWS and CDFW have been consulted.

- Swainson's Hawk and other raptors, including Golden Eagle, Short-eared Owl, and White-tailed Kite: If work is to be conducted during the nesting season (April 1-August 31), pre-construction surveys will be completed no more than 14 days prior to construction, within a radius of 1/2 mile of the project sites, to identify any active nests containing eggs or juveniles. Surveys will be completed in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SWHA TAC, 2000). If an active nest is identified, CDFW will be consulted to discuss whether work may take place without substantial disturbance to the nest. If it is determined that work may proceed before young have fledged, a qualified biologist will monitor the nesting pair for behavioral indications of disturbance during construction. Continuation of work may be postponed until chicks have fledged if activities appear to threaten the success of the nest.

- Burrowing Owl: Preconstruction surveys will be conducted for Burrowing Owl within 14 days prior to construction. If an active burrow is found during the breeding season (February 1 through August 31), markers will be used to clearly demarcate an avoidance buffer zone so that vehicles and workers at the project site will avoid disturbing the area. Buffer zones will be implemented following recommendations in the *CDFW Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Any active burrows will be monitored by a qualified biologist throughout the construction phase to determine the effectiveness of buffers, visual screens, or other measures, and to determine if the activity is jeopardizing an active nest. DWR shall consult with CDFW for assistance in developing site-specific solutions, as needed.

- Migratory birds, Loggerhead Shrike, and Song Sparrow ("Modesto" population): If work is scheduled to take place during the nesting season (April 1-August 31), a pre-construction survey for nests will be conducted within 250 feet of all activities. If active nests are found in the project area, an appropriate non-disturbance buffer will be established in consultation with CDFW and will depend on the species involved, site conditions, and the type of work proposed. No new project activity shall occur within the buffer zone until the young have fledged, until the nest is no longer active, or until a qualified biologist has determined in consultation with CDFW that reducing the buffer would not result in nest

abandonment. Monitoring of the nest by a qualified biologist during construction shall be required to ensure that nests are not jeopardized.

- Western red bat and hoary bat: A qualified biologist shall conduct a pre-construction survey no more than 14 days prior to work commencing to determine if tree roosting bat species such as hoary bat may be present within the project site. If bats are found, a phased-disturbance approach may be implemented to minimize impacts to individual day-roosting bats. A phased disturbance approach would include initiating activity which does not include vegetation removal within the area 24-48 hours before beginning vegetation removal. Minor disturbance in the area is less likely to cause flushing of day-roosting bats, but is thought to discourage bats from returning to the site to roost following nightly foraging. A qualified biologist will be present on site during all vegetation removal activities. If bats are observed or inadvertently injured during project activities, the biologist will determine if project activities must cease, CDFW will be notified immediately, and if necessary the individual will be taken to a suitable wildlife rehabilitation center such as the Lindsey Wildlife Museum.

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 U.S. Fish and Wildlife Service?

Less than significant with mitigation incorporated. A small number of riparian trees and associated vegetation will need to be trimmed or removed in order to access the siphon at Site 2. These minor impacts to riparian habitat are not likely to be significant, because the impacted footprint is very small and habitat quality is low in relation to acreage of similar habitat in the general region. Additionally, impacts to natural communities will be mitigated at ratios negotiated with CDFW, by purchasing credits at an approved mitigation bank.

Mitigation Measure BIO-4: Mitigate impacts related to the removal of riparian habitat or other sensitive natural communities.

- DWR will purchase mitigation credits at a ratio agreed upon with the regulating agencies in order to mitigate impacts to riparian habitat or other sensitive natural communities that may be affected by the proposed project.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than significant with mitigation incorporated. The proposed project would require piles to be driven into the river bottom sediments in the Sacramento and San Joaquin Rivers. This

activity would temporarily disturb the sediment, and therefore, has the potential to adversely affect water quality in the immediate vicinity. Additionally, materials used to create any structure or infrastructure in waters of the US may be defined as fill material; however, due to the construction of the levees and placement of riprap revetment, wetlands which meet the three parameter criteria do not form along the shores of the rivers at the project sites and federally protected wetlands will not be affected by the installation of piles or the fish screens.

Mitigation Measure BIO-5: Avoid and minimize impacts to jurisdictional waters of the United States

In order to minimize impacts to jurisdictional waters of the US, DWR shall implement the following measures:

- Minimize placement of structures in waters of the United States and waters of the state to the greatest extent feasible.
- Locate all staging areas, parking areas, equipment, and storage areas for fuel, lubricants, and solvents in areas away from waters of the United States and waters of the state.
- If deemed necessary by the USACE, mitigate for loss of waters of the U.S., including wetlands, through a mitigation bank or and equivalent 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?

Less than significant impact. The proposed work period of August 1-November 30 is outside of migration and spawning times for North American Green Sturgeon-southern DPS, Delta Smelt, Steelhead – Central Valley DPS, Chinook Salmon- Central valley spring-run ESU, and Chinook Salmon-Sacramento river winter-run ESU, Sacramento Splittail and Longfin Smelt. Additionally, the riprapped banks and channel depth at the project sites reduce the spawning habitat value for these species. No other native species have significant migratory corridors that may be affected by the project. Impacts will be less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No impact. This project would not conflict with any county ordinances protecting biological resources in Sacramento County; therefore, there would be no impact.

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?

No impact. The project area is not currently covered by a habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan, therefore there would be no impact.

3.5 Cultural Resources

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

3.5.1 Environmental Setting

The project is situated within the Sacramento River - San Joaquin River Delta at the southern end of the Sacramento Valley. The elevation ranges from about 15 feet above mean sea level to about 15 feet below mean sea level. Vegetation consists of annual forbs and grasses growing on the land side levee banks, with riparian plants including reeds and blackberry growing within nearby irrigation channels and along some parts of the water side of the levee. The surrounding area is primarily used as pasture for grazing cattle or sheep.

3.5.1.1 Records Search

A record search was conducted on March 3, 2015 by staff at the North Central Information Center of the California Historical Resources Information System (CHRIS) (IC File #SAC-15-23). The search encompassed a ¼ mile radius around the proposed project area. One resource has

been recorded within the proposed project area. This is the Sherman Island Levee (CA-SAC-496H/P-34-000553). No additional resources are recorded within ¼ mile of the proposed project.

A multiple property listing for a proposed Sacramento River Flood Control Project (SRFCP) historical levee district is in progress and is being prepared by the United States Army Corps of Engineers (USACE). The proposed district consists of an extensive system of structures created following the Flood Control Act of 1917 and would include all those flood control elements that were incorporated into the SRFCP between 1917 and 1961.

Six cultural resources surveys have been conducted within portions of the proposed project area, and six more have been conducted within a ¼ mile of the proposed project area. The entire the project has been previously surveyed for cultural resources.

3.5.1.2 Tribal Engagement

A sacred lands file search was conducted by the Native American Heritage Commission (NAHC) on February 13, 2015. The search found that there are no known sacred lands within the project area. Subsequent correspondence with 14 individuals representing five tribal governments did not identify any tribal cultural resources within the project area.

3.5.1.3 Field Surveys

The field survey was conducted on May 6, 2015 by DWR archaeologist Monica Nolte. No archaeological resources were identified within the project area. Two built environment resources over 50 years in age (the Sherman Island Levee and the Twitchell Island Levee) were identified within the project area. The segment of the Sherman Island Levee that is within the project area is a part of the Sacramento River Flood Control Project (SRFCP) and the proposed SRFCP historic district.

3.5.1.4 Findings

A confidential archaeological survey report was prepared for the proposed project by DWR archeologist Monica Nolte. As outlined in the report, Sherman Island was the first of the delta peat islands to be reclaimed and leveled, starting in 1865. The levee was completed in 1869 but has been rebuilt and repaired following multiple failures between 1870 and 1969. The Twitchell Island Levee was also first constructed in the latter part of the nineteenth century. Like the Sherman Island Levee, it has been repaired, rebuilt, and improved numerous times.

Both the Sherman Island Levee and the Twitchell Island Levee could be considered eligible for the California Register of Historical Resources (CRHR) under Criterion 1 for their association

with early reclamation efforts in the delta. Unfortunately, the levees lack the necessary integrity of design, materials, workmanship, and feeling to convey any significance or association with their nineteenth century origins. Both levees have the appearance of modern structures flanked in stone rip-rap with paved roads along their crests and many modern ancillary features (e.g. fish release sites, agricultural intake pipes, pumps, and fish screens). AECOM recommended the Sherman Island Levee as ineligible for the California Register of Historical Resources (CRHR) in 2012 due to its lack of integrity.

Neither levee is known to be associated with persons important in history and would not be eligible under CRHR Criterion 2. They are utilitarian structures of a common type and do not embody distinctive characteristics, are not the work of a master and do not possess high artistic values and therefore would be ineligible under CRHR Criterion 3. Finally, the levees are not likely to yield information important to history or prehistory and thus are not eligible for the CRHR under Criterion 4.

DWR has determined that neither the Sherman Island Levee nor the Twitchell Island Levee is individually eligible for the CRHR; however, Sherman Island Levee within the project area is a part of the proposed SRFCP historic district.

According to the draft multiple property listing, the proposed SRFCP historic district and its features are considered CRHR eligible under Criterion 1 for their association with the Flood Control Act of 1917 (Ch. 144, 39 Stat. 948) and for their important role in controlling the flood waters of the Sacramento River. The period of significance for the proposed district is from its inception in 1917 to its completion in 1961. The character defining features are the flood design capacity at time of incorporation into the SRFCP and the location at time of incorporation. As long as each unit retains its integrity of location, setting, feeling, and association it is considered eligible as contributing element to the proposed SRFCP historic district.

The Sherman Island Levee is a contributing element to the proposed historic district and will be treated as an historical resource under CEQA for the purposes of this project.

Although an historical resource is present within the project area, the project will not result in substantial adverse changes to the resource. A "substantial adverse change" means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired (PRC 5020.1). Only two of the proposed fish screens are along the Sherman Island portion of the project area. Direct impacts to the Sherman Island Levee would be limited to replacement of existing pipe, placement of piles to support the fish screens, and placement of the foundation for the fish screen structures. Other similar structures already exist in the project vicinity, including fish release facilities, irrigation intake pipes, and pumps. The addition

of the proposed self-cleaning fish screens would be a minor change to the visual environment of the levee.

The current proposed project would not have a significant effect on the Sherman Island Levee and is not likely to impact any unknown archaeological sites.

Review of soils maps indicates that the project area is comprised of geologically recent Holocene age soils (10,000 years B.P. and younger). The soils within the project area are mucky silt and clay loams formed in backswamps, flood plains, and marshes. There is a low potential for undiscovered subsurface archaeological deposits and no potential for paleontological resources within the project area.

3.5.2 Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Less than significant. Direct impacts to the levee would be minimal and consist of replacement of existing pipe, placement of piles to support the fish screens, and laying the concrete foundations for the above-ground fish screen structures. Visual impacts would be limited to the addition of the above ground fish screen structures and chain link fence surrounding the structures to the setting. Many similar structures already exist in the project vicinity, including fish release facilities, irrigation intake pipes, and pumps. The addition of the proposed self-cleaning fish screens would be a minor change to the visual environment of a small portion the levee.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less than significant with mitigation incorporated. No archaeological resources are known to exist in or around the proposed project site. The probability that proposed project implementation could impact buried archaeological deposits is considered to be low given that the soils in the project area are of low sensitivity for buried archaeological resources and the area of soil disturbance is primarily within the previously disturbed levee prism. However, in the case that archaeological resources are found, the following mitigation measure will be incorporated to ensure that impacts are less than significant.

Mitigation Measure CULT-1: Mitigate impacts to archaeological resources

- If 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 takes place (CEQA Guidelines §15064.5 [f]). If the find is determined to be an historical or unique archaeological resource, time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation must be available.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No impact. The proposed project is located in Holocene aged alluvial sediments which formed after the end of the last glacial maximum. Project activities would not extend past the Holocene alluvium into older geologic units. Thus, there is no possibility of the presence of paleontological resources. The proposed project is also in a location that is similar geologically to the surrounding area and is not unique geologically.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less than significant with mitigation incorporated. 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 given that no archaeological sites have been identified in the proposed project area or within one-quarter mile of the project. However, in the case that human remains are discovered during construction, Mitigation Measure CULT-2 below will be implemented.

Mitigation Measure CULT-2: Mitigate impacts to 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.

e) Cause a substantial adverse change in the significance of tribal cultural resources, as defined under Assembly Bill (AB) No. 52?

Less than significant with mitigation incorporated. AB 52 defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places and objects with cultural value to a

California Native American tribe". Consultation with Native American tribal representatives did not identify any tribal cultural resources within the project area or immediate vicinity. The following mitigation measure will be implemented if tribal cultural resources are discovered during the course of construction.

Mitigation Measure CULT-3: Mitigate impacts to tribal cultural resources

- If prehistoric archaeological resources or human remains are discovered during construction, DWR will consult with tribal representatives identified by the Native American Heritage Commission to determine whether the find is a tribal cultural resource and to identify culturally appropriate treatment. This consultation will take place concurrently with mitigation measures CULT-1 and/or CULT-2, as appropriate.

3.6 Geology and Soils

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
	ii. Strong seismic ground shaking?	☐	☐	☒	☐
	iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv. Landslides?	☐	☐	☐	☒
b.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c.	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.6.1 Environmental Setting

The project sites are located in the Great Valley Geomorphic province which consists of an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic Period (about 160 million years ago). The Great Valley is further divided into geomorphic subunits, and the project is located within the Delta. The Delta is characterized by Holocene deposits, and its boundary is arbitrarily fixed at the zero elevation contour. Prior to human intervention, this region was dominated by tidal marshes that were traversed by meandering sloughs. Over time, sloughs were altered and marshes drained, and numerous islands were created by the construction of artificial levees.

Three geological faults have been identified within the project vicinity. Rio Vista Fault runs north-south and its southern-most end is located closest to Site 1, approximately 3.3 miles to the northeast. The Antioch Fault runs north-south and its northern-most end is located closest to Site 1 and lies approximately 4.4 miles to the south. There is an unnamed, inferred fault which runs north-south across Sherman Island and is located approximately 1.8 miles east of Site 2 and 2.8 miles west of Site 5. These are all active quaternary faults, which are believed to be the sources of earthquake activity greater than Magnitude 6 at some point within the Quaternary Period, or the last 2.6 million years. Additionally, the Midland Fault, which is buried under alluvium, extends north of Bethel Island in the Delta to the east of Lake Berryessa. This fault is considered to be inactive, but possibly capable of generating a near 7.0 (Richter Scale) earthquake (USGS, 2015).

3.6.2 Discussion

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No impact. None of the proposed sites are located within an area mapped as an Alquist-Priolo Earthquake Fault Zone. Therefore, there would be no impact.

ii) Strong seismic ground shaking?

Less than significant impact. The three active faults located within the vicinity of the project are capable of producing seismic ground shaking within the project site. Damage to structures from this vibration is caused by the transmission of earthquake vibrations from the ground to the structure. The western portion of Sacramento County has been mapped as a moderate ground shaking zone, but the structures will not be manned, and their construction will not increase the risk of loss, injury, or death if strong seismic ground shaking were to occur.

iii) Seismic-related ground failure, including liquefaction?

Less than significant impact. Liquefaction is most likely to occur in deposits of water-saturated alluvium or similar deposits of artificial fill. Soil and hydrology conditions within the Delta region of Sacramento County have made this an area subject to potential liquefaction problems, and buildings in the area are possibly susceptible to moderate damage. However, the platforms and structures associated with this project will not be manned and are low in stature. Therefore, their construction will not increase the risk of loss, injury, or death if strong seismic ground shaking were to occur.

iv) Landslides?

No impact. Landslide is a general term used for a falling mass of soil and rock. According to the Sacramento County General Plan, only a narrow strip along the eastern boundary of the county, from the Placer County line to the Cosumnes River, is considered to have landslide potential. The project site does not fall within the aforementioned area; therefore, there would be no impact.

b) Result in substantial soil erosion or the loss of topsoil?

Less than significant impact. The contractor will adhere to requirements of the General Permit for Discharges of Storm Water Associated with Construction Activity General Permit Order 2009-0009-DWQ (Construction General Permit) which may include a Storm Water Pollution Prevention Plan for control of erosion, sedimentation, and runoff during construction; therefore, this impact would be less than significant.

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 an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than significant impact. Ground disturbance for this project will be minimal, as the levees on which they will be built are critical in maintaining current hydrological conditions. Construction on the levee will be conducted in a manner which will preserve the integrity of the levees and the surrounding lands. Additionally, steel piles which will be driven to support the

fish screens and associated structures will be pre-drilled if placed within 15 feet of the toe of the levee to ensure that levee integrity is not compromised.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No impact. Facilities constructed on land would be built on the existing levees which consist of compacted fill material of unverified origin and expansion potential; however, the structures will be unmanned, and the construction of these facilities will not increase the risks to life or property.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of waste water?

No impact. The proposed project would not require the use of septic tanks or alternative wastewater disposal systems; therefore, there would be no impact

3.7 Greenhouse Gas Emissions

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	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?	☐	☐	☐	☒

3.7.1 Environmental Setting

In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its greenhouse gas (GHG) emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process. Both the GGERP and Initial Study/Negative Declaration are incorporated herein by reference and are available at: http://www.water.ca.gov/climatechange/CAP.cfm. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g. building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines section 15183.5. That section 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, § 15064, subd. (h)(3).)

More specifically, "[l]ater 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 § 15183.5, subd. (b)(2)).

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 , 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 (Section 2.1.3 Environmental Commitments), 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 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, a GGERP Consistency Determination Checklist is attached (Appendix C) documenting that the project has met each of the required elements.

3.7.2 Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than significant impact. 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, Appendix C), 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 and, therefore, less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No impact. DWR’s GGERP is in compliance with all applicable plans and policies. This project is in compliance with the GGERP and all Best Management Practices suggested in the GGERP are outlined in Section 2.1.3 Environmental Commitments as part of the Project, as such there would be no impact.

3.8 Hazards and Hazardous Materials

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d.	Be located on a site that 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 area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f.	For a project located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

h.	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐

3.8.1 Environmental Setting

Both the California State Water Resources Control Board GeoTracker and California Department of Toxic Substances Control EnviroStor databases were consulted, on January 26, 2015, to determine if there were any recorded hazardous materials sites of concern within an approximate two mile radius of the project area. One site within that search radius was identified, located on Sherman Island, approximately 1 mile from Site 2. This occurrence was first reported in 1993 as a diesel leak of unspecified origin which was stopped at the time of discovery. As of March 2014, this case has been closed. Two other sites were identified between 2 and 3 miles from the project sites; one was a leak or spill of petroleum products on Sherman Island which is currently being remediated and monitored for groundwater contamination by PG&E, and a second occurrence is located on neighboring Decker Island at a site which was previously used by the US Army as a boat landing and storage facility. There are no specified contaminants of concern at this second site.

3.8.2 Discussion

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than significant. Hazardous chemicals used during project construction could include, but are not limited to, fuel, motor oil, and lubricants for construction equipment. The threshold for determining significance was based on professional judgment as to whether or not the handling of hazardous materials during the project construction would pose 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. If hazardous chemicals such as fuel or motor oil were to be mishandled, leaks or spills could potentially result in contamination of the soil or water in the project area. However, contractors would provide spill containment for vehicles and the containment would adhere to all required State and federal standards. Considering the small amount of hazardous chemicals that would be used for the project and the mitigation measures that the project contractor will be required to use, the project would not create a significant hazard to the public due to exposure to hazardous chemicals so long as the following mitigation measures are adhered to.

Mitigation Measure HM-1: Minimize potential for hazardous materials spills

- All personnel involved in use of hazardous materials will be trained in emergency response and spill control. Diesel fuel and oil will be used, stored, and disposed of in accordance with standard protocols for the handling of hazardous materials. Contracts will require contractors to prepare and make available to DWR, for review and acceptance, a spill prevention and control plan.

Mitigation Measure HM-2: Mitigate impacts resulting from potential hazardous material spills

- Soils or water contaminated by any hazardous materials spills during construction would be excavated, removed, or mopped up from the site and disposed of at an appropriate regional landfill.

There is always the potential for the release of hazardous substances during construction activities; however, by implementing these mitigation measures, the potential for accidental releases would be minimized, and hazards to the public or the environment would be less than significant.

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?

Less than significant. Following construction, use of hazardous materials for the operations and maintenance of the proposed facilities would be minimal, limited to minor amounts of lubricating fluids necessary to maintain the mechanical functioning of the fish screen retrieval track. Implementation of the proposed project is not expected to increase the risk of the release of hazardous materials into the environment, and this impact would be less than significant.

c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No impact. This project is not located within one-quarter mile of an existing or proposed school and therefore there would be no impact.

d) Be located on a site that 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?

No impact. None of the aforementioned sites will be affected by the proposed project; therefore, construction of the proposed project will not create a significant hazard to the public or the environment due to proximity to these sites.

e) For a project located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No impact. There are no public or private airports within three miles of the project site; therefore, there would be no impact.

f) For a project located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?

No impact. As noted in (e), above, this project is not located within the vicinity of a private airstrip; therefore, there would be no impact.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than significant. The proposed project will not require any public road or land closures during construction but may result in traffic delays along the county road during siphon realignment activities. Since there would only be minor delays and no closures this impact would be less than significant.

h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less than significant with mitigation incorporated. The project site is not located within a wildland fire area or a high fire hazard zone. However there is potential for fire to occur in the area surrounding the project sites or staging areas, which are comprised of mostly low-growing annual vegetation. Measures will be taken to reduce the risk of fire that could be started due to construction activity and vehicle traffic associated with this project. Therefore, the risk of exposing people or structures to significant risk of loss injury or death due to fire would be less than significant with measures incorporated.

Mitigation Measure HM-3: Minimize potential for fires resulting from construction activity

The project contractor will be required to develop a fire protection and prevention plan which incorporates fire safety measures (e.g., spark arrestors, mufflers) on all equipment with the potential to create a fire hazard and staging areas and access roads will be managed for vegetation to the maximum extent practicable to minimize the potential for vehicle-ignited fires. The plan will ensure that fire suppression equipment is maintained on site and that all construction employees have received appropriate fire safety training

3.9 Hydrology and Water Quality

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?	☐	☐	☒	☐
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?	☐	☐	☒	☐
e.	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f.	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g.	Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or	☐	☐	☐	☒

	other flood hazard delineation map?				
h.	Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☐	☐	☒
i.	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j.	Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 Environmental Setting

The proposed project will be constructed atop existing levees along the Sacramento and San Joaquin Rivers. Sites 1 and 2, on the northern shore of Sherman Island along the Sacramento River are located on a federally maintained (US Army Corps of Engineers, USACE) federal flood control "project levee". DWR will obtain approval from the USACE and Central Valley Flood Protection Board to ensure that the project meets construction standards established by these agencies to ensure that the levee is not compromised by construction activities or structures.

This project will also be permitted by the USACE and RWQCB under sections 404 and 401 of the Clean Water Act to ensure that fills and water quality impacts which result from the proposed project within waters of the United States and waters of the state meet the required standards.

3.9.2 Discussion

a) Violate any water quality standards or waste discharge requirements?

Less than significant impact. The proposed project activities have the potential to result in localized, short-term impacts to water quality due to potential fuel, oil leaks, or spills at fuel or oil transfer areas. However, mitigation measures for hazards and hazardous materials proposed in Section 3.8.2 will be followed to minimize this risk. Siltation is likely to occur as a result of the pile driving, however, this is expected to be a temporary disturbance of the river that may slightly increase turbidity, but is not considered significant.

Additionally, this project will adhere to requirements under the Construction General Permit via a Stormwater Pollution Prevention Plan (SWPPP) and a Water Quality Certification pursuant to Section 401 of the Clean Water Act, both issued by the Regional Water Quality Control Board (RWQCB). With these measures and restrictions in place, impacts related to water quality would be less than significant.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

No impact. This project would not use groundwater during construction or operations and construction of the project will not cause lowering of the groundwater table. Therefore, there would be no impact.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Less than significant impact. This proposed project is not expected to alter existing drainage patterns. The increase in impervious surface as a result of this project would be minor, and limited to the small concrete footings that will be poured to support the elevated walkway at each site. This impact would be minor and would not significantly increase runoff on levees which are already highly compacted.

Implementation of erosion control as part of a SWPPP would ensure that sediment from disturbed areas would not be mobilized. Therefore, this impact would be less than significant.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?

Less than significant impact. Because the increase in impervious surface would be small, and limited to the approximately 5 foot concrete footing which will be installed to support each access platform, runoff quantity is not expected to increase and the proposed project is not expected to contribute to an increase in on- or off-site flooding. This impact would be less than significant.

e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than significant impact. The project sites are not currently serviced by a constructed stormwater drainage system. Rainwater drains from the raised levee surfaces and runs directly into the adjacent river or onto the interior of the islands. Water levels due to rainwater accumulation and groundwater seepage on the highly subsided islands are managed for agricultural purposes via a system of pumps and drainage ditches. The proposed project will not significantly increase the volume of runoff from the sites, and sources of potential

construction-related pollutants such as fuels and lubricants or silt will be minimized through the development and implementation of mitigation measures (HM-1 and 2) and a SWPPP. Therefore this impact would be less than significant.

f) Otherwise substantially degrade water quality?

Less than significant impact. As discussed in (c) and (e), above, the proposed project would not substantially degrade water quality and this impact would be less than significant.

g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No impact. The proposed project does not include or facilitate the development of new housing; therefore, there would be no impact.

h) Place within a 100-year flood hazard area structures that would impede or redirect floodflows?

Less than significant. This project is located within a 100-year flood hazard area; however, this project is being designed to accommodate tidal variations in the Sacramento River and the placement of piles along with the rest of the appurtenant structures would not impede, redirect, or cause flood flows. This impact would be less than significant.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less than significant impact. The project would require review by the Army Corps of Engineers for modifications made to a project levee, and encroachment permits from both the Reclamation District and the Central Valley Flood Protection Board. Therefore, the project would be in compliance with all regulations and policies implemented for modifications to levees that are put in place to ensure that levee integrity is not compromised by proposed projects. Therefore, the impact would be less than significant.

j) Contribute to inundation by seiche, tsunami, or mudflow?

No impact. The project will not alter the existing risk for seiche, tsunami or mudflows therefore there would be no impact

3.10 Land Use and Planning

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

3.10.1 Environmental Setting

Sherman and Twitchell Islands have been designated for agriculture and open space (including recreation) in the Sacramento County General Plan. Lands within and immediately adjacent to the project sites are zoned for Agriculture (AG-80) and Residential (RD-1).

Sherman Island is an internationally known windsurfing area and is extremely popular with locals and visitors. Both islands and their surrounding waters also provide ample recreational opportunities for boaters, anglers, and wildlife enthusiasts. Camping and recreational vehicle facilities are also available on Sherman Island.

The project sites are primarily comprised of open water, graded and armored levees, mowed landside slopes of the levees, the county roads along the levee crown, and irrigated pasture, row crops, and grain production, with associated drainage and irrigation ditches beyond the landward levee toe.

3.10.2 Discussion

a) Physically divide an established community?

No impact. Although Site 2 on Sherman Island is located within 50 feet of a residential community, all project activities are located outside of the residential housing area and will not divide an established community. Therefore, there would be no impact.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No impact. The project would not change the existing land use of adjacent lands that have been designated for agricultural use. The installation of the fish screens is intended to reduce the environmental impact of agricultural diversion on special status fish species in the area and will therefore support the continued use of these properties for agricultural purposes. Temporary construction impacts may have the potential to disrupt recreational activities in the area by limiting public access to the area immediately surrounding construction activities and by temporarily displacing game fish species or other wildlife due to construction disturbance; however, these impacts will not conflict with an applicable land use plan, policy or regulations.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No impact. The project area is not covered by a habitat conservation plan or natural community conservation plan. Therefore there would be no impact.

3.11 Mineral Resources

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	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?	☐	☐	☐	☒

3.11.1 Environmental Setting

Mineral resources in Sacramento County, according to the Sacramento County General Plan, include natural gas, petroleum, sand, gravel, clay, gold, silver, peat, topsoil, and lignite. The principal resources which are in production are aggregate (sand and gravel) and natural gas.

Natural gas production is located mostly in the Delta's Rio Vista gas field, which is one of California's largest producing areas. The eastern portion of Sherman Island and all of Twitchell Island have been included within the presumed boundaries of this large gas field. While the field has been largely depleted of gas resources, studies have been proposed to determine the possibility of using the resulting underground void as a gas storage reservoir for carbon sequestration to help meet greenhouse gas reduction targets (California Geological Survey, 2010).

Although peat and lignite resources are present within the Delta, they are not commercially mined. The Sacramento County General Plan does not identify any aggregate resources within the project area.

3.11.2 Discussion

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?

Less than significant impact. Although the proposed project would be built within an area that is known to contain mineral resources, namely natural gas, the nature of the project and the

relatively small permanent footprint (as compared to a large development project) will not result in the significant loss of availability of known mineral resources within the region.

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?

Less than significant impact. As discussed above, the proposed project will have a small permanent footprint and will not result in the significant loss of availability of known mineral resources, namely natural gas, within the local area.

3.12 Noise

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project result in:				
a.	Exposure of persons to or generation of noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e.	For a project located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f.	For a project located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.12.1 Environmental Setting

Existing noise sources in the project area include distant traffic, agricultural operations, wildlife and livestock vocalizations, boating activities, wind, and moving water in the Sacramento River.

Section 6.68.090(e) of Sacramento County Code, which applies to unincorporated portions of Sacramento County, states that "noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property are exempt from applicable standards. This exemption is provided if said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m., provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner."

3.12.2 Discussion

a) Exposure of persons to or generation of noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Less than significant impact. Construction noise would fluctuate depending on the particular type, number, and duration of usage of the varying equipment. The effects of construction noise largely depend on the construction activity, distances to sensitive noise receptors, and ambient noise near that receptor. Work at Site 2 will be located within 500 feet of existing residences and will likely result in temporary noise disturbance for a duration of one to two months. However, given that construction noise in Sacramento County, within set daily hours, is exempt from applicable standards, and all noise-producing work will be conducted in accordance with the stated hours and exemption criteria, the temporary impact to nearby residents would be less than significant.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact. Construction activities in the project area may result in varying degrees of temporary ground vibrations, depending on the equipment used and activity being conducted at the time. Daily time restrictions set for construction work in Sacramento County Code will be adhered to; therefore, impacts to residents will be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than significant impact. The ongoing operation of the fish screens will not significantly increase the ambient noise levels in the area. Some noise will be generated when the screens

are retrieved via the mechanical track system and portable generator, which will only occur for maintenance or drying. The noise created by this activity will not be significantly different, either in intensity or frequency from the existing noise created by vehicle traffic, boat traffic, and agricultural activities in the area. Therefore, impacts will be less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than significant impact. As discussed in previous sections, there will be a temporary increase in noise due to construction activities. These increases will be short in duration, and will adhere to the daily time restrictions set forth by Sacramento County Code. Operational noise will be similar in intensity, duration, and frequency to existing noise disturbance in the area.

e) For a project located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?

No impact. This project is not within 2 miles of a public airport. The closest public use airport to the project area is the Rio Vista Municipal Airport in Rio Vista, which is located approximately 6.5 miles north of the project area. Therefore, there would be no impact related to airport noise.

f) For a project located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?

No impact. This project is not located in the vicinity of a private airstrip. Therefore, there would be no impact related to private airstrip noise.

3.13 Populations and Housing

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b.	Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c.	Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 Environmental Setting

The area surrounding the majority of the project sites is rural with few residences; however Site 2 is located within 500 feet of a residential unit of approximately 30 houses.

3.13.2 Discussion

a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

No impact. This project would not induce substantial population growth. The proposed project is intended to lessen the environmental impact of agricultural water diversion which already takes place. Therefore, there will be no impact.

b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?

No impact. This project would not displace any existing housing; therefore there would be no impact.

c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?

No impact. This project would not displace a substantial number of people; therefore there would be no impact.

3.14 Public Services

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

3.14.1 Environmental Setting

Sherman and Twitchell Islands are serviced by the Delta Fire District, Sacramento County Sheriff's Department, and River Delta Unified School District.

The Sacramento River/Delta-Sherman Island Regional Park is located west of Site 2 on the northwest corner of Sherman Island. This park and adjacent areas along the northern Sherman Island levee are frequented by windsurfers, kiteboarders, and other recreational users.

Access to and around the sites will be temporarily restricted during construction to protect public safety during the operation of heavy equipment; however, one lane traffic controls will allow continued access along public roads, and public access will be restricted only within the immediate vicinity of the construction.

3.14.2 Discussion

Fire protection?

No impact. The project site would continue to be serviced by Delta Fire District and access to the site would be maintained during construction therefore there would be no impacts.

Police protection?

No impact. The project site would continue to be serviced by the Sacramento County Sheriff's Department and access to the site would be maintained during construction, therefore there would be no impacts.

Schools?

No impact. There are no existing schools on either of the two islands and the proposed project would not provide or induce additional housing in the area, therefore there would be no impact to school services.

Parks?

Less than significant impact. The proposed project would temporarily affect public access within the immediate work zones, and noise and construction activity may deter use of areas along the northern Sherman Island levee, which are frequented by windsurfers and kiteboarders. Disturbance in these areas may temporarily increase use of the adjacent Sacramento River/Delta-Sherman Island Regional Park. The park is currently used for these activities, and parking and launch facilities are provided on a user fee basis. Previous inquiries regarding the capacity of the park for the Sherman Island Little Baja and Manzo Ranch Fish Release Sites Project determined that the park has existing facilities capable of supporting the predicted increase in use by windsurfers and kiteboarders who currently use sites along the Sherman Island levee. Therefore, the proposed project will not require the provision of new or altered facilities, even if park use is increased due to construction disturbance, and project's impacts on nearby parks will be less than significant.

Other public facilities?

No impact. There are no other public facilities existing in the project area that would be affected by construction or operation of the improved fish release site, therefore there would be no impact to other public facilities.

3.15 Recreation

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

3.15.1 Environmental Setting

Recreation on navigable waters is protected under the Public Trust. Boating, wind surfing, kite boarding, and fishing occur near the project sites on Sherman Island along the Sacramento River. The project will not extend far enough into the river to require alternate access points for boaters and will only temporarily (during construction) result in restricted access within the project site for recreation. Construction work may temporarily restrict access on the levee roads, but vehicle access will be maintained via one-way road closures.

3.15.2 Discussion

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?

Less than significant impact. Windsurfers and kiteboarders have historically used sites along the northern Sherman Island levee to launch craft and have parked in an area at the base of the levee. Public access at the project sites will be restricted during construction to facilitate the safe use of heavy equipment necessary to complete the project. As previously discussed in Section 3.14.1, temporary closure of this area may result in increased usage of the nearby Regional Park. As construction impacts to this area will be short term, deterioration of the nearby Regional Park facilities due to increased public traffic are expected to be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No impact. The proposed project does not include or require the construction or expansion of recreational facilities; therefore, there would be no impact.

3.16 Transportation/Traffic

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Conflict with and applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and no-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b.	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d.	Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e.	Result in inadequate emergency access?	☐	☐	☐	☒
f.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

3.16.1 Environmental Setting

Construction of the fish screen platforms and realignment of siphons may require temporary closures of the levee roads in the immediate vicinity of the construction; however, DWR will prepare and submit to the County for approval, a Traffic Control Plan which will ensure that one-way traffic access will be maintained through the sites on public roads at all times.

3.16.2 Discussion

a) Conflict with and applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and no-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less than significant impact. Construction of the fish screen platforms will require temporary traffic control of the levee roads and may be reduced to one-way traffic during certain construction activities, particularly the landside pipe replacement at Site 2 and levee raising at Site 4. A Traffic Control Plan which includes one-way access, likely using flaggers to direct traffic on public roads, will be submitted to Sacramento County for approval. Operations would not result in any significant changes in traffic. Therefore, this impact would be less than significant.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less than significant impact. With an approved Traffic Control Plan, impacts to traffic are expected to be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No impact. This project would not affect air traffic patterns therefore there would be no impact.

d) Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No impact. Construction of the fish screen platforms will not affect the alignment of the roads, and the 1 foot raising of the levee road above existing grade at Site 4 will not create hazardous obstacles to visibility which could increase hazards. Therefore there would be no impact.

e) Result in inadequate emergency access?

No impact. This project will not result in any permanent road closures or rerouting, and one-way access will be provided through the construction sites at all times. Therefore there would be no impact.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. Public transit, bicycle, or pedestrian facilities do not exist within the immediate vicinity of the project therefore there would be no impact.

3.17 Utilities and Service Systems

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
	Would the project:				
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☐	☐	☐	☒
e.	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?	☐	☐	☐	☒
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

3.17.1 Environmental Setting

The fish screen structures do not generate wastewater or require the use of a wastewater *t*reatment facility.

3.17.2 Discussion

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No impact. No wastewater will be generated by this project; therefore, there would be no impact.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No impact. As this project will not generate wastewater, it will not require the construction of new wastewater treatment facilities or expansion of existing facilities. Therefore, there would be no impact.

c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No impact. The project sites are not currently serviced by a constructed stormwater drainage system. As construction of impervious surfaces will be minimal with this project, the project will not significantly increase the volume of runoff from the sites, and will not require the construction of new stormwater drainage facilities or expansion of existing facilities. Therefore, there would be no effect.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

No impact. The proposed project will not affect water entitlements that are associated with the existing siphons and properties, therefore, there would be no impact.

e) 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?

No impact. The project area is not currently serviced by a wastewater treatment provider, nor will the project result in requiring a wastewater treatment provider. Therefore, consultation with a waste water treatment provider is not necessary, and there will be no impact.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

No impact. The amount of debris generated from construction of this project is not expected to significantly impact landfill capacities. Operations would not be expected to generate solid waste. Therefore there would be no impact.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

No impact. The solid waste generated by this project will be transported and disposed of in accordance with all applicable federal, state, and local regulations. Therefore, there would be no impact.

3.18 Mandatory Findings of Significance

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b.	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" meant that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of the 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?	☐	☐	☒	☐

3.18.1 Discussion

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

Less than significant with mitigation incorporated. As discussed in Sections 3.1-3.17 of this Initial Study, the proposed project would not significantly affect the environment. The project

could have potential adverse effects on biological resources and cultural resources but those impacts would be reduced to less than significant with mitigation incorporated.

b) Does the project have impacts that are individually limited but cumulatively considerable?

Less than significant impact. Construction of the proposed project would result in short-term temporary impacts that would mainly be limited to the project area. While impacts to resource areas such as air quality and greenhouse gas emissions would contribute to more regional impacts, these impacts would not be cumulatively considerable because of the relative size of the proposed project.

Impacts to air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, public services, transportation and traffic, have been determined to be less than significant or less than significant with mitigation incorporated and would not be cumulatively considerable. Therefore cumulative impacts would be less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant impact. Mitigation measures have been provided to reduce the project's potential effects on air quality, biological resources, and hazards and hazardous materials, and all other impacts to resources in this Initial Study were determined to be less than significant. Thus, impacts to humans, either directly or indirectly, would be less than significant.

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Appendices

Appendix A- Site Photos (2/4/2015)

Appendix B- Special Status Species List and CNDDB Occurrence Map

Appendix C- GGERP Consistency Form

Appendix A- Site Photos (2/4/15)

Site 1 waterside- looking west

Site 1 landside- looking southeast

Site 2 waterside- looking northeast

Site 2 landside- looking south

Site 3 waterside- looking southwest

Site 3 landside-looking northeast

	
Site 4 waterside- looking south	Site 4 landside- looking north
	
Site 5 waterside- looking south	Site 5 landside- looking north
	
Sherman Island Staging Area- looking southeast	Twitchell Island Staging Area- looking northwest

Appendix B- Special Status Species List

Scientific Name	Common Name	Federal/ State/ CRPR	Other Status	Habitats	Potential to Occur in the Project Area	Effect Determination
Amphibians						
Ambystoma californiense	California tiger salamander	FT, X/ST/-	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland	None	No impact. The species is not found throughout most of the delta, as large waterways pose a significant barrier to dispersal. There is no critical habitat within the project area, and species is not known or likely to occur.
Rana draytonii	California red-legged frog	FT, X/-/-	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	None	No impact. Project area is outside the species' range. No critical habitat within the project area.
Reptiles						
Anniella pulchra pulchra	silvery legless lizard	-/-/-	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Chaparral | Coastal dunes | Coastal scrub	None	No impact. No appropriate habitat within the project area.
Emys marmorata	western pond turtle	-/-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable | USFS_S-Sensitive	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	High	Less than significant effect. Waterside habitat provides appropriate foraging and basking habitat for this species. Mitigation measures will ensure that the project's effects are less than significant.
Masticophis lateralis euryxanthus	Alameda whipsnake	FT, X/ST/-		Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	None	No impact. Project area is outside the species' range. No critical habitat within the project area.
Phrynosoma blainvillii	coast horned lizard	-/-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Chaparral | Cismontane woodland | Coastal bluff scrub | Coastal scrub | Desert wash | Pinon & juniper woodlands | Riparian scrub | Riparian woodland | Valley & foothill grassland	Low	No impact. Based on occurrence records documented in the CNDDB, the species has not been found to occur on interior delta islands, potentially due to the species' preference for dryland conditions which are not present in much of the delta, and the prevalence of waterways which act as barriers to dispersal.
Thamnophis gigas	giant garter snake	FT/ST/-	IUCN_VU-Vulnerable	Marsh & swamp | Riparian scrub | Wetland	Moderate	Less than significant with mitigation incorporated. Aquatic features such as agricultural drainages and potentially even the larger waterways in the vicinity of the project provide appropriate habitat for this species. Footprints for ground disturbing activities in upland habitat will be small, and located predominantly in unsuitable disturbed habitat. Mitigation measures will ensure that the project's effects are less than significant.
Birds						

Agelaius tricolor	Tricolored Blackbird	-/SE/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland	Low	No impact. No known nesting colonies within several miles of project area. Additionally, surveys for nesting birds will be conducted within appropriate habitat if work is to take place during the nesting season, and impacts to nesting colonies will be avoided.
Aquila chrysaetos	Golden Eagle	-/-/-	BLM_S-Sensitive | CDF_S-Sensitive | CDFW_FP-Fully Protected | CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest | Cismontane woodland | Coastal prairie | Great Basin grassland | Great Basin scrub | Lower montane coniferous forest | Pinon & juniper woodlands | Upper montane coniferous forest | Valley & foothill grassland	Moderate	Less than significant with mitigation incorporated. While the species may use habitat within the project area for foraging, suitable nesting habitat is limited within 1 mile of the project area, therefore impacts to nesting Golden Eagles are not expected to occur. Mitigation measures will ensure that the project's effects are less than significant.
Ardea herodias	Great Blue Heron	-/-/-	CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Low	No impact. Individuals are known to forage in the area, but nesting colonies (rookeries), which exhibit a high degree of site fidelity, have not been identified in the area.
Asio flammeus	Short-eared Owl	-/-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Great Basin grassland | Marsh & swamp | Meadow & seep | Valley & foothill grassland | Wetland	Moderate	Less than significant with mitigation incorporated. Open grassland on the islands may provide appropriate habitat for this species, but they are unlikely to occur within or near the small, disturbed footprints that will be affected by the proposed project. Mitigation measures will ensure that the project's effects are less than significant.
Athene cunicularia	Burrowing Owl	-/-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland	Low	Less than significant with mitigation incorporated. Grassland on the islands may provide appropriate habitat for this species, but a high water table limits suitability and signs of occupancy have not been found during surveys. Mitigation measures will ensure that the project's effects are less than significant.
Buteo regalis	Ferruginous Hawk	-/-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Pinon & juniper woodlands | Valley & foothill grassland	Low	No impact. Grassland habitat on the islands may provide suitable winter foraging habitat, but impacts to grassland will be minimal and construction activity will likely be restricted during winter months. Nesting does not occur in the area.
Buteo swainsoni	Swainson's hawk	-/ST/-	BLM_S-Sensitive | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland	High	Less than significant with mitigation incorporated. Known to nest on the islands. Impacts to trees suitable for nesting will be minimal. Mitigation measures will ensure that the project's effects are less than significant.
Charadrius montanus	Mountain Plover	-/-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Chenopod scrub | Valley & foothill grassland	Low	No impact. Grassland habitat on the islands may provide suitable winter foraging habitat, but the species has not been recorded in the project vicinity. Impacts to grassland will be minimal and construction activity will likely be restricted during winter months. Nesting does not occur in the area.
Elanus leucurus	White-tailed Kite	-/-/-	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_LC-Least Concern	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland	Moderate	Less than significant with mitigation incorporated. No recorded nests within the area. Impacts to trees suitable for nesting will be minimal. Mitigation measures will ensure that the project's effects are less than significant.

Geothlypis trichas sinuosa	Saltmarsh Common Yellowthroat	-/-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp	None	No impact. Project area is located outside of the subspecies' range.
Lanius ludovicianus	Loggerhead Shrike	-/-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest | Desert wash | Joshua tree woodland | Mojavean desert scrub | Pinon & juniper woodlands | Riparian woodland | Sonoran desert scrub	Moderate	Less than significant with mitigation incorporated. Habitat within the project area may be suitable for foraging and nesting. Mitigation measures will ensure that the project's effects are less than significant.
Laterallus jamaicensis coturniculus	California Black Rail	-/ST/-	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Brackish marsh | Freshwater marsh | Marsh & swamp | Salt marsh | Wetland	Low	No impact. The limited marsh vegetation in the project area, which occurs primarily as a narrow band of tules adjacent to the waterside levee toe, does not provide suitable habitat for this species.
Melospiza melodia	Song Sparrow ("Modesto" population)	-/-/-	CDFW_SSC-Species of Special Concern		High	Less than significant with mitigation incorporated. Habitat within the project area may be suitable for foraging and nesting and the species has been documented in the project area. Mitigation measures will ensure that the project's effects are less than significant.
Melospiza melodia maxillaris	Suisun Song Sparrow	-/-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp | Wetland	None	No impact. Habitat within the project area may provide marginal habitat for foraging and nesting, but the project area is located beyond the eastern boundary of the species' known range.
Phalacrocorax auritus	Double-crested Cormorant	-/-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Riparian forest | Riparian scrub | Riparian woodland	Moderate	No impact. Individuals are known to forage in the area, but nesting colonies (rookeries), which exhibit a high degree of site fidelity, have not been identified in the area.
Rallus longirostris obsoletus	California Ridgway's Rail	FE/SE/-	CDFW_FP-Fully Protected | NABCI_RWL-Red Watch List	Brackish marsh | Marsh & swamp | Salt marsh | Wetland	None	No impact. No suitable habitat within the project area.
Riparia riparia	Bank Swallow	-/ST/-	BLM_S-Sensitive | IUCN_LC-Least Concern	Riparian scrub | Riparian woodland	None	No impact. No appropriate habitat within the project area.
Sternula antillarum browni	California Least Tern	FE/SE/-	CDFW_FP-Fully Protected | NABCI_RWL-Red Watch List	Alkali playa | Wetland	None	No impact. No appropriate habitat within the project area.
Mammals						
Antrozous pallidus	pallid bat	-/-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland	Low	Less than significant impact. No appropriate roosting or foraging habitat within the project area. Pump housings which do not provide ideal habitat, but have some potential to be occupied by bats, will be surveyed for presence of bats prior to disturbance.
Corynorhinus townsendii	Townsend's big-eared bat	-/CT/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland	Low	No impact. Habitat within the project area may be suitable as foraging habitat for this species, but no appropriate roost sites are present. Project activities will be conducted during daylight hours, when bats are unlikely to be foraging.
Dipodomys heermanni berkeleyensis	Berkeley kangaroo rat	-/-/-		Chaparral | Cismontane woodland	None	No impact. The project area is outside the subspecies' range.

Lasiurus blossevillii	western red bat	-/-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | WBWG_H-High Priority	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland	Moderate	Less than significant with mitigation incorporated. May use habitat within the area for foraging. Tree stands within the project footprint provide marginal roosting habitat. Impacts to trees suitable for roosting will be minimal. Mitigation measures will ensure that the project's effects are less than significant.
Lasiurus cinereus	hoary bat	-/-/-	IUCN_LC-Least Concern | WBWG_M-Medium Priority	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest	Moderate	Less than significant with mitigation incorporated. May use habitat within the area for foraging. Tree stands within the project footprint provide marginal roosting habitat. Impacts to trees suitable for roosting will be minimal. Mitigation measures will ensure that the project's effects are less than significant.
Perognathus inornatus	San Joaquin Pocket Mouse	-/-/-	BLM_S-Sensitive	Cismontane woodland | Mojavean desert scrub | Valley & foothill grassland	Moderate	Less than significant effect. This species has potential to use grassland habitat within the project area. Footprints for ground disturbing activities in upland habitat will be small, and located predominantly in unsuitable disturbed habitat. Additionally, there are no protections for this species outside of lands owned by the BLM.
Reithrodontomys raviventris	salt-marsh harvest mouse	FE/SE/-	CDFW_FP-Fully Protected | IUCN_EN-Endangered	Marsh & swamp | Wetland	None	No impact. Project area is located beyond the eastern boundary of the species' known range and no appropriate habitat is present.
Sorex ornatus sinuosus	Suisun shrew	-/-/-	CDFW_SSC-Species of Special Concern	Marsh & swamp | Wetland	None	No impact. Project area is outside of species' range, no appropriate habitat within the project area.
Taxidea taxus	American badger	-/-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Alkali marsh | Alkali playa | Alpine | Alpine dwarf scrub | Bog & fen | Brackish marsh | Broadleaved upland forest | Chaparral | Chenopod scrub | Cismontane woodland | Closed-cone coniferous forest | Coastal bluff scrub | Coastal dunes | Coastal prairie | Coastal scrub | Desert dunes | Desert wash | Freshwater marsh | Great Basin grassland | Great Basin scrub | Interior dunes | Ione formation | Joshua tree woodland | Limestone | Lower montane coniferous forest | Marsh & swamp | Meadow & seep | Mojavean desert scrub | Montane dwarf scrub | North coast coniferous forest | Oldgrowth | Pavement plain | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Salt marsh | Sonoran desert scrub | Sonoran thorn woodland | Ultramafic | Upper montane coniferous forest | Upper Sonoran scrub | Valley & foothill grassland	None	No impact. Based on occurrence records documented in the CNDDB, the species has not been found to occur on interior delta islands, potentially due to their preference for dryland conditions which are not present in much of the delta.
Vulpes macrotis mutica	San Joaquin kit fox	FE/ST/-		Chenopod scrub | Valley & foothill grassland	None	No impact. Based on occurrence records documented in the CNDDB, the species has not been found to occur on interior delta islands, potentially due to their preference for dryland conditions which are not present in much of the delta.
Fish						

Acipenser medirostris	North American Green Sturgeon- southern DPS	FT/-/-	AFS: VU, CDFW: SSC, IUCN: NT, NMFS: SC	Sacramento River Basin, Sacramento-San Joaquin Delta	High	Less than significant with mitigation incorporated. Although the species is known to occur within the project area, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.
Archoplites interruptus	Sacramento Perch	-/-/-	AFS_TH-Threatened | CDFW_SSC-Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters	Moderate	Less than significant with mitigation incorporated. Although the species is known to occur within the project area, flow conditions in the immediate proximity of the project sites may not be suitable for the species. Additionally, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.
Hypomesus transpacificus	Delta Smelt	FT, X/SE/-	AFS_TH-Threatened | IUCN_EN-Endangered	Aquatic | Estuary	High	Less than significant with mitigation incorporated. Although the species is known to occur within the project area and the project sites are located within critical habitat for the species, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.
Oncorhynchus mykiss irideus	Steelhead - Central Valley DPS	FT, X/-/-	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters	High	Less than significant with mitigation incorporated. Although the species is known to occur within the project area, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.
Oncorhynchus mykiss irideus	Steelhead - northern California DPS	FT, X/-/-	AFS_TH-Threatened | CDFW_SSC-Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters	None	No impact. The project area is outside of the species' known range. No critical habitat within the project area.
Oncorhynchus tshawytscha	Chinook Salmon - Central Valley spring-run ESU	FT, X /ST/-	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters	High	Less than significant with mitigation incorporated . Although the species is known to occur within the project area, and the portion of the Sacramento River which runs along the north side of Sherman Island has been designated as critical habitat for this species, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.

Oncorhynchus tshawytscha	Chinook Salmon - Sacramento River winter-run ESU	FE, X /SE/-	AFS_EN-Endangered	Aquatic | Sacramento/San Joaquin flowing waters	HIgh	Less than significant with mitigation incorporated. Although the species is known to occur within the project area, and designated critical habitat for this species includes the entire mainstem Sacramento River, with mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish.
Pogonichthys macrolepidotus	Sacramento Splittail	-/-/-	AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered	Aquatic | Estuary | Freshwater marsh | Sacramento/San Joaquin flowing waters	Moderate	Less than significant with mitigation incorporated. Although the species has not been recorded within the project area, it is found in connected waterways and has potential to occur in the project area. With mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish
Spirinchus thaleichthys	Longfin Smelt	FC/ST/-	CDFW_SSC-Species of Special Concern	Aquatic | Estuary	High	Less than significant with mitigation. Although the species has not been recorded within the project area, it is found in connected waterways and has potential to occur in the project area. With mitigation measures in place, construction activities within the waterway are not likely to significantly affect the species. Installation of fish screens on existing agricultural intakes will decrease the adverse effects of water diversion on native fish
Invertebrates						
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	-/-/-		Vernal pool	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Anthicus antiochensis	Antioch Dunes anthicid beetle	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Anthicus sacramento	Sacramento anthicid beetle	-/-/-	IUCN_EN-Endangered	Interior dunes	None	No impact. No appropriate habitat within the project area.
Apodemia mormo langei	Lange's metalmark butterfly	FE/-/-	XERCES_CI-Critically Imperiled	Interior dunes	None	No impact. Project is located outside of the known range, and appropriate habitat and host plants are not present.
Branchinecta conservatio	Conservancy fairy shrimp	FE, X/-/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Branchinecta longiantenna	longhorn fairy shrimp	FE/-/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Branchinecta lynchi	vernal pool fairy shrimp	FT, X/-/-	IUCN_VU-Vulnerable	Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.

Branchinecta mesovallensis	midvalley fairy shrimp	-/-/-		Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Callophrys mossii bayensis	San Bruno elfin butterfly	FE/-/-	XERCES_CI-Critically Imperiled	Valley & foothill grassland	None	No impact. The project area is outside the species' range and no suitable habitat exists in the project vicinity.
Coelus gracilis	San Joaquin dune beetle	-/-/-	BLM_S-Sensitive | IUCN_VU-Vulnerable	Interior dunes	None	No impact. No appropriate habitat within the project area.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT/-/-		Riparian scrub	None	No impact. No host plants occur within the project area.
Dumontia oregonensis	hairy water flea	-/-/-		Vernal pool	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Efferia antiochi	Antioch efferian robberfly	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Elaphrus viridis	Delta green ground beetle	FT/-/-	IUCN_CR-Critically Endangered	Vernal pool | Wetland	None	No impact. The project area is outside of the species' known range.
Eucerceris ruficeps	redheaded sphecid wasp	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Helminthoglypta nickliniana bridgesi	Bridges' coast range shoulderband	-/-/-	IUCN_DD-Data Deficient	Valley & foothill grassland	None	No impact. The project area is outside of the species' known range.
Hygrotus curvipes	curved-foot hygrotus diving beetle	-/-/-		Aquatic	None	No impact. The project area is outside of the species' known range.
Idiostatus middlekauffi	Middlekauff's shieldback katydid	-/-/-	IUCN_CR-Critically Endangered	Interior dunes	None	No impact. No appropriate habitat within the project area.
Lepidurus packardi	vernal pool tadpole shrimp	FE, X/-/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Linderiella occidentalis	California linderiella	-/-/-	IUCN_NT-Near Threatened	Vernal pool	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Lytta molesta	molestan blister beetle	-/-/-		Vernal pool | Wetland	Low	No impact. Not known to occur in the project area. Marginal quality vernal pool habitat in the area will not be affected by the project.
Metapogon hurdi	Hurd's metapogon robberfly	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Myrmosula pacifica	Antioch multilid wasp	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Perdita scitula antiochensis	Antioch andrenid bee	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Philanthus nasalis	Antioch specid wasp	-/-/-		Interior dunes	None	No impact. No appropriate habitat within the project area.
Sphecodogastra antiochensis	Antioch Dunes halcitid bee	-/-/-	XERCES_CI-Critically Imperiled	Interior dunes	None	No impact. No appropriate habitat within the project area.
Plants						
Amsinckia grandiflora	large-flowered fiddleneck	FE/SE/1B.1	SB_UCBBG-UC Berkeley Botanical Garden	Cismontane woodland | Valley & foothill grassland	Low	No impact. Available habitat is of poor quality due to frequent mowing and dominance of non-natives, and the species is not known or likely to occur in the project area.

Androsace elongata ssp. *acuta*	California androsace	-/-/-4.2		Chaparral | Cismontane woodland | Coastal scrub | Meadow & seep | Pinon & juniper woodlands | Valley & foothill grassland	Low	No impact. Available habitat is of poor quality due to frequent mowing and dominance of non-natives, and the species is not known or likely to occur in the project area.
Anomobryum julaceum	slender silver moss	-/-/-4.2		Broadleaved upland forest | Lower montane coniferous forest | North coast coniferous forest	None	No impact. No appropriate habitat within the project area.
Arabis blepharophylla	coast rockcress	-/-/-4.3		Broadleaved upland forest | Coastal bluff scrub | Coastal prairie | Coastal scrub	None	No impact. No appropriate habitat within the project area.
Arctostaphylos auriculata	Mt. Diablo manzanita	-/-/1B.3		Chaparral | Cismontane woodland	None	No impact. No appropriate habitat within the project area.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	-/-/1B.2		Chaparral	None	No impact. No appropriate habitat within the project area.
Astragalus tener var. *tener*	alkali milk-vetch	-/-/1B.2		Alkali playa | Valley & foothill grassland | Vernal pool | Wetland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Atriplex cordulata var. *cordulata*	heartscale	-/-/1B.2	BLM_S-Sensitive	Chenopod scrub | Meadow & seep | Valley & foothill grassland	Low	No impact. Available habitat is of poor quality due to frequent mowing and dominance of non-natives, and the species is not known or likely to occur in the project area.
Atriplex coronata var. *coronata*	crownscale	-/-/4.2		Chenopod scrub | Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Marginal quality vernal pool habitat in the area will not be affected by the project. Species is not known or likely to occur in the project area.
Atriplex depressa	brittlescale	-/-/1B.2		Alkali playa | Chenopod scrub | Meadow & seep | Valley & foothill grassland | Vernal pool | Wetland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Blepharizonia plumosa	big tarplant	-/-/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	Low	No impact. Available habitat is of poor quality due to frequent mowing and dominance of non-natives, and the species is not known or likely to occur in the project area.
Brasenia schreberi	watershield	-/-/2B.3		Marsh & swamp | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but the plant is most often found in slower moving water. Species is not known or likely to occur in the project area.
Calandrinia breweri	Brewer's calandrinia	-/-/4.2		Chaparral | Coastal scrub	None	No impact. No appropriate habitat within the project area.
California macrophylla	round-leaved filaree	-/-/1B.1	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden | SB_SBBG-Santa Barbara Botanic Garden	Cismontane woodland | Valley & foothill grassland	Low	No impact. Available habitat is of poor quality due to frequent mowing and dominance of non-natives, and the species is not known or likely to occur in the project area.
Calochortus pulchellus	Mt. Diablo fairy-lantern	-/-/1B.2		Chaparral | Cismontane woodland | Riparian woodland | Valley & foothill grassland	None	No impact. Project area is outside species' range.
Campanula exigua	chaparral harebell	-/-/1B.2	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Chaparral | Ultramafic	None	No impact. No appropriate habitat within the project area.

Carex comosa	bristly sedge	-/-/2B.1		Freshwater marsh | Marsh & swamp | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but the plant is most often found in slower moving water. Species is not known or likely to occur in the project area.
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	-/-/1B.1	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	Low	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Species is not known or likely to occur in the project area.
Centromadia parryi ssp. *parryi*	pappose tarplant	-/-/1B.2	BLM_S-Sensitive	Coastal prairie | Marsh & swamp | Meadow & seep | Valley & foothill grassland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	-/-/4.2		Valley & foothill grassland | Vernal pool | Wetland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	-/-/1B.1	BLM_S-Sensitive	Alkali playa | Meadow & seep | Wetland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Chloropyron molle ssp. *molle*	soft salty bird's-beak	FE, X/-/1B.2		Marsh & swamp | Salt marsh | Wetland	Low	No impact. Available habitat is of poor quality because salinity is much lower within project sites than at nearest occurrences, and species is not known or likely to occur in the project area.
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	-/-/2B.1		Marsh & swamp | Salt marsh | Wetland	Low	Less than significant with mitigation incorporated. Known to occur near the project area, mitigation measures will be implemented to avoid adverse effects.
Cirsium hydrophilum var. *hydrophilum*	Suisun thistle	FE, X/-/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Marsh & swamp | Salt marsh | Wetland	Low	No impact. Available habitat is of poor quality because salinity is much lower within project sites than at nearest occurrences, and species is not known or likely to occur in the project area.
Collomia diversifolia	serpentine collomia	-/-/4.3		Chaparral | Cismontane woodland | Ultramafic	None	No impact. No appropriate habitat within the project area.
Convolvulus simulans	small-flowered morning-glory	-/-/4.2		Chaparral | Coastal scrub | Ultramafic | Valley & foothill grassland	None	No impact. No appropriate soils within the project area
Cordylanthus nidularius	Mt. Diablo bird's-beak	-/R/1B.1	BLM_S-Sensitive	Chaparral | Ultramafic	None	No impact. No appropriate soils or habitat within the project area
Cryptantha hooveri	Hoover's cryptantha	-/-/1A		Interior dunes | Valley & foothill grassland	None	No impact. No appropriate habitat within the project area
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	-/-/1B.2		Chaparral | Cismontane woodland | Coastal scrub | Meadow & seep	None	No impact. No appropriate habitat within the project area
Downingia pusilla	dwarf downingia	-/-/2B.2		Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Eriastrum ertterae	Lime Ridge eriastrum	-/-/1B.1		Chaparral	None	No impact. No appropriate habitat within the project area; known only from Lime Ridge area.

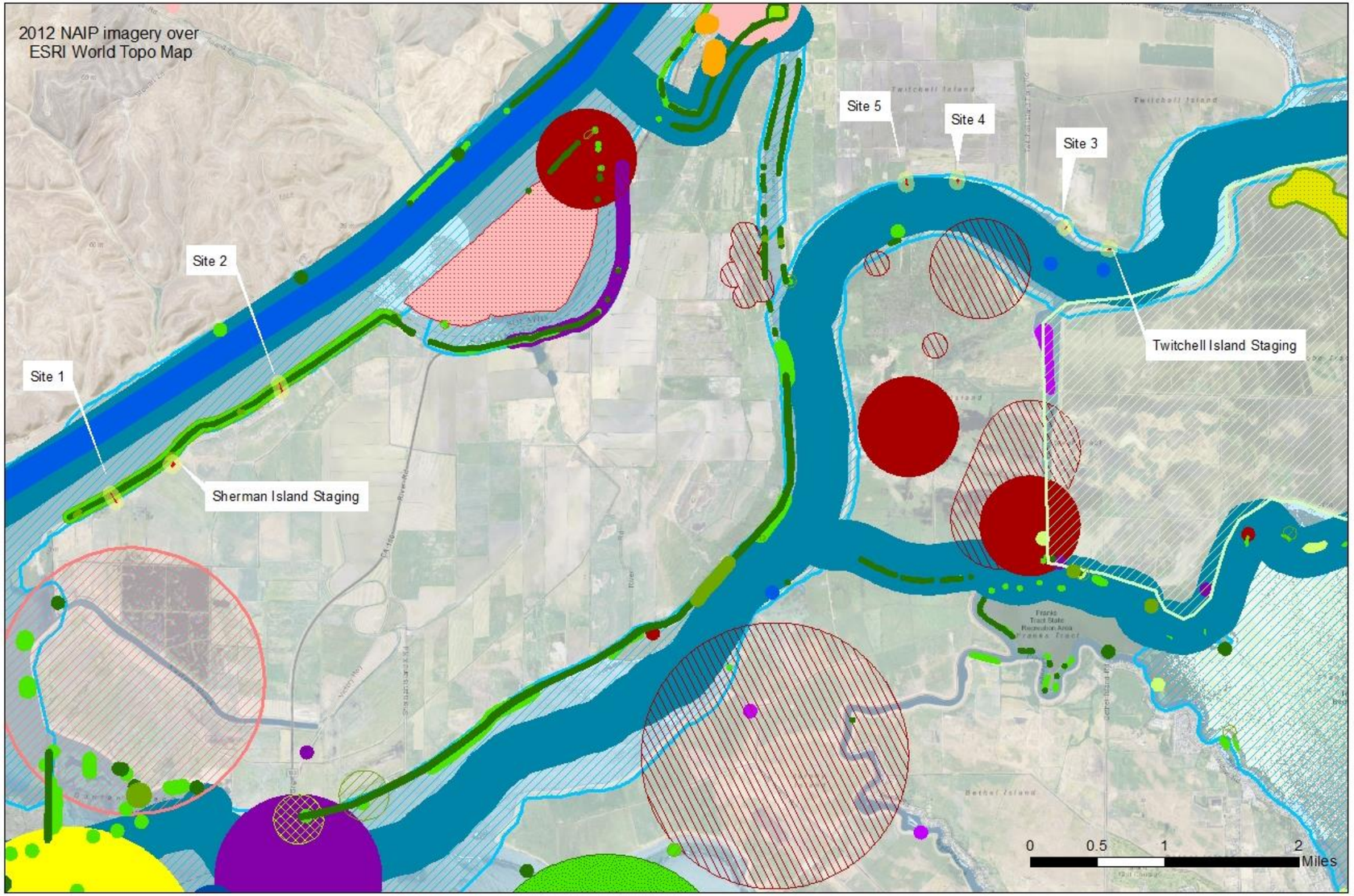
Eriogonum nudum var. *psychicola*	Antioch Dunes buckwheat	-/-/1B.1		Interior dunes	None	No impact. No appropriate habitat within the project area.
Eriogonum truncatum	Mt. Diablo buckwheat	-/-/1B.1		Chaparral | Coastal scrub | Valley & foothill grassland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Eriophyllum jepsonii	Jepson's woolly sunflower	-/-/4.3		Chaparral | Cismontane woodland | Coastal scrub | Ultramafic	None	No impact. No appropriate soils or habitat within the project area.
Eryngium racemosum	Delta button-celery	-/SE/1B.1		Riparian scrub | Wetland	Low	No impact. Microhabitat, which consists of vernally mesic clay depressions in riparian scrub is not present within the project sites. The species is not known or likely to occur in the project area.
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	FE, X/SE/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Interior dunes	None	No impact. No appropriate habitat or designated critical habitat within the project area.
Eschscholzia rhombipetala	diamond-petaled California poppy	-/-/1B.1	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	Low	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Species is not known or likely to occur in the project area.
Extriplex (=Atriplex) joaquinana	San Joaquin spearscale	-/-/1B.2	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Alkali playa | Chenopod scrub | Meadow & seep | Valley & foothill grassland	Low	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Species is not known or likely to occur in the project area.
Fritillaria agrestis	stinkbells	-/-/4.2		Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland	None	No impact. Serpentine soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Fritillaria liliacea	fragrant fritillary	-/-/1B.2	USFS_S-Sensitive	Coastal prairie | Coastal scrub | Ultramafic | Valley & foothill grassland	None	No impact. Serpentine soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Galium andrewsii ssp. *gatense*	serpentine phlox-leaf bedstraw	-/-/4.2		Chaparral | Cismontane woodland | Lower montane coniferous forest | Ultramafic	None	No impact. No appropriate soils or habitat within the project area.
Grimmia torenii	Toren's grimmia	-/-/1B.3		Chaparral | Cismontane woodland | Limestone | Lower montane coniferous forest	None	No impact. No appropriate habitat within the project area.
Helianthella castanea	Diablo helianthella	-/-/1B.2	BLM_S-Sensitive	Broadleaved upland forest | Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Hesperevax caulescens	hogwallow starfish	-/-/4.2		Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Hesperolinon breweri	Brewer's western flax	-/-/1B.2	BLM_S-Sensitive	Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland	None	No impact. No appropriate soils within the project area.
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	-/-/1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden	Freshwater marsh | Marsh & swamp | Wetland	High	Less than significant effect. Known to occur near the project area, mitigation measures will be implemented to avoid adverse effects.

Isocoma arguta	Carquinez goldenbush	-/-/1B.1		Valley & foothill grassland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Juglans hindsii	Northern California black walnut	-/-/1B.1	SB_USDA-US Dept of Agriculture	Riparian forest | Riparian woodland	Low	No impact. The closest occurrence of Northern California black walnut which was mapped along the Sacramento River is considered to be extirpated. Black walnut trees that occur in or near the project sites are most likely hybrids with the commercially grown *Juglans regia* and are not protected as rare plants.
Lasthenia conjugens	Contra Costa goldfields	FE/-/1B.1		Alkali playa | Cismontane woodland | Valley & foothill grassland | Vernal pool | Wetland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Species is not known or likely to occur in the project area.
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	-/-/1B.2	SB_BerrySB-Berry Seed Bank | SB_RSABG-Rancho Santa Ana Botanic Garden	Freshwater marsh | Marsh & swamp | Wetland	High	Less than significant with mitigation incorporated. Known to occur near the project area, mitigation measures will be implemented to avoid adverse effects
Legenere limosa	legenere	-/-/1B.1	BLM_S-Sensitive	Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known or likely to occur in the project area.
Lessingia hololeuca	woolly-headed lessingia	-/-/3		Broadleaved upland forest | Coastal scrub | Lower montane coniferous forest | Ultramafic | Valley & foothill grassland	None	No impact. No appropriate soils or habitat within the project area.
Lilaeopsis masonii	Mason's lilaeopsis	-/R/1B.1		Freshwater marsh | Marsh & swamp | Riparian scrub | Wetland	High	Less than significant with mitigation incorporated. Known to occur at some of the project sites. Mitigation measures will be implemented to reduce the project's impacts.
Limosella australis	Delta mudwort	-/-/2B.1		Brackish marsh | Freshwater marsh | Marsh & swamp | Riparian scrub | Wetland	High	Less than significant with mitigation incorporated. Known to occur at some of the project sites. Mitigation measures will be implemented to reduce the project's impacts.
Madia radiata	showy golden madia	-/-/1B.1	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Chenopod scrub | Cismontane woodland | Valley & foothill grassland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Malacothamnus hallii	Hall's bush-mallow	-/-/1B.2	BLM_S-Sensitive	Chaparral | Ultramafic	None	No impact. No appropriate soils or habitat within the project area.
Microseris paludosa	marsh microseris	-/-/1B.2		Cismontane woodland | Closed-cone coniferous forest | Coastal scrub | Valley & foothill grassland	Low	No impact. Available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.
Monolopia gracilens	woodland woollythreads	-/-/1B.2		Broadleaved upland forest | Chaparral | Cismontane woodland | North coast coniferous forest | Ultramafic | Valley & foothill grassland	None	No impact. Ultramafic soils are not present within the project area and available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives. The species is not known or likely to occur in the project area.

Myosurus minimus ssp. *apus*	little mousetail	-/-/3.1		Valley & foothill grassland | Vernal pool | Wetland	None	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Additionally, this taxon is currently considered a synonym of *M. sessilis* or possibly a sterile hybrid between *M. minimus* and *M. sessilis.*
Navarretia gowenii	Lime Ridge navarretia	-/-/1B.1		Chaparral	None	No impact. No appropriate habitat within the project area.
Navarretia heterandra	Tehama navarretia	-/-/4.3		Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	-/-/1B.1	BLM_S-Sensitive	Cismontane woodland | Lower montane coniferous forest | Meadow & seep | Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Navarretia nigelliformis ssp. *nigelliformis*	adobe navarretia	-/-/4.2		Ultramafic | Valley & foothill grassland | Vernal pool	None	No impact. Ultramafic soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Navarretia nigelliformis ssp. *radians*	shining navarretia	-/-/1B.2	BLM_S-Sensitive	Cismontane woodland | Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Neostapfia colusana	Colusa grass	FT/SE/1B.1		Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Additionally, the pools in the area do not meet the species preference for large, deep, adobe pools. Not known to occur in the project area.
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	FT/SE/1B.1		Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	FE, X /SE/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Interior dunes	None	No impact. No appropriate habitat within the project area.
Phacelia phacelioides	Mt. Diablo phacelia	-/-/1B.2	BLM_S-Sensitive	Chaparral | Cismontane woodland | Ultramafic	None	No impact. No appropriate soils or habitat within the project area.
Plagiobothrys hystriculus	bearded popcornflower	-/-/1B.1		Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Potamogeton zosteriformis	eel-grass pondweed	-/-/2B.2		Marsh & swamp | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but the plant is most often found in slower moving water. Species is not known or likely to occur in the project area.
Ranunculus lobbii	Lobb's aquatic buttercup	-/-/4.2		Cismontane woodland | North coast coniferous forest | Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Sagittaria sanfordii	Sanford's arrowhead	-/-/1B.2	BLM_S-Sensitive	Marsh & swamp | Wetland	Moderate	Less than significant with mitigation incorporated. Known to occur near the project area, mitigation measures will be implemented to avoid adverse effects.
Sanicula saxatilis	rock sanicle	-/R/1B.2	BLM_S-Sensitive	Broadleaved upland forest | Chaparral | Valley & foothill grassland	None	No impact. Bedrock and talus microhabitat preferred by this species is not present within the project area.

Scutellaria galericulata	marsh skullcap	-/-/2B.2		Lower montane coniferous forest | Marsh & swamp | Meadow & seep | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but tussocks and vegetated pilings under riparian overstory, where this species is commonly found are not present within the project area.
Scutellaria lateriflora	side-flowering skullcap	-/-/2B.2		Marsh & swamp | Meadow & seep | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but tussocks and vegetated pilings under riparian overstory, where this species has been found are not present within the project area.
Senecio aphanactis	chaparral ragwort	-/-/2B.2		Chaparral | Cismontane woodland | Coastal scrub	None	No impact. No appropriate habitat within the project area.
Senecio hydrophiloides	sweet marsh ragwort	-/-/4.2		Lower montane coniferous forest | Meadow & seep | Wetland	Low	No impact. Levee banks
Sidalcea keckii	Keck's checkerbloom	FE/-/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Cismontane woodland | Valley & foothill grassland	Low	No impact. This species' habitat is more closely aligned with grasslands in blue oak woodland, which does not occur within the project area.
Streptanthus albidus ssp. *peramoenus*	most beautiful jewelflower	-/-/1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden | USFS_S-Sensitive	Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland	None	No impact. Ultramafic soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives.
Streptanthus hispidus	Mt. Diablo jewelflower	-/-/1B.3		Chaparral | Valley & foothill grassland	None	No impact. The talus and rocky outcrops preferred by this species do not occur within the project area.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	-/-/1B.2		Marsh & swamp | Wetland	Low	No impact. Waterside habitat within the project area may be suitable for this species, but the plant is most often found in slower moving water. Species is not known or likely to occur in the project area.
Symphyotrichum lentum	Suisun Marsh aster	-/-/1B.2		Brackish marsh | Freshwater marsh | Marsh & swamp | Wetland	High	Less than significant with mitigation incorporated. Known to occur near the project area, mitigation measures will be implemented to avoid adverse effects.
Trifolium amoenum	two-fork clover	FE/-/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden | SB_USDA-US Dept of Agriculture	Coastal bluff scrub | Ultramafic | Valley & foothill grassland	Low	No impact. Coastal bluff scrub and ultramafic (serpentine) soils are not present in the project area, and available grassland habitat is of poor quality due to frequent mowing and dominance of non-natives.
Trifolium hydrophilum	saline clover	-/-/1B.2		Marsh & swamp | Valley & foothill grassland | Vernal pool | Wetland	Low	No impact. Marginal quality vernal pool habitat in the area will not be affected by the project. Not known to occur in the project area.
Triquetrella californica	coastal triquetrella	-/-/1B.2	USFS_S-Sensitive	Coastal bluff scrub | Coastal scrub | Valley & foothill grassland	None	No impact. No appropriate habitat within the project area.
Tropidocarpum capparideum	caper-fruited tropidocarpum	-/-/1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden | USFS_S-Sensitive	Valley & foothill grassland	None	No impact. Alkaline soils are not present within the project area and available habitat is of poor quality due to frequent mowing and dominance of non-natives. Species is not known or likely to occur in the project area.
Viburnum ellipticum	oval-leaved viburnum	-/-/2B.3		Chaparral | Cismontane woodland | Lower montane coniferous forest	None	No impact. No appropriate habitat within the project area.

FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FC = listed as a Candidate under the federal Endangered Species Act
X = Critical Habitat has been designated under the federal Endangered Species Act
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FC = listed as a Candidate under the federal Endangered Species Act
X = Critical Habitat has been designated under the federal Endangered Species Act
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SC = listed as a Candidate under the California Endangered Species Act
R = listed as Rare under the California Native Plant Protection Act
FP = listed as Fully Protected under the California Fish and Wildlife Code
1A = ranked as presumed extinct in California by the CNPS
1B = ranked as rare, threatened, or endangered in California and elsewhere by the CNPS
2A = ranked as presumed extirpated from the state, but known to be more common elsewhere in their range by the CNPS
2B = ranked as rare, threatened, or endangered in California, but known to be more common elsewhere in their range by the CNPS
3 = ranked as plants requiring more information in California that are under review by the CNPS
4 = ranked as plants having a limited distribution within California that should be watched by the CNPS
0.1 = ranked as eriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat) by the CNPS
0.2 = ranked as moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat) by the CNPS
0.3 = ranked as not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known) by the CNPS



Legend

- Antioch Dunes evening-primrose
- Bolander's water-hemlock
- bristly sedge
- Delta mudwort
- Delta tule pea
- eel-grass pondweed
- Mason's lilaeopsis
- soft salty bird's-beak
- Suisun Marsh aster
- woolly rose-mallow
- Delta smelt
- longfin smelt
- Sacramento perch
- steelhead - Central Valley DPS
- burrowing owl
- double-crested cormorant
- great blue heron
- song sparrow ("Modesto" population)
- Swainson's hawk
- giant garter snake
- western pond turtle
- hoary bat/western red bat
- Hurd's metapogon robberfly
- Project Footprint
- Action Area

CNDDB Occurrences of Special Status Species

Sherman and Twitchell Islands Fish Screens Project

N

Appendix C- GGERP Consistency Determination

DWR GHG Emissions Reduction Plan Consistency Determination Form

For Projects Using Contractors or Other Outside Labor

Print Form

This form is to be used by DWR project managers to document a DWR CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan. This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are use to implement the project.

Additional Guidance on filling out this form can be found at:
dwrclimatecange.water.ca.gov/guidance_resources.cfm

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
http://www.water.ca.gov/climatechange/CAP.cfm

California Department of Water Resources
1416 9th Steet
Sacramento, CA
95814
dwrclimatechange.water.ca.gov
www.water.ca.gov/climatechange

Project Name:	Sherman and Twitchell Islands Fish Screens Project
Environmental Document type:	Mitigated Negative Declaration
Manager's Name:	Ryan Colquhoun
Manager's email:	ryan.colquhoun@water.ca.gov
Division:	Division of Engineering
Office, Branch, or Field Division	Delta Engineering Branch, General Engineering Section

Short Project Description:

DWR proposes to place five self-cleaning, retractable fish screens at the waterside termini of five DWR-owned intake siphons located on Sherman Island and Twitchell Island in order to reduce potential entrainment of Delta Smelt and other fish species by agricultural diversions on state-owned lands.

Each installation will require modification of the existing intake siphon to accommodate attachment of the self-cleaning fish screen, construction of a structural steel access walkway, electric generator powered winch retrieval track, and additional steel piles to support the structure.

Project GHG Emissions Summary

Total Construction Emissions: 360 $mtCO_2e$

Maximum Annual Construction Emissions: 216 $mtCO_2e$

☒ All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

Extraordinary Construction Project Determination

Do total project construction emissions exceed 25,000 $mtCO_2e$ for the entire construction phase or exceed 12,500 $mtCO_2e$ in any single year of construction.

○ Yes - Addition analysis is required, consult with C4

◉ No - Additional analysis not required

Project GHG Reduction Plan Checklist

☒ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

☐ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and and Measures not incorporated have been listed and determined not be apply to the proposed project (include as an attachment)

☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

○ Yes ◉ No

If you answered Yes, attach a Renewable Power Procurement Plan update approval letter from the DWR SWP Power and Risk Office.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

○ Yes ◉ No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR CEQA Climate Change Committee has determined that the proposed project is consistent with the DWR Greenhouse Gas Reduction Plan and the greenhouse gasses emitted by the project are covered by the plan's analysis.

Project Manager Signature: [signature] Date: 11/9/15

C4 Approval Signature: Matthew Correa Date: 11/12/2015

Attachments:

☒ GHG Emissions Inventory

☐ List and Explanation of excluded Project Level GHG Emissions Reduction Measures

☐ Plan to update Renewable Energy Procurement Plan from DWR SWP Power and Risk Office