

PUBLIC DRAFT ◦ JULY 2019

Initial Study/Mitigated Negative Declaration for the Grand Island Levee Seepage Cutoff Wall Project State Clearinghouse No. 2019XXXXXX



P R E P A R E D F O R

Reclamation District No. 3
P.O. BOX 1011
Walnut Grove, CA 95690

P R E P A R E D B Y

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Cover photo: Grand Island's Project levee.

PROJECT SUMMARY

Grand Island Levee Seepage Cutoff Wall Project	
CEQA lead agency name and address	Reclamation District No. 3 P.O. BOX 1011 Walnut Grove, CA 95690
CEQA responsible agencies	<ul style="list-style-type: none"> • California Department of Water Resources • California Department of Fish and Wildlife
Contact person and phone number	Mike Kynett Project Engineer, or Tina Anderson Project Manager MBK Engineers 455 University Avenue, Suite 100 Sacramento, CA 95825 Office: (916) 456-4400 Fax: (916) 456-0253
Project location	Grand Island, Sacramento-San Joaquin Delta, Sacramento County
Project sponsor's name and address	Reclamation District No. 3 P.O. BOX 1011 Walnut Grove, CA 95690 (916) 776-1945
Zoning	Agriculture
Description of Project	Repair approximately 1,250 feet of Grand Island's levee system by constructing a seepage cutoff wall.
Surrounding land uses and setting	The Project is on land zoned for agriculture and is adjacent to Steamboat Slough to the west.
Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement)	<ul style="list-style-type: none"> • California Department of Water Resources, funded under the Flood System Repair Project • U.S. Army Corps of Engineers (Section 408 Permit) • California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)

PROPOSED MITIGATED NEGATIVE DECLARATION

Project: Grand Island Levee Seepage Cutoff Wall Project

Lead Agency: Reclamation District No. 3

Project Location: Grand Island is located in the Sacramento-San Joaquin Delta, between the cities of Walnut Grove, Rio Vista, and Courtland in Sacramento County, California. The Project is located on the western border of Grand Island along the left bank of Steamboat Slough between stations 245+00 and 265+00.

Project Description: Reclamation District No. 3 plans to repair approximately 1,250 linear feet of levee on the west side of Grand Island, along the left river bank of Steamboat Slough, to address critical seepage problems by constructing a cutoff wall.

Findings: An Initial Study has been prepared to assess the Project's potential effects on the environment and the significance of those effects. Based on the Initial Study, Reclamation District No. 3 has determined that the Project, including mitigation measures included in the Project design, will not have significant effects on the environment. This conclusion is supported by the following findings:

- The Project will have no impacts on the following: agricultural resources, cultural resources, land use and planning, mineral resources, population and housing, public services, recreation, and utilities/service systems.
- The Project will result in less than significant impacts on the following: aesthetics, air quality, energy, geology and soils, greenhouse gas emissions, noise, and transportation.
- Mitigation is included in the Project design to reduce potentially significant impacts to less than significant levels for: biological resources, hazards/hazardous materials, and hydrology/water quality.

Mandatory Findings of Significance:

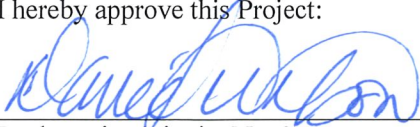
- The Project will not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.
- The Project will not have environmental effects that are individually limited, but cumulatively considerable.
- The Project will not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.
- The Project will not achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- No substantial evidence exists that the Project will have a negative or adverse effect on the environment.

Proposed Mitigation Measures: Mitigation measures included in the Project to avoid or minimize potential environmental impacts are included in the attached Initial Study, which is hereby incorporated and fully made part of this Mitigated Negative Declaration. Implementation of these mitigation measures will ensure that the potential environmental impacts of the Project are less than significant. Reclamation District No. 3 has agreed to implement each of the identified mitigation measures, which will be adopted as part of the Mitigation Monitoring and Reporting Program.

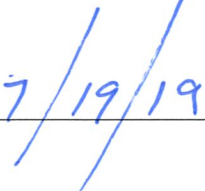
Determination

In accordance with Section 21082.1 of the California Environmental Quality Act (CEQA), Reclamation District No. 3 has independently reviewed and analyzed the Initial Study and proposed Mitigated Negative Declaration for the Project and finds that the Initial Study and proposed Mitigated Negative Declaration reflects the independent judgment of Reclamation District No. 3. The lead agency further finds that the Project mitigation measures will be implemented as stated in the Initial Study and Mitigated Negative Declaration. This Mitigated Negative Declaration is filed in accordance with CEQA and the state CEQA guidelines.

I hereby approve this Project:



Reclamation District No. 3



Date

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Appendix B Database Query Results for Special-status Wildlife Species in the Project Region
Appendix C Comprehensive List of Plant Species Documented in the Survey Area

1 INTRODUCTION

Reclamation District No. 3 (District) plans to repair approximately 1,250 linear feet of levee on the west side of Grand Island, along the left river bank of Steamboat Slough, to address critical seepage problems by constructing a cutoff wall (Project). This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared in compliance with the California Environmental Quality Act (CEQA) to address the potential environmental effects of the Project. With the implementation of conservation measures included in the Project description, any potential impacts associated with this Project will be less than significant.

1.1 Project Location

Grand Island is a 16,245-acre island located in the Sacramento-San Joaquin Delta, between the cities of Walnut Grove, Rio Vista, and Courtland in Sacramento County, California (Figure 1-1). The island is bordered by Steamboat Slough to the west and the Sacramento River to the northeast, east, and south. Surrounding islands include Ryer Island to the west, Brannan Island to the south and east, and Sutter Island to the northwest. This area is within the Rio Vista, Isleton, and Courtland U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles. Two state highways traverse the island. Highway 160 is along the Sacramento River levee from the Steamboat Slough Bridge at the north to the Isleton Bridge at the south. Highway 220 crosses the island from Ryde on the Sacramento River to the ferry crossing on Steamboat Slough. The island is accessible from the north via State Highway 160/Steamboat Slough Bridge, from the east via Walnut Grove Road and Walnut Grove Bridge, from the south via Highway 160/Isleton Bridge, and from the west via State Route 220 and Caltrans ferry service (“J-Mack Ferry”) across Steamboat Slough. Grand Island Road (a Sacramento County road) spans the western levee of Grand Island and provides access to the Project Area.

1.2 Project Area

The Project Area is on the western border of Grand Island and is primarily surrounded by agricultural lands to the east and south. The Project Area includes approximately 1,250 feet of levee along the left bank of Steamboat Slough between stations 245+00 and 265+00 (between Levee Mile 4.76 and 4.96) (Figure 1-1). Access to the Project Area will be from Grand Island Road.



Figure 1-1. Grand Island Levee Seepage Cutoff Wall Project Area and surrounding vicinity.

1.3 Project Purpose and Need

As the nature of this levee repair site has been deemed “critical,” the Project qualifies for funding under the California Department of Water Resources (DWR) Flood System Repair Project. An inspection by DWR found free-flowing and active underseepage that occasionally carries material (soil) from the landside levee toe. Four sinkholes were observed at the downstream end of the site, and seepage along the ditch and boils are reported during high-water events. Poor levee performance associated with these issues dates as far back as 1986 and continues to recur. Previous attempts have been made to repair the site but have proven unsuccessful. DWR evaluated pre-feasibility repair alternatives of constructing a drained seepage berm, cutoff wall, and no action; the cutoff wall was deemed the most appropriate for the circumstances.

1.4 Project Description

The Project involves constructing a three-foot-wide seepage cutoff wall from the 1957 design water surface elevation (DWSE) of approximately 16 feet National Geodetic Vertical Datum 29 (NGVD 29) to a depth of approximately 55–80 feet. The Project Area and construction footprint of the cutoff wall are shown in Figures 1-2 and 1-3.

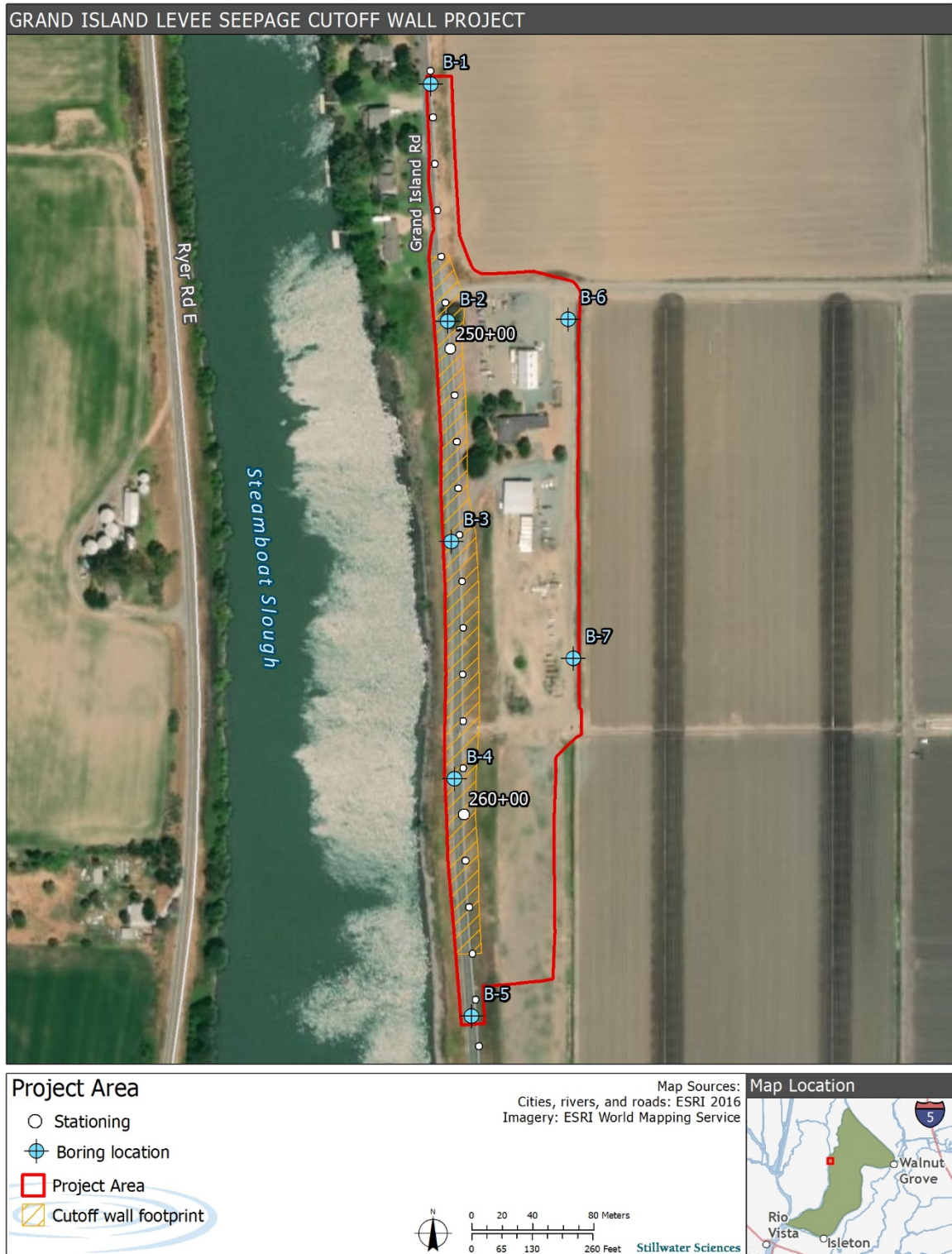


Figure 1-2. Grand Island Levee Seepage Cutoff Wall Project Area.



Figure 1-3. Grand Island Levee Seepage Cutoff Wall Project Area plan drawing, with cutoff wall footprint in yellow.

1.4.1 Site preparation and road closure

Site preparation activities include clearing ruderal plants, debris, and major voids or variability in the levee slope and temporarily demolishing the County road (Grand Island Road). Prior to constructing the cutoff wall, the levee will be degraded by 1/3rd of the landside levee height (6 to 8 feet) to provide a working platform for construction and to reduce the risk of slurry loss through the levee¹.

During the Project the Grand Island Road will be closed, and a 24-hour/day detour will be required for approximately two to three months. The detour will reroute traffic around the perimeter of the island along Highway 160; this option prioritizes driver safety and addresses the relatively high traffic demand of this section of roadway. A secondary option to reroute traffic along a temporary road at the levee toe was considered but eliminated due to safety concerns.

1.4.2 Cutoff wall construction methods

The cutoff wall will be constructed using one of the following typical cutoff wall construction methods: slurry-supported open trench, vertical or horizontal mixing, or vertical chain mixing. Materials used to construct cutoff walls consist of soil-bentonite, soil-cement-bentonite, and cement-bentonite. All the material combinations include water as a component as well. The choice of material and method are interdependent and related to the chosen contractor and Project requirements. For this Project, it is assumed that a soil-bentonite cutoff wall constructed using the slurry-supported open trench method will be selected by the construction contractor, as that is the most economical combination. However, one of the other methods may be preferred by the District or contractor.

The slurry-supported trench construction method consists of the following steps:

- degrading the existing levee by approximately 1/3rd its landside height (6 to 8 feet),
- excavating a 3-foot-wide by approximately 60-foot-deep trench along the centerline of the levee,
- introducing a bentonite-water slurry into the trench to prevent collapse of the trench,
- mixing the permanent backfill on the working platform using material excavated from the trench and the temporary slurry,
- backfilling the trench with the permanent cutoff wall material,
- placing a temporary soil cap on the completed cutoff wall with settlement monitoring plates,
- allowing three to four weeks for settlement of the cutoff wall,
- removing the temporary cap and placing a permanent cap, and
- reconstructing the levee embankment.

Excess material from the trench excavation will be hauled off-site and disposed or side cast on the landside levee slope as levee fill. The levee will be reconstructed with stockpiled material

¹ One method of constructing a seepage cutoff wall involves the use of a temporary water-bentonite slurry to stabilize the excavation trench. That slurry is reused as part of the permanent soil-water-bentonite cutoff wall backfill. In some past cases, the temporary slurry has exploited weaknesses in the levee such as cracks, voids, or animal burrows to leak out of the levee embankment and onto the surrounding area.

augmented with import levee fill. The embankment fill will be compacted prior to hydroseeding (Section 1.4.4).

1.4.3 Imported materials

Unlike typical levee improvements which focus on earthwork and the import of materials, cutoff wall construction makes use of relatively little off-site materials. The Project will require an estimated 300 cubic yards of bentonite (or combination of cement and/or bentonite), 3,500 cubic yards of soil fill, and 1,000 cubic yards of levee crest roadway material (e.g., aggregate base, quarry stone). These materials will be imported from off-site commercial sources or stockpiles within a 30-mile radius of the Project. Haul routes will depend on the contractor but will include public roads.

1.4.4 Site maintenance, clean-up, and seeding

Erosion control measures will be implemented in accordance with the Caltrans Construction Site Best Management Practices (BMP) Manual (Caltrans 2017). Following construction of the cutoff wall, the levee will be reconstructed to its original geometry. The existing Grand Island Road will then be reconstructed to its pre-Project section. Disturbed areas on the landside and waterside will be revegetated with native grasses. Hydroseeding and planting will occur in October or November, prior to the rainy season. No irrigation will be required.

1.4.5 Equipment, personnel, and staging

Table 1-1 provides a list of equipment that will likely be used for the Project.

Table 1-1. Equipment planned for the Grand Island Levee Seepage Cutoff Wall.

Equipment type	Number of rigs (or loads, if specified)
Long Reach Excavator, Komatsu PC 850 or 1250	1
Front-end loader, Cat 950	1
Dozer, Cat D6	2
Excavator, Cat 330	2
Boom Lift, telescopic, 600 Series	1
Forklift, Gradall 534 D6 Long Reach	1
Backhoe	1
Water truck	1
Baker Tank	2
Mixer, high-shear	1
Pump	2
Slurry De-sander	2
Generator, 25 kW	1
Haul trucks	~25–25 trips per day ^a

^a Number of haul truck trips per day may vary but will total approximately 400–500 truck trips.

Construction personnel will typically consist of a Project Manager, Quality Control Engineer, Site Safety Officer, three to five operators assisted by two to three helpers, and haul truck drivers.

Materials, equipment, and contractor facilities will require a staging area along the landside levee toe (Figure 1-3). A temporary slurry-mixing pond will be located within the landside staging area;

the pond will be constructed via a combination of excavating and using the excavated material to build containment dikes. Cutoff wall backfill will be mixed on the working platform on the levee crest. Water for mixing of slurries will be transferred from existing agricultural sources.

Truck trips and material import will be limited to delivery and off haul of equipment, import of bentonite and/or cement, import of soil fill during reconstruction of the levee to make up for material losses, and import of material to reconstruct the levee crest roadway. Levee reconstruction, including cutoff wall material delivery, will likely require 400 to 500 truck trips over a two- to three-week period. Various equipment mobilization, demobilization will require a total of 5 to 10 days and 30 to 50 truck trips.

1.4.6 Construction schedule and timing

Project construction is expected to take three to four months between May 1 and November 30, 2020. A typical workday is assumed to begin at 7:00 am and end at 7:00 pm, Monday through Saturday, with minor maintenance occurring between 9:00 am and 4:00 pm on Sundays. Construction work will not occur prior to 6:00 am or after 8:00 pm on weekdays, or prior to 7:00 am or after 8:00 pm on Saturdays and Sundays.

An estimation of construction timing is as follows:

- Approximately two weeks for mobilization of construction equipment and preliminary site preparation
- Road closure and detour establishment
- Approximately two weeks for road demolition and levee degrading
- Approximately four weeks for cutoff wall construction
- Approximately two weeks for levee settlement
- Approximately two weeks for reconstruction of the levee embankment and road paving
- Remove the road detour and reopen the road to local traffic

1.4.7 Conservation measures

The following conservation measures will be implemented as part of the Project to help assure that the Project will have no impact or only less than significant impacts on the environment. These measures comply with existing regulations and/or requirements or standard practices to avoid, minimize, reduce, or compensate for potential impacts on environmental resources. Pre-construction surveys will be conducted for each year of Project implementation. Results from all pre-construction surveys described in the following conservation measures will be provided to Delta Levee Program California Department of Fish and Wildlife (CDFW) staff for review prior to the initiation of construction.

- **BIO-1.** All contractors and equipment operators will be provided worker environmental awareness training to educate them on the environmental resources of the Project Area, and the required protection measures. Training will include information about the federal and California Endangered Species Acts (ESA and CESA, respectively), and the consequences of noncompliance with these acts. Workers will be informed about the presence, life history, and habitat requirements of all special-status species that may be affected in the Project Area. Training will also include information on state and federal laws protecting nesting birds and water resources. This training will be conducted prior to construction and will be provided to any new staff/contractors added during the Project.

- **BIO-2.** Surveys for western pond turtles and any active pond turtle nests (during the nesting and emergence of hatchling season, April through November) will be conducted by a qualified biologist within seven days prior to onset of staging or construction activities. If a western pond turtle nest is found, a 100-foot no-disturbance buffer zone will be established around the nest using flagging, fencing, and/or signage as appropriate. No construction activities will occur within the buffer zone until a qualified biologist has determined that the nest is not in use. If an active western pond turtle nest is found, CDFW will be notified to determine the appropriate course of action. If a western pond turtle is observed at any time before or during construction, it will be left alone to move out of the area on its own or may be relocated by a qualified biologist to a suitable aquatic habitat outside of the Project Area; translocation of turtles can only be performed in consultation with CDFW, and by an individual possessing a valid scientific collecting permit.
- **BIO-3.** For Project activities conducted during the bird breeding season (February 1– August 15), a pre-construction nest survey will be conducted. The survey will include areas suitable for ground-nesting birds as well as trees, shrubs, buildings, or other structures suitable for nesting within 300 feet of the Project Area. If active nests (nests containing eggs or young) are identified, a no-disturbance buffer zone will be established around the nest using flagging, fencing, and/or signage as appropriate. No construction activities will occur within the buffer zone until a qualified biologist has determined that the young have fledged or that construction activities within the buffer zone are not disturbing the nesting birds. The width of the buffer zone will be determined by a qualified biologist in coordination with CDFW; recommended buffers are 500 feet for raptors and 100 feet for other birds.
- **BIO-4.** The following measures will be implemented between March 1 and August 15 to minimize effects on Swainson’s hawk (*Buteo swainsoni*) and other protected raptors:
 - a) In order to avoid take (FGC § 86) of protected raptors (FGC § 3503.5), a pre-construction raptor nest survey will be conducted within a 0.25-mile buffer of the Project Area, and within 15 days prior to the beginning of construction activities by a CDFW-approved biologist in order to identify active nests in the Project vicinity. The results of the survey will be submitted to the District and CDFW.
 - b) If active nests are found, an initial temporary nest disturbance buffer of 0.25 mile will be established. If Project-related activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an on-site biologist/monitor experienced with raptor behavior will be retained by the Project proponent to monitor the nest. The monitor and the Project proponent will consult with CDFW to determine the best course of action necessary to avoid nest abandonment or take of individuals.
 - c) Work may only be allowed to proceed within the temporary nest disturbance buffer if raptors are not exhibiting agitated behavior such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of CDFW. Based on the behavior observed, the buffer may be reduced if the birds are tolerant of construction activities. The designated on-site biologist/monitor will have the authority to stop work if raptors are exhibiting agitated behavior.
- **HAZ-1.** Following is a list of BMPs that will be used during Project construction to avoid and minimize potential effects from hazards and hazardous materials:
 - a) No potentially hazardous materials will be stored in a location where there is potential to enter any waterway and/or contaminate aquatic resources.

- b) All construction materials with the potential to pollute runoff will be handled with care and stored under cover and/or surrounded by berms when rain is forecast or during wet weather.
 - c) An effort will be made to store only the amount of a potentially hazardous product necessary to complete the job.
 - d) Materials, fuels, liquids and lubricants, and equipment supplies stored onsite will be stored in a neat, orderly manner, in their appropriate containers, with the original manufacturer's label and, if possible, in an enclosure.
 - e) Any hazardous materials will be stored and labeled according to local, state, and federal regulations.
 - f) If drums must be stored without overhead cover, they will be stored at a slight angle to reduce corrosion and ponding of rainwater on the lids.
 - g) Substances will not be mixed with one another unless recommended by the manufacturer.
 - h) Manufacturer's recommendations for proper use and disposal of a product will be followed.
 - i) Whenever possible, all of a product will be used up before disposal of its container.
 - j) If surplus product must be disposed of, the manufacturers or the local and state recommended methods for proper disposal will be followed.
- **HAZ-2.** The following are measures to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the Project:
 - a) Minor spills are those that can be controlled by onsite personnel. The following actions will occur upon discovery of a minor spill:
 - The spread of the spill will be contained.
 - If the spill occurs on impermeable surfaces, such as any temporary surfaces installed for pollution prevention during construction, it will be cleaned up using "dry" methods (i.e., absorbent materials, cat litter, and/or rags).
 - If the spill occurs in permeable substrate areas, it will be immediately contained by constructing an earthen dike. The contaminated soil will be excavated and properly disposed.
 - If the spill occurs during rain, the impacted area will be covered to avoid runoff, and appropriate clean-up steps will be taken after precipitation has ceased.
 - All steps taken to report and contain a spill will be recorded.
 - b) Onsite personnel should not attempt to control major spills until the appropriate and qualified emergency response staff has arrived at the site. Failure to report major spills can result in significant fines and penalties.
 - If a major spill occurs, the Governor's Office of Emergency Services Warning Center will be notified at (800) 852-7550 in addition to local authorities.
 - For spills of federal reportable quantities, the National Response Center will also be notified at (800) 424-8802. The federal reportable spill quantity for petroleum products is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.
 - A written report will be sent to all notified authorities.

- c) Diesel fuel, oil, gasoline, and lubricants are considered petroleum products. These materials will be handled carefully to minimize their exposure to storm water. The risks in using petroleum products will be reduced by following these steps:
- Waste oil and other petroleum products will not be discharged into the ground or other water bodies.
 - Petroleum products will be stored in tightly sealed containers that are clearly labeled, in a covered area, within prefabricated spill containment devices, earthen berms, or similar secondary containment features.
 - Onsite vehicles will be monitored for fluid leaks and receive regular preventative maintenance to reduce the chance of leakage (e.g., check for and fix fuel oil leaks in construction vehicles on a regular basis).
 - Bulk storage tanks having a capacity of more than 55 gallons will be provided with a secondary containment measure. Containment can be provided by a prefabricated temporary containment mat, a temporary earthen berm, or other measure.
 - Bulk fuel or lubricating oil dispensers will have a valve that must be held open to allow the flow of fuel into construction vehicles. During fueling operations, the contractor will have personnel present to detect and contain spills.
- d) The following additional spill control and cleanup practices will be followed:
- Spills will be contained and cleaned up immediately after discovery.
 - Manufacturer's methods for spill cleanup of a material will be followed as described on the material safety data sheet (MSDS) sheets (kept with product containers).
 - Materials and equipment needed for cleanup procedures will be kept readily available onsite, either at an equipment storage facility or on the contractor's trucks. Equipment to be kept onsite will include, but not be limited to, brooms, dust pans, shovels, granular absorbents, sand, sawdust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
 - Onsite personnel will be made aware of cleanup procedures, the location of spill cleanup equipment, and proper disposal procedures.
 - Toxic, hazardous, or petroleum product spills required to be reported by regulations will be documented and a record of the spills will be kept with Project documents.
 - If a spill occurs that is reportable to the federal, state, or local agencies, the contractor is responsible for making and recording the reports.
- **HAZ-3.** The following are measures to reduce the potential for fire:
 - a) Smoking will be permitted only in designated smoking areas or within the cabs of vehicles or equipment.
 - b) Every fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C, and all flammable materials will be removed from equipment parking and storage areas.
 - **HYD-1.** The following BMPs will be implemented during the Project to avoid and minimize potential impacts on waters from erosion:
 - a) Construction will occur only during dry periods.
 - b) Prior to storm events, all construction activities shall cease, and appropriate erosion control measures implemented.

- c) Soil, silt, or other organic materials will not be placed, stockpiled, or stored where such materials could pass into surface water or surface water drainage courses during unexpected rain events.
- d) All areas disturbed by Project activities will be protected from washout or erosion prior to the onset of the rainy season.
- e) All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.
- f) Prior to initiation of any waterside work, erosion control measures will be utilized throughout all phases of operation where silt and/or earthen fill threaten to enter waters of the U.S and/or state.

2 ENVIRONMENTAL SETTING AND IMPACTS

Each of the following resource sections includes a completed checklist (from Appendix G of the CEQA Guidelines) of environmental factors potentially affected and identifies potential Project impacts by significance level (i.e., no impact, less than significant impact, less than significant impact with mitigation incorporated, and potentially significant impact). The environmental factors checked in Table 2-1 would potentially be affected by this Project; mitigation measures will be implemented to ensure potential impacts are reduced to less than significant levels.

Table 2-1. Summary of environmental factors potentially affected by the Project.

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agricultural Resources	<input type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Energy
<input type="checkbox"/> Geology and Soils	<input type="checkbox"/> Greenhouse Gas Emissions	<input checked="" type="checkbox"/> Hazards and Hazardous Materials
<input checked="" type="checkbox"/> Hydrology and Water Quality	<input type="checkbox"/> Land Use and Planning	<input type="checkbox"/> Mineral Resources
<input type="checkbox"/> Noise	<input type="checkbox"/> Population and Housing	<input type="checkbox"/> Public Services
<input type="checkbox"/> Recreation	<input type="checkbox"/> Transportation	<input type="checkbox"/> Utilities and Service Systems
<input type="checkbox"/> Mandatory Findings of Significance		

2.1 Aesthetics

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Except as provided in Public Resources Code Section 21099, would the Project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.1.1 Environmental setting

The term “aesthetics” typically refers to the perceived visual character of an area, such as of a scenic view, open space, or architectural facade. The aesthetic value of an area is a measure of its visual character and visual quality combined with viewer response (FHA 1983). This combination may be affected by the components of a project (e.g., buildings constructed at heights that obstruct views, hillsides cut and graded, open space changed to an urban setting), as well as the length and frequency of viewer exposure to the setting. Aesthetic impacts are changes in viewer response as a result of Project construction and operation.

Grand Island Road is not a designated scenic highway. The levee road in the Project Area provides nearby views of Steamboat Slough on the waterside, and expansive views of agricultural farmland to the landward side. However, the levee road does not provide rare or uncommon scenic views in the vicinity of the Project Area. In addition, the levee in the Project Area does not, itself, provide considerably high value as a scenic resource.

Viewers of the Project Area predominantly include the people inhabiting the residences to the north of the Project Area and drivers using Grand Island Road. People boating in Steamboat Slough likely can see the levee road but are not generally able to see the interior part of the island because of obstruction by the levee.

2.1.2 Findings

a) Would the Project have a substantial adverse effect on a scenic vista?

The Project Area is not within a designated scenic vista and does not provide access to a scenic vista. Repairing the levee will have no effect on any scenic vista; therefore, there will be no impact.

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Grand Island Road is not designated as a state scenic highway. State Highway 160, which spans along the eastern perimeter of Grand Island, is designated as a state scenic highway and will not be directly affected by Project construction. However, there will be a very slight increase in the number of haul trucks traveling between the Project Area and off-site commercial sources with imported levee repair materials. Because these impacts will be temporary and small-scale, effects will be less than significant.

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

Construction activities will temporarily disrupt the limited visual character and quality of the Project Area. The Project Area is mostly road and bare ground with very little vegetation. Construction equipment active on the crown of the levee will be visible to a limited number of nearby residences to the north, as well as boaters using Steamboat Slough. These impacts will occur for a short period of time (approximately three to four months) during construction and will be seen by a limited number of viewers. Construction of the cutoff wall will not change the long-term visual character or the aesthetic quality of the Project Area or surrounding areas since the site will be returned to its original condition. Effects are therefore less than significant.

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

There will be no nighttime construction or creation of a new source of substantial light or glare as a result of the Project. There will be no impact.

2.2 Agricultural Resources

Issues	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 land?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
d) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.2.1 Environmental setting

2.2.1.1 Farmland

The California Farmland Mapping and Monitoring Program (FMMP), administered by the State Division of Land Resource Protection, is responsible for producing agricultural resource maps based on soil quality and land use. The purpose of the FMMP is to provide information to be used in planning for current and future use of the state's agricultural lands. The FMMP designates land into the following categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-up Land, Other Land, and Water. Descriptions of these categories are detailed in the FMMP (California Department of Conservation 2015/2016).

The majority of Grand Island is designated as Prime Farmland, including the Project Area (CFMMP 2014). The land to the north, south, and east of the Project Area is also designated as Prime Farmland; to the west is Steamboat Slough. The Project Area consists primarily of the Grand Island Road, which is a paved County road, and the road shoulder and landside and waterside levee slopes. The Project Area also includes an adjacent parcel to be used for equipment and materials staging; this parcel has a residence and an assortment of buildings, storage, and staging grounds, all related to agricultural operations. No existing land in agricultural production will be used or impacted by the Project.

2.2.1.2 Relevant local or county ordinance

Sacramento County has a goal to protect important farmlands from conversion and encroachment, and to conserve agricultural resources. The Prime Farmland on Grand Island and the Project Area falls within this threshold and protection measures are described in greater detail in the Sacramento County General Plan (Sacramento County 2011). Since there will be no impacts on agricultural lands these ordinances will not apply to the Project.

2.2.2 Findings

a) Would the Project 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 land?

The Project will not impact existing land use, which is agricultural, and will not result in conversion of farmland to non-agricultural use.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Project Area is located under the Williamson Act contract (California Department of Conservation 2015/2016) for Prime and Non-Prime Agricultural land, but since agricultural lands will not be impacted there will be no conflict with the existing zoning of agricultural use.

c) Would the Project 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 portion of Grand Island is zoned for forest land, timberland, or Timberland Production. There will be no impact.

d) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No land in agricultural production will be used or impacted by the Project implementation. There will be no impact.

2.3 Air Quality

Issues	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?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.3.1 Environmental setting

Grand Island is in the southern region of the Sacramento Valley Air Basin (SVAB), which includes; Butte, Colusa, Glenn, Placer (western), Sacramento, Shasta, Solano (eastern), Sutter, Tehama, and Yolo counties, and is administered by the Sacramento Metropolitan Air Quality Management District (SMAQMD). The SVAB is bounded by mountainous areas to the east, west, and north, with an opening to the south into the Sacramento-San Joaquin Delta. The region experiences relatively long summers with generally hot and dry conditions, and short winters with cool, wet conditions. Subtropical high air pressure events can occur year-round and result in the formation of strong atmospheric inversion layers. The combination of these topographical and meteorological factors can prevent the dispersion of pollutants and are particularly conducive to poor air quality. Air quality data for the SVAB from 2014 to 2017 are summarized in Table 2-2 and describe the existing conditions for air quality in the Project vicinity.

Table 2-2. Summary statistics for air quality data in the SVAB from 2014 to 2017.

Year	Pollutant (averaging time)	Maximum concentration	No. of days exceeding federal standards	No. of days exceeding state standards
2014	Ozone (1 hour)	0.116 ppm	0	12
	Ozone (8 hour)	0.088 ppm	48	49
	NO ₂ (daily)	0.064 ppm	0	0
	PM _{2.5} (daily)	190.2 µg/m ³	7	n/a
	PM ₁₀ (daily)	106.4 µg/m ³	0	13
2015	Ozone (1 hour)	0.122 ppm	0	9
	Ozone (8 hour)	0.100 ppm	38	42
	NO ₂ (daily)	0.059 ppm	0	0
	PM _{2.5} (daily)	109.8 µg/m ³	11	n/a
	PM ₁₀ (daily)	118.0 µg/m ³	0	38
2016	Ozone (1 hour)	0.115 ppm	0	17
	Ozone (8 hour)	0.100 ppm	59	61
	NO ₂ (daily)	0.056 ppm	0	0
	PM _{2.5} (daily)	46.8 µg/m ³	5	n/a
	PM ₁₀ (daily)	88.9 µg/m ³	0	31
2017	Ozone (1 hour)	0.121 ppm	0	9
	Ozone (8 hour)	0.092 ppm	45	47
	NO ₂ (daily)	0.061 ppm	0	0
	PM _{2.5} (daily)	85.9 µg/m ³	11	n/a
	PM ₁₀ (daily)	242 µg/m ³	1	38

Source: California Air Resources Board (CARB 2018)

PM_{2.5} = respirable particulate matter (less than 2.5 microns in diameter)

PM₁₀ = respirable particulate matter (less than 10 microns in diameter)

NO₂ = nitrogen dioxide

ppm = parts per million

ug/m³ = micrograms per cubic meter of air

n/a = not available

The SVAB does not consistently meet several applicable air quality standards (CARB 2018). The entire air basin is currently designated as nonattainment for state daily PM₁₀ standards, while Sacramento County is designated as moderate-transitional for federal PM₁₀ standards (USEPA 2018). Except for Glenn and Colusa counties, the SVAB is designated as nonattainment for the state ozone standard, with Sacramento County also designated as nonattainment for the federal 8-hour ozone standard (USEPA 2018). The SVAB has designated attainment for both state and federal standards pertaining to nitrogen oxide and carbon monoxide.

For some air quality constituents, impacts are determined based on the distance to the closest “sensitive receptor.” The nearest sensitive receptors to the Project Area are the eleven residential homes north of the Project Area, a single residence east of the Project Area, and residential homes and businesses in the city of Ryde (estimated population of 146), approximately 2.3 miles southeast of the Project Area.

2.3.2 Findings

This section describes the potential air quality effects of the Project, including exhaust emissions from construction equipment, fugitive dust generated by construction activities, and vehicle travel over unpaved roads. To complete the air quality analysis, information was collected on Project construction activities, duration, timing, and equipment use for the anticipated construction period and used to run the Road Construction Emission Model Version 9.0.0 developed by the SMAQMD to estimate Project emissions.

The modeling was based on the material amounts and construction equipment assumptions described in Table 2-3, and the following: (1) a 9.5-acre Project Area; (2) a 1.5-acre maximum daily disturbance; (3) a total of 267 cubic yards of imported fill per day; (4) a round-trip distance of 60 miles for imported material; and (5) a 6-day work week at 12 hours per day, totaling approximately 96 days over the period of May 1 through November 30 in 2020.

Additional model assumptions include all feasible SMAQMD best available control technology (BACT) and application of best management practices (BMP) such that all construction vehicles meet SMAQMD required emission reductions of 20 percent NO_x and 45 percent exhaust PM.

Table 2-3. Project emission sources and assumptions used to determine air emissions.

Emission source	Project assumptions
Imported material used for construction	300 cubic yards
Imported material used for soil fill	3,500 cubic yards
Imported material used for paving	1,000 cubic yards
Fuel-fired construction equipment	Excavator (3) Front-end loader (1) Dozer (2) Water truck (1) Boom lift (1) Forklift (1) Backhoe (1) Mixer (1) Pump (2) Slurry De-sander (2) Generator (1) Haul trucks (5)
Employee commute trips	10 employee trips/day, 25 miles each way

SMAQMD criteria air pollutants and precursors of primary concern for construction activity in California include ozone precursors (NO_x and ROG), PM₁₀, and PM_{2.5}. Carbon monoxide, sulfur dioxide, and lead are of less concern because construction activities are not likely to generate substantial quantities of these criteria air pollutants (SMAQMD 2018).

Emissions thresholds for criteria pollutants developed by the SMAQMD and the U.S. Environmental Protection Agency (USEPA) were used in determining the significance of Project-related air quality effects. Since the SMAQMD thresholds are more stringent than the USEPA thresholds, emissions would be considered significant if they exceeded the local thresholds

established by the SMAQMD for construction activities. Thresholds established by the SMAQMD are:

- 85 pounds per day of NO_x (nitrogen oxides)
- No threshold established for construction phase ROG (reactive organic gas)
- 80 pounds per day of PM₁₀ (summed for dust and exhaust)²
- 82 pounds per day of PM_{2.5} (summed for dust and exhaust)³
- 1,100 metric tons per year GHG (greenhouse gas) as CO₂e (carbon dioxide equivalent)

Model results for the maximum daily emissions in pounds per day for the Project construction period are shown in Table 2-4.

Table 2-4. Maximum daily Project construction emission estimates (pounds per day).

	NO _x	ROG ¹	PM ₁₀	PM _{2.5}	CO ₂ e ²
Project construction	82.51	9.34	17.36	5.33	94.80
SMAQMD threshold	85	n/a	80	82	1,100

¹ The SMAQMD has not adopted a ROG threshold for the construction phase of a project. The SMAQMD operational phase threshold for ROG is 65 pounds per day (SMAQMD 2018).

² The CO₂e value for Project construction is listed as total metric tons and the SMAQMD threshold in metric tons per year.

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Based on the air quality modeling, construction of the Project is expected to result in temporary emissions that are well below state standards. There will be no change in long-term operational emissions. This impact will therefore be less than significant.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard?

The model results show the construction of the Project is not expected to exceed the annual threshold criteria of pollutants for which the Project region is currently in non-attainment (including PM_{2.5}, PM₁₀, and ozone precursors [e.g. NO_x and ROG]). Although the Project will result in some emissions for which the SVAB is not in attainment, the minimal amount and temporary nature of these emissions will not result in a cumulatively considerable net increase of these pollutants. Therefore, this impact will be less than significant.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

The construction of the Project is not expected to expose sensitive receptors to substantial pollutant concentrations. The nearest sensitive receptors are eleven residential homes north of the Project Area, a single residence east of the Project Area, and residential homes and businesses in the city of Ryde, approximately 2.3 miles southeast of the Project Area. The Project will not

² Represents threshold value if all feasible SMAQMD best available control technology (BACT) and best management practices (BMP) are applied; otherwise threshold is zero (0).

result in substantial pollutant concentrations, as demonstrated by the modeling results and due to the temporary nature of Project construction. Therefore, the Project is expected to have no impact on exposing sensitive receptors to substantial pollutant concentrations.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The construction of the Project is not expected to result in other emissions adversely affecting a substantial number of people, such as those leading to objectionable odors. Post-construction, the Project will not result in any change to current operation or maintenance of the levee. Therefore, the Project is expected to have no impact.

2.4 Biological Resources

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.4.1 Environmental setting

2.4.1.1 Methods

Special-status species are defined as those that are:

- listed as endangered or threatened, rare, or are proposed/candidates for listing under the ESA and/or CESA;
- designated by CDFW as a Species of Special Concern;
- designated by CDFW as Fully Protected under the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515);
- designated as rare under the California Native Plant Protection Act (CNPPA); and/or
- included on the CDFW's Special Vascular Plants, Bryophytes, and Lichens List with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4 (CDFW 2018a).

Sensitive natural communities are defined as vegetation types with a state ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) on CDFW's California Sensitive Natural Communities List (CDFW 2018b).

Desktop review

The special-status species and sensitive natural communities with the potential to occur in the Project Area were identified through a query of the following resources:

- U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) portal (USFWS 2018),
- California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDDB; CDFW 2018c),
- National Marine Fisheries Service's (NMFS), West Coast Region, California Species List Tool (NMFS 2019), and
- California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2018).

Database queries were based on a search of the USGS 7.5-minute quadrangles in which the Project is located (Isleton), and the surrounding eight quadrangles (Courtland, Bruceville, Thornton, Terminous, Bouldin Island, Jersey Island, Rio Vista, and Liberty Island). The database query results are presented in Appendix A (for special-status plants and sensitive natural communities) and Appendix B (for special-status wildlife and fish species).

Habitat type assessment

On March 3, 2017, a site reconnaissance of the Project Area—including a habitat assessment for special-status wildlife, fish, and plant species—was conducted by two wildlife biologists (H. Burger and A. Misraraj) and two botanists (M. Keever and R. Thoms) from Stillwater Sciences. The habitat preferences and distributional range of each species documented from the database queries (Appendices A and B) were compared with existing information and the results of the site reconnaissance to determine the potential for each species to occur in the Project Area. If a species' required habitat was lacking from the Project Area or if the Project Area is outside the species' known distribution or elevation range, the species was considered not likely to occur.

Twenty-four special-status plant species and five sensitive natural communities were identified from the database queries (Appendix A). Eighteen of the special-status species were determined to have no potential to occur in the Project Area, either because no suitable habitat was present, or the Project Area was outside of the species' known range. Six special-status species had low

potential to occur because suitable habitat was not likely present. None of the sensitive natural communities had potential to occur in the Project Area.

Botanical field surveys

Special-status plant surveys of the Project Area were conducted on April 12, 2018 for early-blooming species (by M. Keever and R. Thoms) and on June 6, 2018 for late-blooming species (by M. Keever and E. Elsey) by two-person teams led by individuals with: (1) experience conducting floristic surveys; (2) knowledge of plant taxonomy and plant community ecology and classification; (3) familiarity with the plant species of the area; and (4) familiarity with appropriate state and federal statutes related to plants and plant collecting.

Surveys for special-status plant species were conducted in accordance with the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996) and *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW 2018d). Specifically, surveys were comprehensive for vascular plants and bryophytes such that “every plant taxon that occurs on site [was] identified to the taxonomic level necessary to determine rarity and listing status” (CDFW 2018b). If identification was not possible in the field, the plants were collected for identification in the laboratory in accordance with government collecting regulations (using the “1 in 20” rule, Wagner 1991) or, if potentially a special-status plant, according to the botanists’ current CDFW plant voucher collection permit guidelines (e.g., not more than five individuals or two percent of the population, whichever is less, for one voucher sheet). Vascular plants were identified following the taxonomy of the *Jepson eFlora* (Jepson Flora Project 2019). A total of approximately 22 person-hours were spent on the botanical field surveys.

CNDDDB forms were completed for any documented special-status plant populations and any sensitive natural communities were documented on CNPS/CDFW Combined Vegetation Rapid Assessment and Relevé Field Forms. Concurrent with the special-status plant surveys, surveys for blue elderberry (*Sambucus nigra*) were conducted following USFWS (2017) guidelines for assessing habitat for the federally listed valley elderberry longhorn beetle.

2.4.1.2 Land cover types

Land cover types in the Project Area consist primarily of ruderal herbaceous vegetation and developed areas (Figure 2-1; Table 2-5), neither of which provide high quality habitat for special-status species. Descriptions of all land cover types are provided below, including species composition for vegetation types.

Table 2-5. Summary of land cover types in the Project Area.

Cover type	Acres	Percent of Project Area
Vegetation types		
Native oak	0.1	1.2%
Ornamental	0.3	2.3%
Ruderal herbaceous	6.1	51.7%
Non-vegetated land cover types		
Bare ground	0.5	4.3%
Developed	4.8	40.7%
Total	11.7	100.0%

Native oak

In the Project Area the native oak habitat type is a small component of the total acreage (0.1 acres; 1.2 percent) and is represented by two separate, mature oak trees: one valley oak (*Quercus lobata*) and one interior live oak (*Quercus wislizeni*), with sparse ruderal herbaceous vegetation in the understory.

Ornamental

In the Project Area ornamental cover is a small component of the total acreage (0.3 acres; 2.3 percent) and is located adjacent to the developed land, concentrated around one of the buildings. Species include English ivy (*Hedera helix*; Cal-IPC High [Cal-IPC 2019]), redwood (*Sequoia sempervirens*), and an assortment of cultivated non-native shrubs and small trees. Although native to California, the redwood found here was planted outside of its historical range.

Ruderal herbaceous

In the Project Area the ruderal herbaceous cover type is the most prevalent cover type (6.1 acres; 51.7 percent) and is located on the levee slopes and along borders of agricultural and developed areas. Vegetative cover ranges widely based on the season and management routines, from nearly barren on road margins to approaching 100 percent cover in open areas when rainfall is sufficient and where soils are rich. Dominant plant species in this cover type include the non-native grasses ripgut grass (*Bromus diandrus*), wall barley (*Hordeum murinum*), and Bermuda grass (*Cynodon dactylon*), and the non-native forbs longbeak stork's bill (*Erodium botrys*) and blessed milkthistle (*Silybum marianum*), most of which are rated by Cal-IPC as Limited or Moderate (Appendix C) (Cal-IPC 2019). Perennial pepperweed (*Lepidium latifolium*) is also present, which is rated High by Cal-IPC and is known to rapidly propagate and alter habitats (Cal-IPC 2019).

Bare ground

In the Project Area bare ground is a small component of the total acreage (0.5 acres; 4.3 percent) and is found on the landside levee slope between the levee road and the developed area. This area is devoid of vegetation.

Developed

In the Project Area developed land is the second largest component (4.8 acres; 40.7 percent) and is found primarily on the landside of the levee and consists of gravel surfaces and an assortment of buildings, storage, and staging grounds, all related to agricultural operations. Other developed areas in the Project Area include the paved road on the levee crown and graveled access roads.

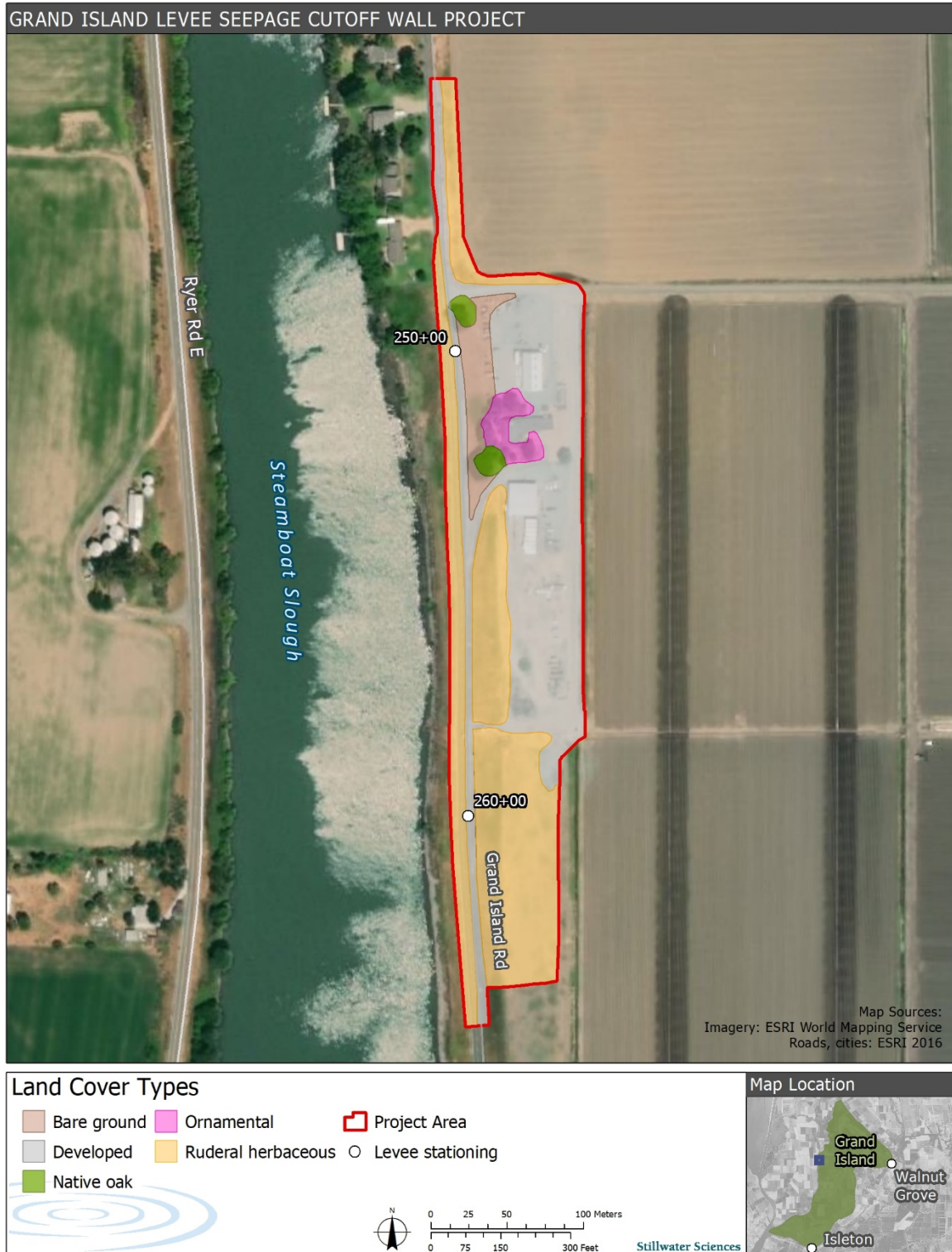


Figure 2-1. Land cover types in the Project Area.

2.4.1.3 Waters and wetlands

The site assessment concluded there were no potentially jurisdictional waters in the Project Area, given that the Project Area is above the high tide line. Landside wetland areas that are the result of levee seepage are not subject to the jurisdiction of the USACE under the federal Clean Water Act (USACE 1995).

2.4.1.4 Special-status plant species and sensitive natural communities

No special-status species or sensitive natural communities were documented within the Project Area. Appendix C provides a comprehensive list of plants documented in the Project Area during the botanical surveys.

2.4.1.5 Special-status wildlife and fish species

Thirty-two special-status wildlife and fish species were identified from the database queries as potentially occurring in the Project region (Appendix B). Of these, 28 species have no or low potential to occur in or near the Project Area because no or marginally suitable habitat is present, or the Project Area is outside of the species' known range. The four special-status wildlife species with moderate to high potential to occur within or near the Project Area are listed in Table 2-6.

Table 2-6. Special-status wildlife species with moderate to high potential to occur in the Project Area.

Common name Scientific name	Status federal/state	Likelihood to occur in the Project Area
Western pond turtle <i>Actinemys marmorata</i>	none/Species of Special Concern	Moderate
White-tailed kite <i>Elanus leucurus</i>	none/Fully Protected	Moderate
Northern harrier <i>Circus cyaneus</i>	none/Species of Special Concern	Moderate
Swainson's hawk <i>Buteo swainsoni</i>	none/State Threatened	Moderate/High

These species are discussed in detail below, including listing status, habitat associations, and notable life history requirements. In addition to the species described below, other common and special-status amphibians, reptiles, birds, and mammals may use the study area for foraging, cover, dispersal, and breeding.

Western pond turtle. Western pond turtle is a California Species of Special Concern, inhabits fresh or brackish water characterized by areas of deep water, low flow velocities, warm water and/or ample basking sites, and underwater cover elements such as large woody debris and submergent vegetation (Jennings and Hayes 1994). Although aquatic, western pond turtles spend time on land basking, overwintering, and nesting, up to 0.6 miles away from aquatic habitats (Holland 1994).

There is a moderate potential for western pond turtle to be present in the Project Area, particularly as dispersing individuals migrating overland through the Project Area. While there

are no CNDDDB occurrence records for the species in or within proximity to the Project Area, western pond turtles are commonly observed in the waterways of the Delta (CDFW 2018c). There is suitable aquatic and basking habitat in areas along Steamboat Slough near the Project Area, and suitable upland nesting habitat on the interior of Grand Island beyond the levee toe outside of agricultural fields and the Project Area. Western pond turtles are likely to use objects such as waterside pipes, logs, and other debris in the water for basking in and around the Project Area. Western pond turtles are not likely to nest on the levee slope in the Project Area due to compact soils and active vegetation management on the levee.

White-tailed kite. White-tailed kite is a CDFW Fully Protected species. White-tailed kite is a resident (breeding and wintering) species throughout central and coastal California. Preferring riparian corridors, groves of trees are often required for perching and nesting (Erichsen 1995), though nest trees may also be isolated (Dunk 1995). Foraging sites include open and ungrazed grasslands, agricultural fields, wetlands, and meadows that support large populations of small mammals.

There are two records of white-tailed kite sightings within a mile of the Project Area from 2013 and five records from 2016, all of which were sighted on Ryer Island, located directly west of the Project Area (eBird 2019). There is suitable foraging habitat for white-tailed kite in the vegetated habitats along the interior of the levee beyond the Project Area, and white-tailed kite may nest in isolated or groups of trees located behind residences to the north of the Project Area.

Northern harrier. Northern harrier is a CDFW Species of Special Concern. It is a common winter visitor, and breeds in California in small numbers. Meadows, marshes, and wetlands are optimal habitat types; other suitable habitats include grasslands, ungrazed or lightly-grazed pastures, and grain fields (Davis and Niemela 2008). Northern harriers nest on the ground in shrubby vegetation, usually along the edge of marshes. This species breeds from April through September, with peak breeding during June and July (Zeiner et al. 1990).

This species is commonly observed in the Delta, with several sightings documented on Ryer Island, including one directly across the channel from the Project Area and two within one mile of the Project Area from 2013. In addition, there were four sightings on the east side of Grand Island in 2017 (eBird 2019). One northern harrier was observed flying south of the Project Area during a site visit on March 3, 2017. The levee slopes do not provide suitable nesting habitat for northern harrier since there is limited vegetative cover. Foraging habitat is present beyond the Project Area in nearby agricultural fields.

Swainson's hawk. Swainson's hawk is a migratory raptor that is a spring and summer resident in California's Central Valley. Throughout its range, Swainson's hawks nest most commonly in a few species of trees, such as oaks, cottonwoods, sycamores, or willows (Schlorff and Bloom 1983, CDFG 1994) near large, sparsely vegetated flatlands (Bloom 1980). Foraging habitat may include recently harvested hay, wheat, or alfalfa crops, low-growing crops such as beets or tomatoes, open pasture (i.e., cultivated, but not planted), non-flooded rice fields, or post-harvest cereal grain crops (Bloom 1980; CDFG 1994). Breeding occurs from late March to late August, with peak activity from late May through July (Zeiner et al. 1990).

There are numerous known Swainson's hawk nest sites documented within five miles of Grand Island (CDFW 2018c). Swainson's hawks may nest in isolated or groups of trees behind residences on the waterside of the levee north of the Project Area. Agricultural fields on Grand Island provide foraging opportunities.

Other migratory birds. Other non-listed but otherwise protected migratory bird species could establish nests in and near the Project Area, either in trees near the Project Area, or for ground nesters, in ruderal vegetation. Several tall trees north of the Project Area, on water side of the levee and behind local residences, provide potential nesting opportunities, as do isolated trees in scattered locations along the levee and outside of the Project footprint. Protection of migratory birds, their occupied nests, and their eggs is required by CDFG Code Sections 3503, 3513, and 3800. Nesting season for migratory birds is typically February 1 through August 15.

2.4.2 Findings

a) Would the Project 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?

Special-status plant species

No special-status species were documented within the Project Area. Therefore, Project-related impacts on special-status plants are not anticipated.

Special-status wildlife and fish species

Western pond turtle. Turtles that may be migrating overland through the Project Area can be injured or killed by Project vehicles or construction equipment. **BIO-1** includes training construction personnel in what to do in the event a western pond turtle is encountered (Section 1.4.7). In addition, measure **BIO-2** will be implemented to ensure that western pond turtles are not adversely affected by the Project, including preconstruction surveys, and allowing turtles in harm's way to move from the construction area on their own accord (Section 1.4.7). Impacts on western pond turtle are less than significant with **BIO-1** and **BIO-2** incorporated.

Nesting birds and raptors. There may be Project-related effects on ground-nesting migratory birds if disturbance occurs to or near active nest sites during the breeding season. Effects on nesting migratory birds could result from ground disturbance or by noise or vibration that directly or indirectly affects eggs or young. Direct impacts may occur from stepping on or excavating a ground nest. Indirect impacts may occur from construction noise (for example, from heavy equipment, vehicles, generators, and human presence) or vibration near nests on the ground or in nearby trees or structures, which could lead to nest abandonment or premature fledging.

The mature trees near the Project Area behind the residences to the north could potentially support nesting white-tailed kite or Swainson's hawk. While these trees will not be directly affected (e.g., by removal or trimming), construction activities during the bird's nesting season could indirectly impact individuals nesting as a result of construction noise, heavy equipment, vehicles, and presence of construction workers, which could lead to nest abandonment or premature fledging. Impacts on nesting birds and raptors are less than significant with **BIO-1**, **BIO-3**, and **BIO-4** incorporated, which include worker environmental awareness training, preconstruction nesting bird surveys, and targeted preconstruction surveys for Swainson's hawk nests (Section 1.4.7).

Special-status bird species (white-tailed kite, northern harrier, and Swainson's hawk) are unlikely to forage in the Project Area due to the little habitat value it offers. Work will be restricted to the road and adjacent levee slopes. There will be therefore no effect on foraging habitat.

Fish. Given that the Project Area is located above the high tide line of Steamboat Slough, special-status fish species will not be directly impacted by construction activities. Furthermore, implementation of **HAZ-1**, **HAZ-2**, and **HYD-1** would ensure that there are no indirect impacts on adjacent aquatic habitat (i.e., Steamboat Slough) as a result of hazardous material spills, soil erosion, and/or stormwater runoff during construction (Section 1.4.7).

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No riparian habitats or sensitive natural communities were documented within the Project Area. It is anticipated that the Project will require disturbing or removing only ruderal herbaceous vegetation consisting primarily of non-native grasses and forbs. Therefore, Project-related impacts on riparian habitats and/or sensitive natural communities are not anticipated.

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No potentially jurisdictional waters or wetlands are in the Project Area. Landside wetland areas that are the result of levee seepage are not subject to the jurisdiction of the USACE under the federal Clean Water Act (USACE 1995). Therefore, Project-related impacts on wetlands are not anticipated.

d) Would the Project 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?

The Project includes modifications to existing levee infrastructure and will not include construction of any elements that will block wildlife movement. Therefore, the Project will not interfere substantially with the movement of any native resident wildlife species, nor impede the use of any wildlife nursery sites (see above for discussion of special-status wildlife species, nesting raptors, and migratory birds). No impact will occur.

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

The Project will not conflict with any local policies or ordinances protecting biological resources; there will be no impact.

f) Would the Project 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 Habitat Conservation Plans or Natural Community Conservation Plans include the Project Area. There will be no impact.

2.5 Cultural Resources

Issues	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 pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.5.1 Environmental setting

The Sacramento-San Joaquin River Delta is a large inland river delta consisting of a network of shallow channels and marshy islands at the confluence of the Sacramento and San Joaquin Rivers (Pierce 1988). It began forming toward the end of the Pleistocene, as rising sea levels and associated slowing of river currents caused wetlands to expand and river sediments to accumulate in this region. Over the next several thousand years, sediment continued to accumulate creating thick deposits of peat, sand, and silt in many areas of the Delta, creating natural levees. However, until the mid-19th century, settlement in the area was limited because of the shortage of solid ground and constantly shifting banks of sand and organic material, though there is evidence of Native American groups having occupied this area for thousands of years.

Grand Island is in the Sacramento-San Joaquin River Delta region, immediately north of Isleton between Steamboat Slough and the Sacramento River, at an elevation ranging from -15 feet to 10 feet above sea level. The island itself is primarily agricultural land dotted with fields and small farms, with an earthen levee surrounding the perimeter on which the primary road is located accompanied by a series of subsidiary roads and drainage ditches crisscrossing the interior. The Area of Potential Effect (APE), as defined by Section 106 of the National Historic Preservation Act (NHPA), is located on the western edge of the island at Levee Mile 4.76 and 4.96 and the adjacent active farmland. The soils within the APE are characterized as Laugenour Loam, which is good for intensive crop cultivation (USDA 2018).

Albion Environmental, Inc. (Albion) conducted Phase I archaeological investigations for the Project, which comprised background historical research, a records search (of known cultural resources within 0.5 mile of the APE as well as Native American consultation), and a field reconnaissance survey of the APE that included limited subsurface testing.

GEI Consultants, Inc. (GEI) prepared a supplemental memorandum that evaluated built environment resources in the project APE (the Grand Island Levee and a farm complex) and included a finding of effects discussion for the Grand Island Levee, which appears to meet National Register of Historic Places (NRHP) criteria (GEI 2018).

Pre-contact historic context, ethnographic context, and post-contact historic context of the region are detailed in the archaeological investigations report (Albion 2018).

2.5.1.1 Record search

Albion conducted background research including a records search at the North Central Information Center (NCIC) of the California Historical Resources Information System, and initiated consultation with the Native American Heritage Commission (NAHC) and local Native American tribes.

2.5.1.2 North Central Information Center

The following sources were consulted as part of the NCIC records search (Albion 2018):

- the California Inventory of Historic Resources, managed by the State of California Department of Parks and Recreation, and
- the Historic Property Data File for Sacramento County, managed by the State Office of Historic Preservation (including the California Register, California Historic Landmarks, and California Points of Historical Interest).

A search of records at NCIC indicates that one prior survey has been conducted within the Project APE and three have been conducted within a 0.5-mile radius. The prior survey within the APE was conducted in 1999 as part of the Grand Island Natural Gas Pipeline Project, Steamboat Slough, but identified no cultural resources (Jones & Stokes 1999).

NCIC has no records for any cultural resources within the Project APE but one resource was identified within a 0.5-mile radius. This resource (P-34-2138) is located south of the APE and consists of a 24-inch steel siphon pipe passing through the levee and a wood frame pump house with corrugated metal roof and siding on the east side of the levee (Larson et al. 2007).

2.5.1.3 Native American consultation

Albion initiated Native American outreach to solicit information about potential Tribal resources in or near the Project APE and the treatment of those resources. Resources of interest might include archaeological deposits, traditionally important plants, or locales that have been or are currently used for Tribal activities. The NAHC indicated that there are sacred sites in or near the APE and forwarded the names of ten tribal representatives to contact for details. Albion contacted each of these by letter, describing the Project and asking for information or comments. Albion followed the letters with emails and phone calls. Eight of the representatives did not respond, while a representative of the Tsi Akim Maidu Tribe replied and had no comment on the Project. A representative of the Mi-Wuk Tribe replied that they have no record of any cultural resources within the vicinity of the Project.

2.5.1.4 National Register of Historic Places

GEI evaluated built environment resources in the project APE for eligibility in the NRHP (GEI 2018). The following is a summary of methods and results from GEI 2018.

2.5.1.4.1 NHRP Criteria

The NRHP is the nation's master inventory of known historic resources, including listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level. Properties (structures, sites, buildings, districts, and objects) more than 50 years of age can be listed in the NRHP provided they meet one of the four evaluation criteria described below; however, properties less

than 50 years of age that are of exceptional significance or are contributors to a district, that also meet the evaluation criteria, can be included in the NRHP.

- A. Properties associated with events that have made a significant contribution to the broad patterns of history
- B. Properties associated with the lives of persons significant in our past
- C. Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- D. Properties that have yielded or may likely yield information important in prehistory or history

In addition to meeting one of the evaluation criteria, a property must also retain integrity to convey that significance. Although the evaluation of integrity is sometimes subject to judgement, it must always be grounded in an understanding of the property's physical features and how they relate to its significance. The NRHP recognizes seven aspects of integrity, which are listed below:

- Location: The place where the historic property was constructed or the place where the historic event occurred.
- Design: The combination of elements that create the form, plan, space, structure, and style of a property.
- Setting: The physical environment of a historic property.
- Materials: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- Feeling: A property's expression of the aesthetic or historic sense of a particular period of time.
- Association: The direct link between an important historic event or person and a historic property.

2.5.1.4.2 NHRP Evaluation

This segment of the Grand Island Levee (Levee Unit 104) appears to meet NRHP Criterion A for its association with the Sacramento River Flood Control Project (SRFCP) and retains the necessary integrity to convey its importance (GEI 2018). The Grand Island Levee is a component of the state and federal government's comprehensive approach to flood management and serves as an integral part of flood management in the region and the Delta. Its association with the SRFCP contributed to the broad patterns of history. The SRFCP was the most complete approach to flood management in the state in the early 20th century. It was also one of two such approaches to flood management in the nation, which was undertaken by the federal government, the other being on the Mississippi River (Rich 1955). The levee system was originally designed to protect agricultural land and the economic interests of farmers. This protection contributed to the successful economic growth and development of the Delta region. The improvements made to the levees were authorized by the Flood Control Act of 1917, that was modified in subsequent years. This levee provides a direct protection for the agricultural land in RD 3 (USACE 1960).

This segment of the Grand Island Levee does not appear to meet NRHP Criterion B (GEI 2018). Research revealed little about the land owners on Grand Island, and although Grand Island was developed by some prominent men of the early development of the Delta, including George D. Roberts of the Tide Land Reclamation Company and General Thomas H. Williams, this levee segment has no known direct association with these men or any other persons significant in history. This levee segment is not the best representation of any potential importance of Roberts or Williams. This levee segment does not appear eligible under NRHP Criterion C, as the levees on Grand Island were built by controlled compaction of the earth and a crown wide enough to accommodate a vehicle, making the segment a common example of modern levee design. It also does not represent the work of a master engineer nor does it possess high artistic qualities. This levee segment does not appear to meet NRHP Criterion D because it is not the sole source of important information.

Located on these two parcels is a farm complex including a residence (APN 142-0100-048) and two metal sheds (APN 142-0100-061) that are 50 years old or older; these structures do not appear to meet NRHP significance (GEI 2018).

2.5.1.5 Field survey

On May 7, 2018, Albion archaeologists conducted a surface reconnaissance survey of the entire APE and limited subsurface testing of portions of the APE. The reconnaissance survey involved walking the APE at 5-meter intervals or less to observe the surface for evidence of archaeological materials, documented by written notes and photos. Notes documented details on disturbances, slope, ground cover, soil visibility, vegetation, the built environment, and any cultural material observed. Two shovel probes were excavated inside the APE, each in 20-centimeter levels, with all soil dry-screened through 1/8-inch wire mesh and any cultural material observed but not collected. One was located near the northern end of the APE on the water-side levee slope just west of the road. The other SP was placed in the southern third of the APE on the land-side slope of the levee east of the road. SPs are hand-excavated units measuring approximately 40 centimeters in diameter by 60 centimeters in depth that provide a window into the soil conditions and any buried cultural material not visible on the surface. A detailed methodology is provided in the archaeological investigations report (Albion 2018).

Based on surface survey and limited subsurface testing of the Project APE, Albion identified no cultural materials indicative of intact subsurface archaeological deposits that would qualify as historic properties under Section 106 of the NHPA.

2.5.1.6 Summary

Background research suggests that Grand Island was home to one or more Miwok tribelets by the early 19th century, and historic maps and photos indicate that the general vicinity of the APE was preempted for farmland as early as the 1850s. However, no information on specific locations of human settlement within the APE are available for this time period and it's not until the late 19th and early 20th centuries that we have clear visual evidence of the locations of farms and levees on the island. The modern levee system was in place by the 1890s and by the 1930s the modern landscape of levees, roads, and farms was largely in place, including those within the APE. Aerial photography from the 1930s shows a series of roads, farm buildings, and agricultural fields in and adjacent to the APE that resemble the modern cultural landscape. Consequently, since ground-disturbing activities for this Project will be confined to the levee, there is a low potential for encountering archaeological deposits associated with historic farming and residential activities that took place inland of the levee system. Furthermore, the levee itself is well documented

historically and no further information could be gleaned from additional archaeological study. The shoreline where the levee is now would have been low-lying and marshy prior to the levee's construction and the potential for buried deposits associated with precolonial and historic period Miwok occupation of the island is very low.

2.5.2 Findings

a) Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

According to GEI 2018, the Grand Island Levee (Levee Unit 104) appears eligible for the NRHP for its association with flood management in the Sacramento region. The proposed project would construct approximately 1,250 linear-feet of cutoff wall along the centerline of the levee as described above in the project description (Section 1.4).

Under Federal law, the Criteria of Adverse Effect are set forth by the Advisory Council on Historic Preservation in its implementing regulations, 36 CFR Part 800 (as revised). As codified in 36 CFR Part 800.4(d)(2) and PA Stipulation VI, if there are historic properties that may be affected by a Federal undertaking, the agency official shall assess any adverse effects in accordance with the Criteria of Adverse Effect. Adverse effects can occur when prehistoric or historic archaeological sites, structures, or objects listed in or eligible for listing in the NRHP are subjected to the following alterations:

- physical destruction of or damage to all or part of the property;
- alteration of the property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;
- removal of the property from its historic location;
- change in the character of the property's use or of physical features in the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of the property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe or Native Hawaiian organization; or
- transfer, lease, or sale of the property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

When originally constructed, this levee was designed to be periodically maintained and strengthened. The proposed modifications would not alter the character-defining features or the integrity of the levee which include its overall design and form. In addition, the materials, workmanship, and general physical characteristics that convey the historical significance of the levee would remain in place. The levee would retain its historical significance and continue to serve its intended purpose within the context of flood control. Therefore, the Project will not cause a substantial adverse change in the significance of a historical resource as defined in §15064.5, and the Project will have no impact on historical resources.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

The records search, consultation, and field reconnaissance revealed no known or newly identified archaeological resources within the APE (Albion 2018). Since ground-disturbing activities for this Project will be confined to the levee, there is a low potential for encountering archaeological deposits associated with historic farming and residential activities that took place inland of the levee system. This is confirmed by results of subsurface testing. Furthermore, the levee itself is well-documented historically and no further information could be gleaned from additional archaeological study. The shoreline where the levee is now would have been low-lying and marshy prior to the levee’s construction and the potential for buried deposits associated with precolonial and historic period Miwok occupation of the island is very low. The Project will not cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5, and the Project will thus have no impact.

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

There is extremely low potential for encountering undocumented human remains during the Project. Historical documents and results of the record search do not indicate any human burials within the Project Area, and no human remains were encountered during the surface reconnaissance. Should human remains be encountered during excavation, work within the immediate area will be halted and the Sacramento County Coroner will be notified immediately. If the remains are determined to be Native American, then the NAHC will be notified within 24 hours as required by Public Resources Code 5097. The NAHC will notify the designated Most Likely Descendant who will provide recommendations for the treatment of the remains within 48 hours of being granted access to the site.

2.6 Energy

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.6.1 Environmental setting

2.6.2 Findings

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Project construction will require fossil fuels, a nonrenewable resource, to power construction vehicles and equipment. The use of such equipment is necessary for construction of a functional cutoff wall and to repair the levee effectively and safely. Construction equipment will be used as efficiently as feasible. The impact will be therefore be less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Project will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. There will be no impact.

2.7 Geology and Soils

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.7.1 Environmental setting

Grand Island is composed predominately of marsh muds and peats that accumulated throughout the Holocene (present day to approximately 11,000 years before present) (Atwater 1982, Helley and Graymer 1997). This process of tidal marshland formation, principally overlying older sand and eolian deposits from the Pleistocene-age Modesto Formation, occurred throughout the Delta region until land reclamation began in the late 1800s during Euro-American settlement (Whipple et al. 2012). Reclamation entailed construction of levees around the Delta islands to facilitate agricultural practices, which precluded the recurrent flooding that once supported the marsh setting. Oxidation of the drying peat soils has led to its depletion and, thus, subsidence of the Delta islands, including Grand Island. Delta soils are generally poorly drained, silty-clayey loams; the soils within the Project vicinity are predominantly composed of Laugenour loam, which is good for intensive crop cultivation (USDA NCSS 2015). The levee will be reconstructed with stockpiled material augmented with imported levee fill.

The Project Area lies within the Great Valley geomorphic province that is crossed by few faults but is bordered to the west by the Coast Range province which hosts several active right-lateral, strike-slip faults. The Hayward Fault Zone lies about 45 miles to the southwest of the Project Area. The closest “active” faults³ designated by the California Geological Survey (CGS) are the Greenville Fault Zone and Green Valley-Concord fault zones, located about 30 miles to the southwest and 26 miles to the west, respectively. The closest potentially active fault is the Midland Fault Zone running north-south through the Delta, just southwest of Grand Island, approximately 6 miles from the Project Area. (Unruh and Hitchcock 2009, CGS 2010). The most recent displacement along this fault is estimated by the CGS (2010) fault to be mid- to early-Quaternary (0.7–2.6 million years before present).

The Greenville and Green Valley-Concord faults have estimated slip rates of 1–3 and 2–8 millimeters/year, respectively (USGS 1999), and the USGS estimates a 16 percent probability of the faults experiencing an earthquake of magnitude 6.7 or greater by the year 2043 (Aagaard et al. 2016). The Hayward fault exhibits spatially variable slip rates, ranging from a low of 3–4 millimeters/year to a high of 4–6 millimeters/year; average slip rate for the Hayward Fault is calculated to be 4.6 millimeters/year (Lienkaemper et al. 2012). The 30-year probability of future large events of the Hayward Fault is calculated to be approximately 29 percent (± 6 percent), based on a 1900-year earthquake chronology (Lienkaemper et al. 2010). Peak ground motion⁴ estimated by the CGS in the Project Area is assigned a moderately low value of 0.3 for alluvial materials (CGS 2016). Sacramento County as a whole is not affected by ground-rupture hazards. Delta islands may be susceptible to liquefaction due to shallow groundwater depths and presence of sandy-peaty soils having low cohesive strength. A liquefaction hazard assessment on nearby Bouldin Island, approximately 10 miles south-southeast of Grand Island, gauged Quaternary alluvial sediments as being susceptible to liquefaction under saturated conditions (CGS 2018). However, Grand Island is not mapped as a liquefaction hazard zone (Cal OES 2019). These lands are also susceptible to levee damage caused by seismically induced waves in the Delta channels (USGS 2000).

³ An “active fault” is defined by the California Geological Survey as a fault having surface displacement within the Holocene epoch, or the past 11,000 years (CGS 2018).

⁴ Peak ground motion (10 percent probability of being exceeded in 50 years) is expressed as a percent of the acceleration due to gravity.

2.7.2 Findings

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault?

The Project is not located within an Alquist Priolo Earthquake Fault Zone. The Green Valley fault is the nearest delineated Alquist-Priolo zoned fault and is located 30 miles to the west of the Project Area. This fault is considered historically active (i.e., active within the last 15 thousand years) and is noted to exhibit between 1.0 and 5.0 millimeters/year of right lateral offset (Bryant and Cluett 2002). The levee seepage cutoff wall will not result in long-term operational or land use change that will alter the risks associated with the rupture of an earthquake fault. The Project will therefore have no impact.

ii) Strong seismic ground shaking?

The Project Area is not located near active faults and, accordingly, lies in a zone with a low potential for strong seismic ground shaking. Installation of the underseepage cutoff wall will result in no operational or land use change that will alter the people or structures exposed to strong seismic ground shaking. The Project will therefore have no effect.

iii) Seismic-related ground failure, including liquefaction?

The Project Area lies in the Delta, which is potentially susceptible to seismically induced liquefaction that could cause a loss of integrity of the levees, thereby breaching the levees and flooding Grande Island. The Project is being conducted specifically to minimize this risk by mitigating critical underseepage issues that could result in levee failure if not addressed. In addition, the Project levee repair will result in no operational or land use change that will alter the number or location of people or structures exposed to seismic-related ground failure. The Project will therefore have a less than significant impact.

iv) Landslides?

The Project Area has very flat topography, except for the levees that surround the island, which are designed with slopes that typically do not exceed 25 degrees. Accordingly, the Project Area is not susceptible to landslides. The Project levee repair will result in no operational or land use change that will alter the people or structures exposed to landslides. The Project will therefore have no impact.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

In the short-term and mostly during active construction, there is potential for stormwater-related erosion of surficial soil from the levee slopes. The current and planned levee is made up of fill, and there is minimal topsoil present. To minimize the risk of soil erosion, erosion control measures will be implemented in accordance with the Caltrans Construction Site BMP Manual (Caltrans 2017) (Section 1.4.7). After construction, the embankment fill will be compacted and track-walked, then seeded with a native grass mixture. In the long-term, these measures will

stabilize the levee slope, which has been designed to have a stable gradient. Effects of the Project on soil erosion and loss of topsoil will be less than significant.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The existing earthen levees surrounding Grand Island overlie potentially unstable geologic units comprised of peat and silty-clayey loams. The Project involves excavating a 3-foot-wide by approximately 60-foot-deep trench to install an underseepage cutoff wall, ultimately reducing the risk of liquefaction and/or levee collapse. Overall, the underseepage cutoff wall will substantially improve the stability to the levee; the Project will therefore have a beneficial effect regarding unstable soils.

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

The areas underlying and adjacent to the Project are composed of expansive soils. The Project has, however, been designed to address the potential for expansive soil. By protecting existing agricultural fields and residences from potential levee failure, the Project will reduce risks to life and property likely to occur if the levee fails. The potential effects from the Project being located on and/or utilizing expansive soils will be less than significant.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

There are eleven residences immediately north of the Project Area that are expected to all use septic tanks. The Project will not include installation or disturbance to any existing septic tanks or alternative wastewater disposal systems. There will be no impact.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The Project will not destroy a unique paleontological resource or site or unique geologic feature. There will be no impact.

2.8 Greenhouse Gas Emissions

Issues	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.8.1 Environmental setting

In January 2008, California Assembly Bill 32, the Global Warming Solutions Act of 2006, went into effect. This bill required CARB to develop regulations to address global climate change due to greenhouse gas (GHG) emissions. The act also requires a statewide greenhouse gas emissions limit, equal to the 1990 level, as a limit to be achieved by 2020. The 2020 GHG emissions limit is 431 million metric tons of carbon dioxide equivalent (CO₂e). Signed into law in 2016, the California Global Warming Solutions Act of 2006: Emissions Limit (SB32) further requires the State of California to reduce statewide GHG emissions to 40 percent below the 1990 level by the year 2030 (CARB 2018).

State law defines greenhouse gases to include the following emissions: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (Health and Safety Code, section 38505(g)). The most common greenhouse gas that results from human activity is carbon dioxide, followed by methane and nitrous oxide. The SMAQMD has adopted quantitative threshold value of 1,100 metric tons per year CO₂e for greenhouse gas emissions during Project construction (SMAQMD 2018).

2.8.2 Findings

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

The construction of the Project, scheduled for approximately four months between May and November 2020, is not expected to generate greenhouse gas emissions that would have a significant impact on the environment. The results from the Road Construction Emissions model used for determining the significance of Project-related air quality effects shown in Section 2.3 (Air Quality) predict a total of 94.8 metric tons of CO₂e during construction of the Project, which is well below the 1,100 metric tons per year of CO₂e that has been proposed as a standard for Project construction by SMAQMD. Therefore, impacts regarding the generation of greenhouse gas emissions are expected to be less than significant.

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

The construction of the Project will not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases, as it will not change land use or transportation infrastructure. Therefore, the Project will have no impact.

2.9 Hazards and Hazardous Materials

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project Area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.9.1 Environmental setting

Land uses surrounding the Project Area are predominantly agricultural and open space, along with some residences. The lands surrounding the Project Area have the potential to contain hazardous substances. Petroleum products and pesticides are the most likely materials that may have been stored or released into the surrounding environment. Older gas wells, underground storage tanks used to store petroleum products, and septic systems may develop leaks. These leaks can lead to the contamination of soils and groundwater. A query of the California Department of Toxic Substances Control’s (CDTSC’s) database reveals that there are no known sites in the Project Area having cleanup, permitted, or other hazardous materials status (CDTSC 2019).

The surrounding river elevation fluctuates seasonally and tidally, and the groundwater elevation is maintained by pumping and draining the island surface. Even during periods of low tide, it is likely that groundwater flows toward the island and that any contaminated water could be

transported to the soils within and near the levees. The composition of the existing levee is unknown. In many parts of the Bay Delta non-hazardous and hazardous materials were potentially incorporated into levee construction and repair. In addition to soil, rock, and concrete, materials used for bank protection may have included other available materials, including asphalt, fiberglass, automobile bodies and tires, asbestos fiber, and metal. Therefore, the underlying materials of the existing levees may contain hazardous substances. The exact composition of the levee materials below the surface is not wholly known throughout the Project Area. Potential sources of contamination of the surface of the levees may include trash and debris from litter and illegal dumping, contaminant-laden sediment transported in the waterway and deposited on the levee, and surficial application of herbicides commonly used for weed control along the levee.

2.9.2 Findings

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

The Project has the potential to accidentally spill diesel fuel and other hazardous materials used by construction equipment during the levee repair work. To minimize the risk of hazardous-materials release during construction, the Project will implement hazardous materials BMPs as outlined in **HAZ-1** and **HAZ-2** (Section 1.4.7). All fuels and other hazardous materials will be handled and stored according to the manufacturer's specifications. A containment area will be established for construction equipment staging and the ground will be protected from potential contamination within the containment area. In the event of a spill, crew personnel will stop the spillage at its source, contain the spilled material, and notify Project supervisors and appropriate agency representatives. Impacts related to the transport, use, or disposal of hazardous materials will therefore be less than significant with **HAZ-1** and **HAZ-2** incorporated.

b) Would the Project 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?

As stated above, implementation of hazardous materials management BMPs as outlined in **HAZ-1** and **HAZ-2** (Section 1.4.7) will occur during construction; therefore, there will be a less than significant impact with mitigation.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are no schools located within 0.25 mile of the Project Area. The closest school to the Project Area is Mokelumne High (Continuation) School, located about 6 miles to the north-northeast in Sacramento County. The Project will therefore have no impact.

d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The Project Area and the remainder of Grand Island are not included on a list of hazardous materials sites. The Project will have no impact.

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project Area?

There are no public-use airports within two miles of the Project Area. The closest public or public-use airport to the Project Area is Rio Vista Municipal Airport, located about 6 miles to the southwest. The Project will therefore have no impact.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

There are eleven residences to the north of the Project Area and a single residence east of the Project Area adjacent to the proposed staging area. Grand Island Road is located along the crown of the levee where the cutoff wall construction will take place. Agricultural buildings and residences outside of the Project Area will continue to have access to alternative roads when Project construction activities on the levee limit local traffic. All roadway traffic supporting Project construction will adhere to all applicable laws for motor vehicles and with the county’s Office of Emergency Services. The Project Manager will coordinate with local fire, police and emergency medical responders to establish an emergency route around the Project Area that will minimize any potential increase to emergency response times. Because there is no known emergency response plan for Grand Island, the Project will have no impact.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The whole of Grand Island has been designated by the Department of Forestry and Fire Protection (CalFire) as “Local Responsibility Area” having no “moderate” to “very high” fire hazard severity zones (CalFire 2007). Accordingly, the Project will not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. In addition, the Project will implement **HAZ-3** to reduce the potential for a grass fire (Section 1.4.7). Therefore, the impact will be less than significant.

2.10 Hydrology and Water Quality

Issues	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.10.1 Environmental setting

Grand Island is surrounded by navigable waterways. The island is encircled by a flood control levee maintained by Reclamation District No. 3. The levee crown is 36 feet wide, with a water side slope of approximately 25 degrees and a landside slope of approximately 17 degrees. The levee height varies from 15–20 feet above Steamboat Slough. The interior of the island presently lies between -5 and 25 feet above mean sea level (Simons 2009).

The Delta experiences a two-season Mediterranean climate, with wet cool winters and dry hot summers. The Central Valley and its surrounding upland drainages receive highly variable annual rainfall punctuated by episodic large events that typically coincide with the El Niño. Mean annual rainfall at Grand Island between 1981 and 2010 was 17.3 inches (PRISM 2018). Water levels in the adjacent waterways fluctuate predominately by tidal action and episodic flood events typically in winter and spring. Bi-directional flow therefore occurs in this part of the Delta due to winter storms (river flow directed toward the Sacramento-San Joaquin confluence to the southwest of Grand Island), tidal actions (daily fluctuations), and water-supply pumping in the south Delta (at the State Water Project intakes). Grand Island is currently mapped within FEMA’s effective 100-year recurrence floodplain designation, but not their effective 500-year designation (CDWR 2019). There are no tsunami risks in the Project vicinity according to the CGS’s tsunami inundation map (CGS 2019).

The majority of Delta channels including around Grand Island have been classified as *impaired* by the State Water Resources Control Board (SWRCB 2010). This designation is given to streams for which a standard of water quality for beneficial uses (such as drinking water and water for recreation) has not been met. The regional water body in contact with —Delta Waterways: northern portion—is classified as impaired for metals (mercury), pesticides (chlorpyrifos, DDT, diazinon, dieldrin, chlordane, group A pesticides), toxicity (unknown toxicity), PCBs (organic chlorine compound used in coolant fluids), and miscellaneous (invasive aquatic species) (SWRCB 2010).

Turbidity is determined by the cloudiness or haziness of a fluid caused by individual particles (suspended solids). Turbidity directly affects water temperature by absorbing light, which in turn warms the water and lessens the water's ability to hold oxygen. Elevated turbidity concentrations can therefore impact aquatic habitat quality. Continuous turbidity measurements made since 2010 at the USGS river gage near Mandeville Island (south of Grand Island) recorded values ranging up to approximately 100 nephelometric turbidity units (NTU), with the highest concentrations correlated with winter storm events (USGS 2019).

2.10.2 Findings

a) Would the Project violate any water quality standards or waste discharge requirements?

Project-related ground disturbance could temporarily increase the potential for localized erosion and sediment-laden stormwater runoff. To minimize the risk of soil erosion and stormwater runoff during construction, the Project will implement **HYD-1**. In addition, the Project will implement a Stormwater Pollution Prevention Plan (SWPPP) in order to mitigate potential pollution associated with stormwater runoff. The Project will also implement hazardous materials BMPs (**HAZ-1** and **HAZ-2**) to minimize the potential for accidental spills of hazardous materials to enter waterways (Section 1.4.7). In the long-term, the Project should decrease the potential for runoff since the seepage cutoff wall will terminate leaks and make the levee more stable, have an all-weather aggregate base road, and be stabilized with hydroseeding. Implementation of the Project will have a less than significant impact with **HYD-1**, **HAZ-1**, and **HAZ-2** incorporated.

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

The Project will not alter existing groundwater pumping rates or natural recharge potential on Grand Island. The Project will therefore have no impact.

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

The Project involves excavating a 3-foot wide by approximately 60-foot deep trench along approximately 1,250 feet of levee to install a seepage cutoff wall. Earth movement and rock placement will be conducted during levee repair work which could temporarily disturb surficial soils and alter runoff potential at low levels. Construction will, however, be contained to the land side of the existing levee and will not substantially alter the existing drainage patterns or adjacent

stream courses. The Project will have a less than significant impact on the drainage within the island.

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

The Project has the potential to cause minor alterations to existing drainage patterns during excavation and construction. However, surface runoff will not likely be affected in a manner that would result in an increased risk of flooding. In the long term, the Project will decrease the risk of flooding in the Project vicinity. The Project will therefore have a less than significant impact.

e) Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

There is no existing or planned stormwater drainage system on Grand Island. The Project will repair an existing structure and should minimize the potential for runoff relative to current conditions through the installation of a seepage cutoff wall. The levee crest road here is a paved (asphalt concrete) public roadway, with similar drainage patterns and capacity to current conditions. The Project will have a less than significant impact regarding this issue.

f) Would the Project otherwise substantially degrade water quality?

See item (a) above.

g) Would the Project 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?

The Project will not involve construction of new housing nor will it affect the proximity of existing structures to the 100-year floodway. The Project will therefore have no impact.

h) Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The Project is constructing a seepage cutoff wall within the existing levee to protect against levee failure during floods of various magnitude. While earth movement and rock placement on the levee will technically occur within the 100-year floodway, it will be mostly surficial in nature and above the high tide line, which will avoid redirection of flood flows within the adjacent waterway. The Project will therefore have a less than significant impact.

i) Would the Project 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?

The installation of the seepage cutoff wall along the western side of Grand Island is specifically intended to minimize the chance of levee failure and thus will increase flood protection on the landside of the island. The Project will therefore have no impact.

j) Would the Project result in inundation by seiche, tsunami, or mudflow?

The portion of the Sacramento-San Joaquin Delta where Grand Island is situated is not at risk from tsunamis or mudflows (CGS 2019). Seismically induced earth movements and seiches are possible in the Delta channels. However, the Project will not alter the potential for this type of event and the Project will increase the ability of the levee to protect the landside of the island from such events. The Project will therefore have no impact.

2.11 Land Use and Planning

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.11.1 Environmental setting

The zone designation for Grand Island under the Sacramento County General Plan (2011) is agriculture. Grand Island is also part of the Delta Primary Zone, as defined by the Delta Protection Act of 1992. The Primary Zone includes approximately 500,000 acres of waterways, levees and farmed lands throughout five counties (DPC 1995). The Land Use and Resource Management Plan for the Primary Zone of the Delta guides planning for the conservation and enhancement of the natural resources of the Delta, while sustaining agriculture and meeting increased recreational demand (DPC 1995).

Grand Island is located within the area covered by the Delta Plan, a comprehensive, long-term management plan for the Delta and Suisun Marsh required by the 2009 Delta Reform Act (Delta Stewardship Council 2018). The Delta Reform Act also included the creation of The Delta Stewardship Council, the state agency responsible for developing and implementing the Delta Plan. The Delta Plan includes new rules and recommendations based on the best available science to achieve the coequal goals of protecting and enhancing the Delta ecosystem and providing for a more reliable water supply for California, while protecting and enhancing the unique agricultural, cultural, and recreational characteristics of the Delta. The Project will not be considered a “covered action” under the Delta Plan, since California Water Code section 85057.5(b)(5) states that a “covered action” does not include routine maintenance and operation of a facility located in the Delta that is owned or operated by a local public agency (Delta Stewardship Council 2013).

2.11.2 Findings

a) Would the Project physically divide an established community?

The Project will not physically divide any established community and will therefore have no impacts.

b) Would the Project cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Project will not conflict with goals or policies in the Sacramento County General Plan (Sacramento County 2011) or the Land Use and Resource Management Plan for the Primary Zone of the Delta (DPC 1995). Thus, the Project will have no impact.

2.12 Mineral Resources

Issues	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.12.1 Environmental setting

There are few mineral resources of economic value found in the Delta, although extraction of peat and sand-gravel does occur on other Delta islands. The closest of these activities is located approximately 11 miles to the southwest of the Project Area on Bradford Island (USGS 2005).

2.12.2 Findings

a) Would the Project 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?

There are no known mineral resources in the Project Area. The Project will have no impact.

b) Would the Project 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?

There are no known mineral resources in Project Area. The Project will have no impact.

2.13 Noise

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Generation of excessive ground borne vibration or ground borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project Area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.13.1 Environmental setting

Noise-sensitive land uses are defined as uses that can be adversely affected by high levels of noise. Residences, schools, hospitals, nursing homes, religious facilities, libraries, hotels, and other areas of similar use are often considered to be sensitive receptors to noise. The nearest sensitive receptors to the Project are the eleven residences to the north of the Project Area and the single residence east of the Project Area adjacent to the proposed staging area. Due to its remote location in the Delta, there is relatively low ambient noise in the Project Area. Ambient noise in the Project vicinity is primarily caused by routine agricultural and maintenance activities on the western portion of Grand Island, low levels of vehicular traffic on Grand Island Road, and boat traffic along Steamboat Slough.

Noise can be defined as unwanted sound and is generally measured in decibels (dB). In order to make the measurements more quantifiable by humans, the decibel scale is weighted. The most common metric is A-weighting, which measures noise levels in a way that can be easily perceived by humans. A whisper is about 30 dBA, normal speaking is roughly 60 dBA, and a shout is about 100 dBA. Based on this scale, a change of 3 dBA is considered noticeable, but acceptable. A significant impact could result from an increase of 5 dBA or more. Long-term exposure to noises, exceeding a level of 70 dBA, can cause hearing loss.

The Sacramento County noise ordinance for unincorporated areas is in the Sacramento County Code, Chapter 6.68. Exterior noise standards for agricultural and residential properties are 55 dB between 7:00 am and 10:00 pm, and 50 dB between 10:00 pm and 7:00 am (Sacramento County Code 6.68.070). However, noise sources associated with construction, repair, remodeling, demolition, paving, or grading of any real property are exempt from this noise ordinance, provided these activities do not take place before 6:00 am or after 8:00 pm on weekdays, and before 7:00 am or after 8:00 pm on Saturdays or Sundays (Sacramento County Code 6.68.090). 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 may continue work after 8:00 pm 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 (Sacramento County Code 6.68.090).

2.13.2 Findings

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Typical construction equipment noise emissions for the Project are estimated between 80 and 85 dB, 50 feet from the source equipment (Table 2-7). A general rule is that noise commonly decreases by 10 dB with every 100 feet distance from the source (Solano County Planning Department 1977). Applying this general rule, construction equipment noise emissions would be at or below the Sacramento exterior noise standards (55 dB) during the hours of construction at locations between approximately 350 feet and 900 feet from the Project Area and not audible at locations greater than 900 feet away from the source.

Table 2-7. Typical construction equipment noise levels.

Equipment description	Typical noise level (dB) from 50 feet	Typical noise level (dB) at 350 feet ²
Backhoe	80	50
Dozer	85	55
Dump Truck	84	54
Excavator	85	55
Flat Bed Truck	84	54
Front End Loader	80	50
Grader	85	55
Scraper	85	55
Tractor	84	55

¹ Source: USDOT 2006

² Calculated based on general rule that noise commonly decreases by 10 dB with every 100 ft distance from the source (Solano County Planning Department 1977)

Depending on types of equipment used and location used within the Project Area, noise levels during Project implementation will at times exceed 55 dB for residences within a 350-foot radius of the source during working hours. There are seven residences located within 350 feet of the Project Area that may experience noise above typical exterior noise standards when construction activities are at the northernmost end of the Project Area. However, noise sources associated with construction activities between 6:00 am and 8:00 pm on weekdays and between 7:00 am and 8:00 pm on Saturdays or Sundays are exempt from these standards (Section 2.13.1).

Project construction will not occur prior to 6:00 am or after 8:00 pm on weekdays, or prior to 7:00 am or after 8:00 pm on Saturdays and Sundays (Section 1.4.6). Therefore, no noise standards or ordinances will be exceeded and there will be no impact.

b) Would the Project result in generation of excessive ground borne vibration or ground borne noise levels?

Up to seven residences (those within approximately 350 feet of northernmost end of the Project Area) may experience increased ground borne vibration and/or noise levels in excess of 55 dB during construction hours (see item (a) above). The ground borne vibration and noise levels will vary depending on where the equipment sources are in the Project Area, though are not expected to be excessive due to the time of day most construction will occur and the distance from most of the residences. The majority of construction work will generally occur between 7:00 am and 7:00 pm when many residents are expected to be away from their homes or less sensitive to noise, though there will be construction work on Saturdays and light maintenance on Sundays. To minimize disturbance during weekend work, the contractor will try to coordinate construction activities to occur greater than 350 feet away from the closest residence, where feasible. Any increases of ground borne vibration and/or noise levels during construction will be temporary, lasting three to four months. Because ground borne vibration and/or noise generated from construction will not be excessive during most of construction, will only last three to four months, and will be coordinated to minimize disturbance to nearby residences, the impact is less than significant.

c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project Area to excessive noise levels?

The Project is not located within the vicinity of a private airstrip or within two miles of a public airport or public use airport; therefore, there will be no impact.

2.14 Population and Housing

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Induce substantial unplanned growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.14.1 Environmental setting

Grand Island is a rural area with a generally low population density. The majority of Grand Island is zoned for agriculture. Walnut Grove, at the eastern end of Grand Island and located on the east and west banks of the Sacramento River, is the largest nearby community with an estimated population of 1,542. To the north of the Project Area, there are 13 land parcels with eleven

residences. Adjacent to and east of the Project Area, there is one residential building and an assortment of buildings, storage, and staging grounds related to agricultural operations.

2.14.2 Findings

a) Would the Project induce substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

This Project does not include any elements that would induce population growth. There will be no impact.

b) Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Existing housing on Grand Island will not be displaced. There will be no impact.

2.15 Public Services

Issues	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, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.15.1 Environmental setting

Grand Island is primarily managed for agriculture. This island has a low population of residents located in small communities scattered in small areas throughout the island perimeter. No government facilities, public resources, or services occur on the island near the Project Area.

2.15.2 Findings

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Fire protection? Police protection? Schools? Parks? Other public facilities?

There will be no new fire protection services, police protection services, schools, parks, or other public facilities needed as a result of the Project. There will be no impact.

2.16 Recreation

Issues	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.16.1 Environmental setting

The Sacramento-San Joaquin Delta waterways surrounding Grand Island (Sacramento River and Steamboat Slough) are a recreation destination for boating, fishing, wildlife viewing, and hunting. Grand Island is not, however, designated by the County as a Recreation Area, Boater Destination Site, or Fishing Access Site.

2.16.2 Findings

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?

The Project will not change the current use of existing recreational facilities on or near the island. There will be no impact.

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

The Project does not include recreational facilities or require the construction or expansion of recreational facilities. There will be no impact.

2.17 Transportation

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>

2.17.1 Environmental setting

Travelers on Grand Island’s roads consist of residents of the eleven homes to the north of the Project Area as well as regional commuters, truckers, and travelers driving to and from businesses, water access points, and other recreation areas in this region of the Delta. Grand Island is accessible from the north via State Highway 160/Steamboat Slough Bridge, from the east via Walnut Grove Road/Walnut Grove Bridge, from the south via Highway 160/Isleton Bridge, and from the west via State Route 220 and Caltrans ferry service (“J-Mack Ferry”) across Steamboat Slough (Figure 1-1). The Project Area can be accessed overland via Grand Island Road or by boat via Steamboat Slough. Grand Island Road is a County road in unincorporated Sacramento County; it is not currently or planned to be an arterial thoroughfare or collector road. Sacramento County roads have an un-posted maximum speed limit of 55 mph. The Sacramento County Maintenance & Operations Division (M&O) maintains, operates and improves unincorporated area roadways, including Grand Island Road.

2.17.2 Findings

Grand Island Road is located on the crown of the levee where the Project construction will take place. Approximately 1,250 feet of Grand Island Road will need to be demolished/degraded prior to construction of the cutoff wall. As a result, a traffic detour will be established, which will reroute traffic onto Highway 160 around the northeastern and eastern perimeter of the island (and along State Route 220, if needed based on destination) for a period of approximately two to three months. The Project Manager will coordinate with local fire, police and emergency medical responders to establish an emergency route that will not increase emergency response times.

a) Would the Project conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

There are no known transportation plans, ordinances, or policies established for Grand Island. There will be no impact.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The traffic detour may increase drive times by up to approximately 20 minutes, including for drivers traveling from the residences near the north end of the Project Area accessing areas to the south. There will be an associated increase in vehicle distances traveled. There will be a localized and temporary increase in traffic on this section of Highway 160, particularly between Steamboat Slough Bridge to the north and the town of Ryde (near the junction of Highway 160 with State Route 220) to the east. A traffic delay or inconvenience is not considered a significant effect under CEQA.

There will be temporary and localized increase in truck traffic as a result of an estimated eight haul trucks making two trips to and from the Project Area to off-site commercial import material sources during each day of construction. Haul routes will be selected to avoid schools, parks, and high pedestrian use areas, which is feasible since the Project Area is in a rural, low-population-density area.

The Project detour may temporarily increase the number of total vehicle miles traveled as a result of added miles from the detour. Grand Island Road, however, is not a thoroughfare arterial or collector road. Furthermore, because the detour will be temporary (two to three months) and will affect a relatively small number of drivers, the impact will be less than significant.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The design features of the improved levee road will be the same as the existing road and will be compatible with existing uses. There will be no impact.

d) Would the Project result in inadequate emergency access?

The Project Manager will coordinate with local fire, police and emergency medical responders to establish an emergency route around the Project Area that will minimize any potential increase to emergency response times. The impact will be less than significant.

2.18 Utilities and Service Systems

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓

2.18.1 Environmental setting

Existing public liquid waste facilities in Sacramento County include the regional sewage system for the urbanized area; localized sewer systems in Walnut Grove, Isleton, Galt, Rancho Murieta, Hood, Courtland, and Locke; and dedicated single-facility systems at Boy's Ranch, Rio Cosumnes Correctional Center, and Metro Airport. The remainder of the County is served by private septic systems. Utilities available in the Project Area include electricity.

Wastewater treatment for residences near the Project Area is by private septic systems. There are no known public wastewater treatment facilities or stormwater drainage facilities on the western portion of Grand Island.

2.18.2 Findings

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The Project will not require or result in the relocation or construction of new or expanded utilities. There will be no impact.

b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Water for mixing of slurries will be transferred from existing agricultural sources. The Project is expected to have a sufficient water supply based on the relatively small amount of water needed to complete the Project. There will be no impact.

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

The Project will not create a need for increased wastewater treatment capacity. There will be no impact.

d) Would the Project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Excess material from the trench excavation will either be side cast on the landside levee slope as levee fill or hauled off-site and disposed. The Project will not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. There will be no impact.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The Project will comply with federal, state, and local management and reduction statutes and regulations related to solid waste. There will be no impact.

3 CUMULATIVE EFFECTS

Cumulative effects are impacts on the environment that result from the incremental impact of the action when combined with other past, present, and reasonably foreseeable future actions (40 CFR Section 1508.7). Cumulative consequences may arise when individual effects originate from a single project over its multiple phases, or from several separate projects that are occurring within similar timeframes and geographical areas. A cumulative impact is considered significant if the combined impact is significant and the incremental effect is found to be cumulatively significant, in the context of impact intensity and sensitivity of the resource. Other past, present, and reasonably foreseeable future actions include levee repair or maintenance in the vicinity of Grand Island.

Cumulative impacts are evaluated by comparing the impacts of the action alternatives under evaluation with those of these past, present, and reasonably foreseeable future projects. Because the Project will have no or beneficial impacts on the following resources, there will be no cumulative effects and these resources are not discussed further: agricultural and forest resources, cultural resources, land use and planning, mineral resources, population and housing, public services, recreation, and utilities/service systems.

3.1 Aesthetics

The Project would have temporary and small-scale impacts on aesthetic resources during construction. Because the impacts are temporary (three to four months) and small-scale, they are not cumulatively considerable.

3.2 Air Quality

The Project would result in less than significant effects on air quality. These effects are cumulative with those of other projects in the air basin. Because the air basin is in non-attainment for some pollutants, additional contributions are potentially significant. However, the Project's incremental contribution is not measurable or cumulatively considerable.

3.3 Biological Resources

The Project would not remove sensitive habitat and would not impact sensitive biological resources when avoidance measures would be implemented. The Project will not result in any long-term loss of habitat for special-status species and are therefore not cumulatively considerable.

3.4 Geology and Soils

In the short-term and mostly during active construction, there is potential for stormwater-related erosion of surficial soil from the levee slopes as a result of the Project. To minimize the risk of soil erosion, erosion control measures will be implemented. In the long-term, the Project the substantially improve the stability to the levee, and the Project will have a beneficial effect regarding unstable soils. The Project would therefore not have a cumulatively considerable effect on geology and soils.

3.5 Greenhouse Gas Emissions

The construction of the Project is not expected to generate greenhouse gas emissions that would have a significant impact on the environment. The results from the Road Construction Emissions model used for determining the significance of Project-related air quality effects shown in Section 2.3 (Air Quality) predict a total of 94.8 metric tons of CO₂e during construction of the Project, which is well below the 1,100 metric tons per year of CO₂e that has been proposed as a standard for Project construction by SMAQMD. Therefore, impacts regarding the generation of greenhouse gas emissions are expected to be less than significant and not contribute significantly to cumulative effects for greenhouse gas emissions.

3.6 Hazards and Hazardous Materials

The Project could result in accidental spills or leaks that could affect surface and ground water resources. The implementation of site-specific stormwater BMPs would avoid or minimize the release of stormwater to offsite receiving waters. Related effects may also occur as a result of other local construction, levee repair, or levee maintenance projects but would be mitigated with similar site-specific stormwater BMPs and would mitigate for soil and sediment disturbance. The incremental effect of Project would not contribute significantly to cumulative effects for hazards and hazardous materials.

3.7 Hydrology and Water Quality

In the short-term and mostly during active construction, there is potential for Project-related ground disturbance to temporarily increase the potential for localized erosion and stormwater runoff during construction. The Project will include BMPs to control erosion as well as minimize the potential for accidental spills of hazardous materials to enter waterways. In the long-term, the Project should decrease the potential for runoff since the seepage cutoff wall will terminate leaks and make the levee more stable. The Project would therefore not have a cumulatively considerable effect on hydrology and water quality.

3.8 Noise

The Project would result in less than significant impacts as a result of increased ambient noise and vibration during Project construction. Given that noise-related impacts resulting from the Project would be temporary (i.e., only during project construction), the incremental effect of the Project regarding noise is not cumulatively considerable and is therefore less than significant.

3.9 Transportation

The impacts on transportation resulting from the Project would be temporary (i.e., only during project construction) and will affect a small number of drivers. Therefore, the incremental effect of the Project on traffic is not cumulatively considerable and is therefore less than significant.

3.10 Growth-Inducing Effects

The Project would not directly remove obstacles to growth or result in population increases.

4 MANDATORY FINDINGS OF SIGNIFICANCE

Issues	Potentially significant impact	Less than significant with mitigation incorporated	Less than significant impact	No impact
Would the Project:				
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5 DETERMINATION

On the basis of this evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	<input type="checkbox"/>
I find that although the Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	<input checked="" type="checkbox"/>
I find that the Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	<input type="checkbox"/>
I find that the Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	<input type="checkbox"/>
I find that although the Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.	<input type="checkbox"/>

6 LIST OF PREPARERS

The table below lists the preparers of this IS/MND and participants in the related planning, data gathering, and analytical tasks.

Name	Title	Affiliation	Project role
Mike Kynett, P.E.	Project Engineer	MBK Engineers	Engineering, Project design
Tina Anderson	Project Manager	MBK Engineers	Project management and support
Christian Braudrick, PhD.	Senior Geomorphologist	Stillwater Sciences	Senior review: geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources
Christina Buck	Biologist	Stillwater Sciences	Environmental analysis, document preparation
Crystal Garcia	Biologist	Stillwater Sciences	Environmental analysis, document preparation
Holly Burger	Senior Wildlife Biologist	Stillwater Sciences	Project management, senior review, environmental analysis including wildlife resources, and document preparation/production
Joey Verdian	Geologist	Stillwater Sciences	Environmental analysis, document preparation: geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources
Karley Rodriguez	GIS Analyst	Stillwater Sciences	GIS support, maps
Kelli Wheat Dawson	Document Production	Stillwater Sciences	Document production
Krista Orr	Ecologist	Stillwater Sciences	Document review
Lauren Phillips	GIS Technician	Stillwater Sciences	GIS support, maps
Megan Keever	Botanist	Stillwater Sciences	Senior review: botanical resources
Michael Scaffidi	Wildlife Biologist/ Environmental Compliance	Stillwater Sciences	Environmental analysis, document preparation
Rob Thoms	Botanist & Plant Ecologist	Stillwater Sciences	Environmental analysis, document preparation: botanical resources
Wayne Swaney	Environmental Scientist	Stillwater Sciences	Environmental analysis, document preparation: air quality, greenhouse gases
Christina Spellman	Archaeologist	Albion Environmental	Cultural resources
Douglas Ross, PhD.	Senior Historical Archaeologist	Albion Environmental	Cultural resources
Matt Manigault	Archaeologist	Albion Environmental	Cultural resources
Stella D'Oro	Senior Archaeologist	Albion Environmental	Cultural resources
Madeline Bowen	Senior Architectural Historian	GEI Consultants, Inc.	Cultural resources
Patricia Ambacher	Architectural Historian	GEI Consultants, Inc.	Cultural resources

7 CONSULTATION AND COORDINATION

The Draft IS/MND will be circulated to agencies, individuals, and/or organizations known to have a special interest in the proposed Project and will be made available to the public for a 30-day review period. Comments will be received and addressed or incorporated into the project as appropriate. The public will be notified as follows:

- A Notice of Intent (NOI) to adopt an MND will be posted for publication in a local newspaper and filed with the Sacramento County Clerk.
- copies of the proposed IS/MND, with an attached Notice of Completion (NOC), will be submitted to the State Clearinghouse for distribution.
- Copies of the proposed IS/MND will be distributed by the State Clearinghouse to interested parties.
- Copies of the proposed IS/MND will be made available for public review at MBK Engineers offices in Sacramento.

8 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

8.1 Federal

Clean Air Act. Section 176(c) of this act prohibits federal action or support of activities that do not conform to a State Implementation Plan. The Project is not expected to violate any air quality standard, increase air quality violations in the Project region, exceed the USEPA's general conformity *de minimis* threshold, or hinder the attainment of air quality objectives in the local air basin. The Project will have no adverse effect on the future air quality of the Project Area and is compliant with this act.

Clean Water Act (Sections 401 and 404). Section 404 of this act requires that a permit be obtained from the USACE for fill of waters of the U.S., including wetlands, prior to Project implementation. In compliance with Section 401 of the Act, a water quality certification or a waiver of water quality certification needs to be obtained from the Central Valley Regional Water Quality Control Board (RWQCB). This Project does not require 404 or 401 permits since there will be no waterside work below the high tide line. If it is determined that the Project may impact waters of the U.S., then Section 404 and 401 permits will be secured prior to Project implementation, in compliance with this act.

Endangered Species Act. The ESA prohibits unauthorized take of species listed or proposed for listing as threatened or endangered. The ESA also ensures that the actions of federal agencies do not jeopardize the continued existence of threatened and endangered species. The conservation measures incorporated into the Project will assure compliance with the ESA.

Migratory Bird Treaty Act. Protection of migratory birds, their occupied nests, and their eggs is required by the Migratory Bird Treaty Act (MBTA) (16 USC 703 et seq.), Title 50 Code of Federal Regulations (part 10), and CDFG Code Sections 3503, 3513, and 3800. The full list of the species protected under the MBTA appears in Title 50, Section 10.13, of the Code of Federal Regulations (50 CFR 10.13) and includes federally and state-listed migratory birds as well as other non-listed migratory birds. Conservation measures incorporated into the Project will assure compliance with the MBTA.

8.2 State

California Environmental Quality Act. This Initial Study/Mitigated Negative Declaration has been prepared to comply with CEQA.

California Endangered Species Act. Generally, CDFW administers the state laws providing protection of fish and wildlife resources, including the CESA. CESA parallels the ESA and was written to protect state endangered and threatened species. Conservation measures incorporated into the Project, including consultation with CDFW regarding state-listed and sensitive species that may be impacted, will assure compliance with CESA.

Native Plant Protection Act. The California Native Plant Protection Act (NPPA) of 1973 directed CDFW to preserve, protect, and enhance native plants. It gave CDFW the authority to designate native plants as endangered or rare and require that landowners who have been notified of state-listed species on their property, and who wish to destroy those plants and their habitat, to

provide CDFW with notice to salvage the plants no less than 10 days before destruction occurs. Many of the species designated under the NPPA were subsumed by CESA, but there is a subset of species, subspecies, and varieties of plants that were not, and are protected as rare under the NPPA. Conservation measures incorporated into the Project, which include NPPA rare plants that may be impacted, will assure compliance with NPPA.

Fish and Game Code Sections 3503 and 3513. Under California Fish and Game Code Section 3503 it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests and under Section 3513 it is unlawful to take or possess any migratory non-game bird designated under the MBTA. Conservation measures incorporated into the Project will assure compliance with these Fish and Game Code sections.

Fish and Game Code Wetland Regulation (Section 1600 et seq.). California Fish and Game Code Section 1600 et seq. gives authority to CDFW to regulate activities that would interfere with the natural flow of, or substantially alter the channel, bed, or bank of a lake, river, or stream. Any work on the waterside levee, from the hinge point down, requires the District to notify CDFW and apply for a Lake or Streambed Alteration Agreement. If it is determined that the activity will have substantial adverse effects on fish and wildlife resources, the Lake or Streambed Alteration Agreement includes conditions to protect these resources. The Project is in compliance with these Fish and Game Code sections.

Delta Protection Act

The Delta Protection Act was established in recognition of the increasing threats to the resources of the Primary Zone of the Delta from urban and suburban encroachment which have the potential to impact agriculture, wildlife habitat, and recreational uses. Pursuant to the Delta Protection Act, the Land Use and Resource Management Plan for the Primary Zone of the Delta was completed and adopted by the Delta Protection Commission in 1995 (updated in 2002). The Project will not result in urban or suburban encroachment and is, therefore, in compliance with this act.

9 REFERENCES

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Appendices

Appendix A

Database Query Results for Special-status Plant Species and Sensitive Natural Communities in the Project Region

Table A-1. Database query results for special-status plant species documented in Grand Island Project region.

Scientific name	Common name	Source	Status ¹ federal/state/ CRPR	Blooming period	Elevation range (feet)	Habitat associations	Potential to occur in the Project Area
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck	USFWS	FE/CE/1B.1	March–May	886–1,804	Cismontane woodland, valley and foothill grassland	None; Project is outside elevation range
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Ferris' milk-vetch	CNPS	None/None/1B.1	April–May	7–246	Vernally mesic areas of meadows and seeps; subalkaline flats in valley and foothill grassland	None; no suitable habitat present
<i>Brasenia schreberi</i>	watershield	CNDDDB, CNPS	None/None/2B.3	June– September	98–7,218	Freshwater marshes and swamps	None; no suitable habitat present
<i>Carex comosa</i>	bristly sedge	CNDDDB, CNPS	None/None/2B.1	May– September	0–2,051	Coastal prairie, marshes and swamps, lake margins, and valley and foothill grassland	Low; suitable habitat is not likely present
<i>Centromadia parryi</i> subsp. <i>rudis</i>	Parry's rough tarplant	CNPS	None/None/4.2	May– October	0–328	Alkaline, vernal mesic seeps and sometimes roadsides in valley and foothill grassland and vernal pools	Low; suitable habitat is not likely present
<i>Chloropyron molle</i> subsp. <i>molle</i>	soft bird's-beak	CNDDDB, CNPS	FE/CR/1B.2	July– November	0–10	Coastal salt marshes and swamps	None; no suitable habitat present
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	CNDDDB, CNPS	None/None/2B.1	July– September	0–656	Coastal, fresh, or brackish marshes and swamps	None; no suitable habitat present
<i>Downingia pusilla</i>	dwarf downingia	CNPS	None/None/2B.2	March–May	3–1,460	Mesic valley and foothill grassland, vernal pools	Low; suitable habitat is not likely present
<i>Extriplex joaquinana</i>	San Joaquin spearscale	CNDDDB, CNPS	None/None/1B.2	April– October	3–2,740	Alkaline areas in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland	Low; suitable habitat is not likely present
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	CNDDDB, CNPS	None/None/1B.2	June– September	0–394	Freshwater marshes and swamps, often in riprap on sides of levees	None; documented on Grand Island but no suitable habitat present

Scientific name	Common name	Source	Status ¹ federal/state/ CRPR	Blooming period	Elevation range (feet)	Habitat associations	Potential to occur in the Project Area
<i>Juglans hindsii</i>	Northern California black walnut	CNDDDB, CNPS	None/None/1B.1	April–May	0–1,444	Riparian forest, riparian woodland	None; documented (now extirpated) on Grand Island but black walnuts in this area are likely of hybrid origin and thus not protected
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	CNPS	None/None/4.2	February–May	66–2,297	Alkaline clay vernal pools	None; no suitable habitat present
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	CNDDDB, CNPS	None/None/1B.2	May–July (August), (September)	0–16	Freshwater and brackish marshes and swamps	Low; documented on Grand Island but suitable habitat is not likely present
<i>Legenere limosa</i>	legenere	CNDDDB, CNPS	None/None/1B.1	April–June	3–2,887	Vernal pools	None; no suitable habitat present
<i>Lepidium latipes</i> var. <i>heckardii</i>	Heckard's pepper-grass	CNDDDB, CNPS	None/None/1B.2	March–May	7–656	Alkaline flats in valley and foothill grassland	None; no suitable habitat present
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	CNDDDB, CNPS	None/CR/1B.1	April–November	0–33	Freshwater and brackish marshes and swamps, riparian scrub	None; documented on Grand Island but no suitable habitat present
<i>Limosella australis</i>	Delta mudwort	CNDDDB, CNPS	None/None/2B.1	May–August	0–10	Usually mud banks in freshwater and brackish marshes and swamps and riparian scrub	None; no suitable habitat present
<i>Oenothera deltoides</i> subsp. <i>howellii</i>	Antioch Dunes evening-primrose	CNDDDB, CNPS	FE/CE/1B.1	March–September	0–98	Inland dunes	None; no suitable habitat present
<i>Potamogeton zosteriformis</i>	eel-grass pondweed	CNDDDB, CNPS	None/None/2B.2	June–July	0–6,102	Freshwater marshes and swamps	None; no suitable habitat present
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	CNDDDB, CNPS	None/None/1B.2	May–October (November)	0–2,133	Shallow freshwater marshes and swamps	None; no suitable habitat present

Scientific name	Common name	Source	Status ¹ federal/state/ CRPR	Blooming period	Elevation range (feet)	Habitat associations	Potential to occur in the Project Area
<i>Scutellaria galericulata</i>	marsh skullcap	CNDDDB, CNPS	None/None/2B.2	June– September	0–6,890	Lower montane coniferous forest, mesic meadows and seeps, and marshes and swamps	None; no suitable habitat present
<i>Scutellaria lateriflora</i>	side-flowering skullcap	CNDDDB, CNPS	None/None/2B.2	July– September	0–1,640	Mesic meadows and seeps and marshes and swamps	None; no suitable habitat present
<i>Symphotrichum lentum</i>	Suisun Marsh aster	CNDDDB, CNPS	None/None/1B.2	(April), May– November	0–10	Brackish and freshwater marshes and swamps	None; documented on Grand Island but no suitable habitat in Project Area
<i>Trifolium hydrophilum</i>	saline clover	CNDDDB, CNPS	None/None/1B.2	April–June	0–984	Marshes and swamps, vernal pools, and mesic alkaline valley and foothill grassland	Low; suitable habitat is not likely present

¹ Status:

Federal		California Rare Plant Rank (CRPR)
FE	Federally listed as endangered	1B Plants rare, threatened, or endangered in California and elsewhere
None	No federal status	2B Plants rare, threatened, or endangered in California, but more common elsewhere
State		4 Plants of limited distribution, a watch list
CE	California listed as endangered	0.1 Seriously threatened in California (high degree/immediacy of threat)
CR	California listed as rare	0.2 Fairly threatened in California (moderate degree/immediacy of threat)
None	No state status	0.3 Not very threatened in California (low degree/immediacy of threats or no current threats known)

Table A-2. Database query results for sensitive natural communities documented in the Grand Island Project region¹.

Natural community (Holland 1986)	Status ² (Global rank/state rank)	Distribution ³	Habitat description ³	Potential to occur in the Project Area
Coastal and Valley Freshwater Marsh	G3/S2.1	Remnant stands are most extensive in the upper portion of the Sacramento-San Joaquin River Delta, in river oxbows and other areas on the flood plain. Occurs occasionally along the coast, in coastal valleys near river mouths, and around the margins of lakes and springs.	Dominated by perennial, emergent monocots including tules (<i>Scirpus</i> spp.) and cattails (<i>Typha</i> spp.). Often forms completely closed canopies.	None; species and structure not found during habitat assessment
Great Valley Mixed Riparian Forest	G2/S2.2	Remnant stands on floodplains of low-gradient, depositional streams of the Great Valley, usually below 500 feet.	A tall, dense, winter-deciduous, riparian forest with a well-closed tree canopy that includes box elder (<i>Acer negundo</i>), Northern California black walnut (<i>Juglans hindsii</i>), western sycamore (<i>Platanus racemosa</i>), Fremont cottonwood (<i>Populus fremontii</i>), Goodding's black willow (<i>Salix gooddingii</i>), red willow (<i>Salix laevigata</i>), and Pacific willow (<i>Salix lasiandra</i> var. <i>lasiandra</i>). Understories include California button willow (<i>Cephalanthus occidentalis</i>) and Oregon ash (<i>Fraxinus latifolia</i>). Wild grape (<i>Vitis californica</i>) and other vines are present in both tree and shrub canopies.	None; species and structure not found during habitat assessment
Great Valley Oak Riparian Forest	G1/S1.1	Formerly extensive on low-gradient, depositional reaches of the major streams of the Sacramento and northern San Joaquin valleys. More scattered in the San Joaquin watershed and on the floodplains of the Kings and Kaweah rivers.	A medium to tall broadleaved, winter-deciduous, closed-canopy riparian forest dominated by valley oak (<i>Quercus lobata</i>). Understories include scattered Oregon ash, northern California black walnut, western sycamore, and young valley oak. Lianas are often conspicuous.	None; species and structure are not found during habitat assessment
Northern Hardpan Vernal Pool	G3/S3.1	On the east side of the Great Valley from Tulare or Fresno County north to Shasta County in "Red Dirt Hogwallow Lands," on old alluvial terraces.	A low, amphibious, herbaceous community dominated by annual herbs and grasses. Germination and growth begin with winter rains. Rising spring temperatures evaporate the pools, leaving concentric bands of vegetation as the pool dries.	None; species and structure are not found during habitat assessment

Natural community (Holland 1986)	Status ² (Global rank/state rank)	Distribution ³	Habitat description ³	Potential to occur in the Project Area
Valley Oak Woodland	G3/S2.1	In Sacramento and San Joaquin valleys adjacent to the Sierra Nevada foothills and valleys of the Coast Ranges from Lake County to western Los Angeles County, usually below 2,000 feet.	An open grassy-understoried savanna dominated by Valley oak. Valley oak is usually the only tree present; its canopy seldom exceeds 30–40 percent absolute cover.	None; vegetation structure is not found during habitat assessment

¹ Source: California Natural Diversity Database (CDFW 2018c)

² Status:

Global Rank

G1 Critically Imperiled
G2 Imperiled
G3 Vulnerable

State Rank

S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable

Additional Threat Ranks:

0.1 Very threatened

³ Source: Holland (1986).

Appendix B

Database Query Results for Special-status Wildlife Species in the Project Region

Table B-1. Database query results for special-status wildlife and fish species documented in the Grand Island Project region.

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
Invertebrates					
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	USFWS	FE/-	Disjunct occurrences in Tehama, Glenn, Butte, Yolo, Solano, Stanislaus, Merced, and Ventura counties	Large, deep vernal pools in annual grasslands	None; the Project Area is outside of species' known range and no suitable habitat is present
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	CNDDB, USFWS	FT/-	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Vernal pools; also found in sandstone rock outcrop pools	None; no suitable habitat is present
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	CNDDB, USFWS	FE/-	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	None; no suitable habitat is present
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	CNDDB, USFWS	FT/-	Streamside habitats throughout the Central Valley	Riparian and oak savanna habitats below 3,000 feet with host plant <i>Sambucus</i> sp. (blue elderberry)	None; elderberry shrubs are not present
Delta green ground beetle <i>Elaphrus viridus</i>	CNDDB, USFWS	FT/-	Only known to occur in Solano County	Grassland habitat interspersed with vernal pools	None; Project Area is outside of species' known range and no suitable habitat is present
San Bruno elfin butterfly <i>Callophrys mossii bayensis</i>	USFWS	FE/-	Largest population on San Bruno Mountain in San Mateo County; smaller populations may occur in Contra Costa and Marin counties	Coastal scrub; host plant is Pacific stonecrop (<i>Sedum spathulifolium</i>)	None; Project Area is outside of the species' known range
Fish					
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	CNDDB	-/SSC	Lower portions of the Napa, Petaluma, Sacramento and San Joaquin rivers; Sacramento-San Joaquin Delta including Suisun Bay, Suisun Marsh	Low-elevation mainstem rivers and estuaries with low to moderate salinity (0-18 ppt); shallow, flooded vegetated habitat for spawning and foraging	None; there is no suitable habitat given that the Project Area is above the high tide line.

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
Green sturgeon, Southern DPS <i>Acipenser medirostris</i>	NMFS	FT/-	Nearshore coastal waters from Monterey Bay to Graves Harbor, Alaska. Spawning occurs in mainstem Sacramento River	The Sacramento River is an important migratory corridor for larval and juvenile sturgeon during their downstream migration.	None; there is no suitable habitat give that the Project Area is above the high tide line.
Delta smelt <i>Hypomesus transpacificus</i>	CNDDDB, USFWS	FT/SE	Found only in the Sacramento-San Joaquin Estuary, including the lower reaches of Sacramento and Napa rivers; the Delta including Suisun Bay, Goodyear, Suisun, Cutoff, First Mallard, and Montezuma sloughs	Estuarine or brackish turbid waters up to 18 parts per thousand (ppt); spawn in shallow brackish water upstream of the mixing zone (zone of saltwater-freshwater interface) where salinity is around 2 ppt	None; there is no suitable habitat give that the Project Area is above the high tide line.
Longfin smelt <i>Spirnichus thaleichthys</i>	CNDDDB	FC/ST	San Francisco estuary from Rio Vista or Medford Island in the Delta as far downstream as South Bay; concentrated in Suisun, San Pablo, and North San Francisco bays; historical populations in Humboldt Bay, Eel River estuary, and Klamath River estuary	Adults in large bays, estuaries, and nearshore coastal areas; migrate into freshwater rivers to spawn; salinities of 15–30 ppt	None; there is no suitable habitat give that the Project Area is above the high tide line.
Chinook salmon, central Valley spring- run ESU <i>Oncorhynchus tshawytscha</i>	NMFS	FT/ST	Sacramento River and its tributaries (Deer, Mill, Antelope, Battle, Beegum, Butte, and Big Chico creeks and the Feather and Yuba rivers)	Low- to mid-elevation rivers and streams with cold water, clean gravel of appropriate size for spawning and adequate rearing habitat; typically rear in freshwater for one or more years before migrating to the ocean	None; there is no suitable habitat give that the Project Area is above the high tide line.
Chinook salmon, Sacramento Winter- run ESU <i>Onchorhynchus tshawytscha</i>	NMFS	FE/SE	Sacramento River and its tributaries	Low- to mid-elevation rivers and streams with cold water, clean gravel of appropriate size for spawning and adequate rearing habitat; typically rear in freshwater for one or more years before migrating to the ocean	None; there is no suitable habitat give that the Project Area is above the high tide line.

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
Steelhead, Central Valley DPS <i>Oncorhynchus mykiss</i>	CNDDDB, NMFS	FT/-	Sacramento and San Joaquin rivers and their tributaries	Rivers and streams with cold water, clean gravel of appropriate size for spawning, and suitable rearing habitat; typically rear in freshwater for one or more years before migrating to the ocean	None; there is no suitable habitat given that the Project Area is above the high tide line.
Amphibians					
California tiger salamander <i>Ambystoma californiense</i>	USFWS	FT/ST	Very fragmented; along the coast from Sonoma County to Santa Barbara County, in the Central Valley and Sierra foothills from Sacramento County to Tulare County	Grassland, oak savannah, or edges of woodland that provide subterranean refuge (typically mammal burrows); breeds in nearby temporary ponds, vernal pools, or slow-moving parts of streams	None; Project Area is outside of the species' known range and no suitable habitat is present
California red-legged frog <i>Rana draytonii</i>	USFWS	FT/SSC	Largely restricted to coastal drainages on the central coast from Mendocino County to Baja California; in the Sierra foothills south to Tulare and possibly Kern counties	Breeds in still or slow-moving water with emergent and overhanging vegetation, including wetlands, wet meadows, ponds, lakes, and low-gradient, slow moving stream reaches with permanent pools; uses adjacent uplands for dispersal and summer retreat	None; Project Area is outside of the species' known range
Reptiles					
Western pond turtle <i>Actinemys marmorata</i>	CNDDDB	-/SSC	From the Oregon border along the coast ranges to the Mexican border, and west of the crest of the Cascades and Sierras	Permanent, slow-moving fresh or brackish water with available basking sites and adjacent open habitats or forest for nesting	Moderate; suitable habitat is present, species commonly documented throughout Delta (CDFW 2018c)
California legless lizard <i>Anniella pulchra</i>	CNDDDB	-/SSC	Northern Contra Costa County south to northwestern Baja California; scattered occurrences in San Joaquin Valley, along the southern Sierra Nevada mountains, and in the western	Sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces; warm, moist, loose soil for burrowing	None; no suitable habitat is present

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
			Mojave Desert		
Giant garter snake <i>Thamnophis gigas</i>	CNDDDB, USFWS	FT/ST	Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low- gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Low; closest documented record is from 1992 and approximately 5.5 miles east of the Project Area (near southern end of Randall Island) (CDFW 2018c); occasional sightings documented sporadically throughout the Delta; habitat along Steamboat Slough is marginal
Birds					
White-tailed kite <i>Elanus leucurus</i>	CNDDDB	-/SFP	Year-round resident; found in nearly all lowlands of California west of the Sierra Nevada mountains and the southeast deserts	Lowland grasslands and wetlands with open areas; nests in trees near open foraging area	Moderate; suitable nesting habitat is present adjacent to Project Area
Northern harrier <i>Circus cyaneus</i>	Site visit	-/SSC	Year-round resident; scattered throughout California; in the northwest, nests largely within coastal lowlands from Del Norte County south to Bodega Head in Sonoma County, inland to Napa County	Nests, forages, and roosts in wetlands or along rivers or lakes, but also in grasslands, meadows, or grain fields	Moderate; suitable nesting habitat is present adjacent to Project Area, may forage in Project vicinity
Swainson's hawk <i>Buteo swainsoni</i>	CNDDDB	-/ST	Summer resident; breeds in lower Sacramento and San Joaquin valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	Moderate/High; suitable habitat is present; occurrences have been documented near Project Area

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
American peregrine falcon <i>Falco peregrinus anatum</i>	CNDDB	FD/SD, SFP	Most of California during migrations and in winter; nests primarily in the Coast Ranges, northern Sierra Nevada Mountains, and other mountainous areas of northern California	Wetlands, woodlands, cities, agricultural lands, and coastal area with cliffs (and rarely broken-top, predominant trees) for nesting; often forages near water	Low (foraging only); marginally suitable foraging habitat is present
California black rail <i>Laterallus jamaicensis coturniculus</i>	CNDDB	-/ST, SFP	Northern San Francisco Bay area (primarily San Pablo and Suisun bays) and Sacramento-San Joaquin Delta	Large tidally-influenced marshes with saline to brackish water, typically with a high proportion of pickleweed (<i>Salicornia virginica</i>); also can be associated with bulrush (<i>Schoenoplectus</i> spp.), cattail (<i>Typha</i> spp.), or rushes (<i>Juncus</i> spp.); peripheral vegetation at and above mean high higher water necessary to protect nesting birds during extremely high tides	None; no suitable habitat is present in the vicinity of the Project Area
Ridgway's rail <i>Rallus obsoletus</i>	USFWS	FE/SE, SFP	Predominantly in the marshes of the San Francisco estuary: South San Francisco Bay, North San Francisco Bay, San Pablo Bay, and sporadically throughout the Suisun Marsh area east to Browns Island	Salt and brackish water marshes, typically dominated by pickleweed (<i>Salicornia virginica</i>) and Pacific cordgrass (<i>Spartina foliosa</i>)	None; Project Area is outside of species' known range
Western yellow-billed cuckoo <i>Coccyzus americanus</i>	CNDDB	FT/SE	Breeds in limited portions of the Sacramento River and the South Fork Kern River; small populations may nest in Butte, Yuba, Sutter, San Bernardino, Riverside, Inyo, Los Angeles, and Imperial counties	Summer resident of valley foothill and desert riparian habitats; nests in open woodland with clearings and low, dense, scrubby vegetation	None; Project Area is outside of the species' known range

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
Western burrowing owl <i>Athene cunicularia hypugaea</i>	CNDDB	-/SSC	Year-round resident throughout much of the state; Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows	Low; no suitable burrows present, highly compacted soils likely to preclude establishment
Bank swallow <i>Riparia riparia</i>	CNDDB	-/ST	Summer resident; occurs along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American rivers; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou counties; small populations near the coast from San Francisco County to Monterey County	Nests in vertical bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	None; no suitable habitat is present
Song sparrow ("Modesto" population) <i>Melospiza melodia</i>	CNDDB	-/SSC	Year-round resident; north-central portion of the Central Valley	Emergent freshwater marshes, riparian willow thickets, and riparian forests	Low; marginally suitable habitat is present, species commonly documented throughout Delta (CDFW 2018c)
Tricolored blackbird <i>Agelaius tricolor</i>	CNDDB	-/ST	Permanent resident, but makes extensive migrations both in breeding season and winter; common locally throughout Central Valley and in coastal areas from Sonoma County south	Feeds in grasslands and agriculture fields; nesting habitat components include open accessible water, a protected nesting substrate (including flooded or thorny vegetation), and a suitable nearby foraging space with adequate insect prey	None; no freshwater marsh is present in the vicinity of the Project Area
Mammals					
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	CNDDB	FE/SE	Single, known extant population restricted to the Stanislaus River in Caswell Memorial State Park	Brushy understory of valley riparian forests	None; Project Area is outside of the species' known range

Common name Scientific name	Query sources	Status ^a federal/state	Distribution in California	Habitat associations	Likelihood to occur in the Project Area
Western red bat <i>Lasiurus blossevillii</i>	CNDDDB	-/SSC	Near the Pacific Coast, Central Valley, and the Sierra Nevada	Riparian forests, woodlands near streams, fields and orchards	Low; no roosting habitat is present in the Project Area, may forage in Project Area
American badger <i>Taxidea taxus</i>	CNDDDB	-/SSC	Throughout the state except in the humid coastal forests of Del Norte County and the northwest portion of Humboldt County	Shrubland, open grasslands, fields, and alpine meadows with friable soils	None; no suitable habitat or burrows are present

^a Status codes:

Federal

FE = Listed as endangered under the federal Endangered Species Act

FT = Listed as threatened under the federal Endangered Species Act

FC = Federal candidate species

FD = Federally delisted

State

SE = Listed as endangered under the California Endangered Species Act

ST = Listed as threatened under the California Endangered Species Act

SD = State delisted

SSC = CDFW Species of Special Concern

SFP = CDFW Fully Protected species

Appendix C

Comprehensive List of Plant Species Documented in the Project Area

Table C-1. Comprehensive list of plant species documented in the Project Area.

Scientific name ¹	Common name	Family	Nativity status	Cal-IPC rating ²
<i>Amaranthus albus</i>	tumbleweed	Amaranthaceae	Introduced	
<i>Amsinckia menziesii</i>	common fiddleneck	Boraginaceae	Native	
<i>Asparagus officinalis</i> subsp. <i>officinalis</i>	garden asparagus	Asparagaceae	Introduced	
<i>Atriplex prostrata</i>	fat-hen	Chenopodiaceae	Introduced	
<i>Avena barbata</i>	slender wild oat	Poaceae	Introduced	Moderate
<i>Avena fatua</i>	wild oat	Poaceae	Introduced	Moderate
<i>Brassica rapa</i>	turnip, field mustard	Brassicaceae	Introduced	Limited
<i>Bromus carinatus</i>	California brome	Poaceae	Native	
<i>Bromus diandrus</i>	ripgut grass	Poaceae	Introduced	Moderate
<i>Capsella bursa-pastoris</i>	shepherd's purse	Brassicaceae	Introduced	
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian thistle	Asteraceae	Introduced	Moderate
<i>Conium maculatum</i>	poison hemlock	Apiaceae	Introduced	Moderate
<i>Convolvulus arvensis</i>	bindweed	Convolvulaceae	Introduced	
<i>Crassula connata</i>	pygmy-weed	Crassulaceae	Native	
<i>Cynodon dactylon</i>	Bermuda grass	Poaceae	Introduced	Moderate
<i>Echinochloa crus-galli</i>	barnyardgrass	Poaceae	Introduced	
<i>Elymus triticoides</i>	beardless wild rye	Poaceae	Native	
<i>Equisetum arvense</i>	common horsetail	Equisetaceae	Native	
<i>Equisetum laevigatum</i>	smooth scouring rush	Equisetaceae	Native	
<i>Erigeron canadensis</i>	horseweed	Asteraceae	Native	
<i>Erodium botrys</i>	longbeak stork's bill	Geraniaceae	Introduced	
<i>Erodium cicutarium</i>	redstem filaree	Geraniaceae	Introduced	Limited
<i>Euphorbia maculata</i>	spotted spurge	Euphorbiaceae	Introduced	
<i>Festuca myuros</i>	rattail sixweeks grass	Poaceae	Introduced	Moderate
<i>Festuca perennis</i>	rye grass	Poaceae	Introduced	Moderate
<i>Foeniculum vulgare</i>	fennel	Apiaceae	Introduced	Moderate
<i>Galium aparine</i>	goose grass	Rubiaceae	Native	
<i>Geranium dissectum</i>	cutleaf geranium	Geraniaceae	Introduced	Limited
<i>Geranium molle</i>	dovefoot geranium	Geraniaceae	Introduced	
<i>Hedera helix</i>	English ivy	Araliaceae	Introduced	High
<i>Helminthotheca echioides</i>	bristly ox-tongue	Asteraceae	Introduced	Limited
<i>Hirschfeldia incana</i>	shortpod mustard	Brassicaceae	Introduced	Moderate
<i>Hordeum marinum</i> subsp. <i>gussoneanum</i>	Mediterranean barley	Poaceae	Introduced	Moderate
<i>Hordeum murinum</i>	wall barley	Poaceae	Introduced	Moderate
<i>Lactuca serriola</i>	prickly lettuce	Asteraceae	Introduced	
<i>Lamium amplexicaule</i>	henbit	Lamiaceae	Introduced	
<i>Lepidium draba</i>	heart-podded hoary cress	Brassicaceae	Introduced	Moderate

Scientific name ¹	Common name	Family	Nativity status	Cal-IPC rating ²
<i>Lepidium latifolium</i>	perennial pepperweed	Brassicaceae	Introduced	High
<i>Lupinus bicolor</i>	miniature lupine	Fabaceae	Native	
<i>Malva neglecta</i>	common mallow	Malvaceae	Introduced	
<i>Malva parviflora</i>	cheeseweed	Malvaceae	Introduced	
<i>Medicago polymorpha</i>	California burclover	Fabaceae	Introduced	Limited
<i>Medicago sativa</i>	alfalfa	Fabaceae	Introduced	
<i>Modiola caroliniana</i>	modiola	Malvaceae	Introduced	
<i>Plantago lanceolata</i>	English plantain	Plantaginaceae	Introduced	Limited
<i>Poa annua</i>	annual blue grass	Poaceae	Introduced	
<i>Polygonum aviculare</i> subsp. <i>depressum</i>	oval-leaf knotweed	Polygonaceae	Introduced	
<i>Quercus lobata</i>	valley oak	Fagaceae	Native	
<i>Quercus wislizeni</i>	interior live oak	Fagaceae	Native	
<i>Ranunculus muricatus</i>	spinyfruit buttercup	Ranunculaceae	Introduced	
<i>Raphanus sativus</i>	radish	Brassicaceae	Introduced	Limited
<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	Introduced	Moderate
<i>Rumex crispus</i>	curly dock	Polygonaceae	Introduced	Limited
<i>Senecio vulgaris</i>	common groundsel	Asteraceae	Introduced	
<i>Sequoia sempervirens</i>	redwood	Cupressaceae	Native	
<i>Silybum marianum</i>	blessed milkthistle	Asteraceae	Introduced	Limited
<i>Sonchus asper</i> subsp. <i>asper</i>	prickly sow thistle	Asteraceae	Introduced	
<i>Sorghum halepense</i>	Johnson grass	Poaceae	Introduced	
<i>Stellaria media</i>	common chickweed	Caryophyllaceae	Introduced	
<i>Taraxacum officinale</i>	common dandelion	Asteraceae	Introduced	
<i>Tribulus terrestris</i>	puncturevine	Zygophyllaceae	Introduced	Limited
<i>Trifolium hirtum</i>	rose clover	Fabaceae	Introduced	Limited
<i>Trifolium repens</i>	white clover	Fabaceae	Introduced	
<i>Triticum aestivum</i>	common wheat	Poaceae	Introduced	
<i>Urtica urens</i>	dwarf nettle	Urticaceae	Introduced	
<i>Vicia ludoviciana</i> subsp. <i>ludoviciana</i>	deerpea vetch	Fabaceae	Native	
<i>Vicia sativa</i> subsp. <i>sativa</i>	spring vetch	Fabaceae	Introduced	
<i>Vicia villosa</i> subsp. <i>villosa</i>	winter vetch	Fabaceae	Introduced	

¹ Scientific name follows the Jepson eFlora (Jepson Flora Project 2019).

² Cal-IPC ratings:

- High Species having severe ecological impacts on physical processes, plant and animal communities, and vegetation structure.
- Moderate Species having substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure.
- Limited Species having minor ecological impacts on a statewide level of for which there is not enough information to justify a higher score.
- Watch Not currently invasive in California. Assessment has found them to be a high risk for becoming invasive in the future.