Twitchell Island Wetland Enhancement and Restoration Project

Initial Study / Mitigated Negative Declaration

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1.0 INTRODUCTION

1.1 Introduction and Regulatory Guidance

This Initial Study/ Mitigated Negative Declaration (IS/ MND) has been prepared by Reclamation District 1601, in partnership with the California Department of Water Resources (DWR) to evaluate the potential environmental effects resulting from the Twitchell Island Wetland Enhancement and Restoration Project (hereinafter referred to as the "proposed Project" or "Project"). Chapter 2, "Project Description," presents detailed Project information.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section [PRC] 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations (CCR) Section 15000 et seq.) to inform decision-makers, representatives of affected and responsible agencies, the public, and other interested parties of the potential environmental impacts associated with implementation of the proposed Project. An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a "public agency shall prepare…a proposed negative declaration or mitigated negative declaration…when: (a) The Initial Study shows that there is no substantial evidence…that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

1.2 Summary of Findings

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the Project.

Based on the evaluations in Chapter 3, it was determined that the Project would have either no impact or a less-than-significant impact related to the following issue areas identified in the Environmental Checklist, included as Appendix G of the State CEQA Guidelines.

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems
- Wildfire

Potentially significant impacts were identified for biological resources, cultural resources, and tribal cultural resources; however, mitigation measures included in the IS/MND would reduce all impacts to a less-than-significant level.

2.0 PROJECT DESCRIPTION

2.1 Project Background

The California Department of Water Resources (DWR), through a contract with Reclamation District 1601 and in consultation with the California Department of Fish and Wildlife (CDFW), is proposing to restore and enhance wetland and riparian habitat on Twitchell Island in the Sacramento-San Joaquin Delta (Delta), Sacramento County, California (Figure 1). Historically, the area that became Twitchell Island was primarily tule marsh with some riparian forest. In approximately 1869, levees were constructed that ultimately formed Twitchell Island. Reclamation District 1601, formed in 1914, is responsible for operation and maintenance of the levees around the perimeter of Twitchell Island. Much of the island has been farmed since the early 1900s and the levees have continued to be built up as the associated farmland subsides. In the early 1990s, DWR purchased approximately 90 percent of Twitchell Island to benefit water quality and create wildlife habitat.

The Project proposes to enhance and restore approximately 40 acres of wetland and approximately 80 acres of riparian and scrub-shrub habitat within a 185-acre Project Area footprint on Twitchell Island. Approximately 50 acres within the Project Area would remain under agriculture use. The remaining portion of the Project Area would be undisturbed and primarily consists of the island perimeter levee side slope and access roadways. Within the 120-acre restoration and enhancement area, the Project would plant native riparian tree and shrub species interspersed with native grasses and redistribute onsite soil to create a mosaic of shallow open-water habitat, habitat islands, and emergent wetland communities. Additionally, the Project would construct shallow swales, incorporate water control structures for water delivery, and include management within the improved wetland units. Once complete, the Project would result in a net increase in wetland acreage, improving aquatic resource functions and services onsite.

2.2 Project Purpose and Need

The purpose of the Project is to provide high-quality and cost-effective habitat for the Delta Levees Special Flood Control Projects Program (Delta Levees Program or "DLP") participants. Reclamation districts responsible for maintenance of levees throughout the Delta participate in the DLP. Reclamation districts that receive funding from DLP for levee maintenance and improvement work are required to have no-net loss of habitat and a net-habitat improvement for that work. CDFW oversees those mandates outlined in the California Water Code (CWC), and along with DWR, sees an advantage in addressing them programmatically. The Project would offset future impacts associated with levee maintenance and improvement work implemented through DLP and, thereby, help satisfy the no net loss of habitat mandate provided in CWC Sections 12314(c) and 12987(c), as well as the net habitat improvement mandate provided in CWC Sections 12314(d) and 12987(d).

The Project would also restore wetlands to reduce and reverse land subsidence, sequester atmospheric carbon, and create wildlife habitat. Elevations within the project area have fallen to approximately 3 to 22 feet below sea level. Land subsidence within the Delta threatens levee stability and creates a larger void for saltwater penetration in the event of a levee breach. Protecting and maintaining proper functions of the Delta is critical in ensuring proper water quality is maintained for potable, agricultural, and many other water uses.

Wetland restoration also plays a significant role in combatting climate change. Marsh habitat supports vegetation growth and creates conditions that allow plant matter to decompose anaerobically creating peat soils and sequestering carbon. Converting land under agricultural use to wetland reduces greenhouse gas emissions (DWR 2020).

In addition, the Delta provides critical wintering and resting habitat for migratory birds within the Pacific Flyway. As one of the largest remaining wetland areas in California, the Delta provides habitat to 15 percent of waterfowl on the Pacific Flyway. The project would improve wetland habitat within the Delta, increasing habitat functions and services for waterfowl and other wildlife.

2.3 Project Location

The Project Area is located on Twitchell Island, an approximately 3,500-acre island in the western Sacramento-San Joaquin Delta, about 3.5 miles south of Isleton and 3 miles southeast of Rio Vista in southwest Sacramento County (Figure 1). The Project Area encompasses approximately 185 acres, located on two parcels (Assessor Parcel Numbers 157-0130-022-0000 and 157-0130-006-0000) owned by DWR. The Project would be located on the northern portion of Twitchell Island, near Sevenmile Slough (Figure 2). The latitude and longitude of the approximate center of the Project Area are 38.114785, -121.657261. The Project Area is currently used for agriculture, in particular alfalfa and cattle grazing. See Table 1.

Table 1. Project Location

Assessor Parcel Numbers	157-0130-022-0000 and 157-0130-006-0000
Latitude / Longitude	38.114785, -121.657261
USGS 7.5-minute Quadrangle	Jersey Island, CA
Section / Township / Range	Sections 08, 09 / Township 3N / Range 3E

Source: Ducks Unlimited 2023.

2.4 Project Components

The Project would create riparian habitat in the northern portion of the Project Area and two wetland units in the southern portion of the Project Area. Figure 3 presents the preliminary design of the proposed Project. The features described in the following sections would be constructed to create the proposed wetland units. Approximately 50,000 cubic yards of material would be excavated and relocated within the Project Area. Except for the pipeline installation and ditch described below, no major ground disturbance would occur on the northern portion of the Project Area, which is outside of the proposed wetland units. This portion of the Project Area would only be affected by proposed vegetation control and native planting to create riparian habitat.

2.4.1 Pipeline

Consistent with existing onsite hydrology, water would be delivered to the Project Area from Sevenmile Slough through an existing siphon. The Project proposes to install a three-way valve on the existing siphon outfall. The two outside valves could be utilized for agriculture and irrigation uses. The middle valve would connect to

a pipeline extension from the siphon to deliver water to the wetland units proposed in the southern portion of the Project Area. An approximately 4,200-linear-foot, 16-inch polyvinyl chloride (PVC) pipeline would be installed at the existing siphon and would follow along the northern perimeter of the Project Area, turn south at the western Project Area boundary, then turn east and terminate at the northwestern portion of the eastern wetland unit (Figure 3). The end of the pipeline extension would be fitted with a valve to allow for operation of the water levels into the wetland units and provide water to the agricultural area in the southeast portion of the Project Area.

Excavation of an approximately 3-foot-wide trench, 24-inches below ground surface would be required to locate the pipeline extension below the final grade. The pipeline trench would be located approximately 10 feet away from new and existing ditches and fence lines. The excavated trench would be backfilled and restored to pre-construction contours once the pipeline is installed.

2.4.2 Wetland Grading and Swales

The Project would create two wetland units in the southwestern portion of the Project Area (Figure 3). Both wetland units would be graded to cut higher elevations and fill lower elevations in the interior. Water siphoned from Sevenmile Slough would be conveyed to the wetland units via the pipeline extension described above. Approximately 7,100 linear feet of shallow swales would be constructed to disperse water from the siphon pipeline extension through the wetland units. Swales would have 5:1 side slopes and 15-foot bottom widths. Water would flow through Unit 1 (the eastern wetland unit) first and then would be gravity fed into Unit 2 (the western wetland unit, located at a lower elevation than Unit 1). Water would then be discharged into the existing ditch along the southern boundary of the Project Area where it could be conveyed to the southern end of Twitchell Island and pumped out of the island into the San Joaquin River.

2.4.3 Potholes and Islands

The Project would construct both potholes and islands to increase the complexity of enhanced wetland habitats onsite (Figure 3). Two potholes would be constructed in Unit 1 and another pothole would be excavated in Unit 2. Potholes would have 5:1 side slopes and varying bottom widths. These potholes would provide for water level variability to support a range of wetland vegetation and limit monocultures. Similarly, two new islands would be constructed in Unit 1 and another island would be constructed in Unit 2. These islands would provide foraging habitat for migratory birds and aquatic species within the units. Islands would vary in size and would be constructed with approximately 10:1 side slopes to create emergent marsh habitat and approximately 5:1 side slopes if adjacent to proposed swales or potholes to provide open water habitat.

2.4.4 Berms and Maintenance Paths

Perimeter berms would be constructed around the proposed wetland units in the southwestern portion of the Project Area to contain water within the wetland units (Figure 3). The berms would be constructed with compacted fill from the spoil materials excavated to grade the wetlands and construct the proposed potholes and swales. Berms would extend a total of approximately 7,200 linear feet, have approximately 3:1 side slopes, and approximately 12-foot top widths.

Additionally, two maintenance paths would be constructed within Unit 1 to provide access from the proposed northern perimeter berm to the habitat islands for vegetation management activities. Each maintenance path

would be constructed using compacted fill from the spoil materials and would have approximately 5:1 side slopes and approximately 16-foot top widths. Approximately 6-inches of crushed rock would be placed on the top of the paths.

2.4.5 Perimeter Ditch

A new perimeter ditch would be constructed along the northern boundary of the wetland units to capture stormwater runoff and seepage from the wetland units. The ditch would be constructed approximately 30 feet north of the proposed wetland unit perimeter berm and would convey water southeast to the larger existing drainage ditch south of the Project Area. The ditch would have approximately 2:1 side slopes and an approximately 4-foot bottom width.

2.4.6 Water Control Structures

Four new water control structures would be installed in the proposed wetland units (Figure 3). The four water control structures would consist of high-density polyethylene (HDPE) pipe with risers and would be supported by timber piles. Two water control structures are proposed to convey water between the two wetland units along the proposed swale pathways. Two additional water control structures are proposed at the southern ends of the swales within each wetland unit to allow for water to drain into the existing ditch on the southern boundary of the Project Area.

2.4.7 Native Plantings

Trees and shrubs would be planted in the northern portion of the Project Area (Figure 3). Riparian forest trees would include species like Goodding's black willow (*Salix gooddingii*), red willow (*S. laevigata*), Pacific willow (*S. lasiandra*), cottonwood (*Populus fremontii*), box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), coast live oak (*Quercus agrifolia*), interior live oak (*Q. wislizeni*), valley oak (*Q. lobata*), Northern California black walnut (*Juglans hindsii*), and western sycamore (*Platanus racemosa*). Scrub-shrub species would include species like arroyo willow (*S. lasiolepsis*), sandbar willow (*S. exigua*), blue elderberry (*Sambucus mexicana*), western redbud (*Cercis occidentalis*), California buckeye (*Aesculus californica*), big saltbush (*Atriplex lentiformis*), California wild grape (*Vitis californica*), California button willow (*Cephalanthus occidentalis*), American dogwood (*Cornus sericea*), California rose (*Rosa californica*), California blackberry (*Rubus ursinus*), and coyote bush *(Baccharis* spp.). In addition, natural recruitment and broadcast seed of native plants would be applied within the wetland units.

2.4.8 Invasive Plant Management

After construction of the proposed wetland units, various plant management treatments would be applied to control invasive plant growth and promote native wetland plant growth. Dependent on plant growth, labor availability, and funding, annual treatments may consist of one primary treatment, such as herbicide application, and one secondary treatment, such as mowing or grinding. The method(s) ultimately used to treat invasive plants would consider species, seasonality, weather, labor availability, cost, and other factors. Best management practices would be implemented to reduce impacts, see Section 2.5.5, "Best Management Practices." The following provides a description of the various treatment methods that could be applied to remove invasive non-native plants, such as common reed (*Phragmites* sp.), Russian thistle (*Salsola* sp.), and water primrose (*Ludwigia peploides*).

Treatment Methods

Mowing

Top-mowing would involve cutting above-ground stems, leaves, and flowering stalks using handheld gas-powered equipment (e.g., tri-bladed brushcutter, corded weedwhacker) or heavy equipment, where possible (e.g., Marshmaster outfitted with mowing attachment). Biomass generated during and as a result of mowing would be left in place to decompose and/or tilled into the soil as mulch during grinding (see below).

Mowing would be used to clear above-ground vegetation in preparation for other treatments, such as grinding or herbicide application, or could be used as a seed suppression measure. In general, handheld equipment would be used to mow areas with low to moderate plant density, limited access, or for seed suppression where handheld equipment can readily remove seedlings without compacting or disturbing too much soil. Where and when possible, heavy equipment would be used to treat larger areas, or areas supporting dense stands of vegetation.

Grinding or Tilling

Grinding would involve the use of gas-powered hand tools (e.g., brushcutter) or heavy equipment (e.g., Marshmaster outfitted with a rototiller attachment) to target rhizomes below the soil surface. After above ground vegetation has been removed, the blades of the brushcutter or rototiller would be used to grind (macerate) the root crown and rhizomes into small fragments. Grinding depths typically extend three to six inches below the ground surface, with precise depths depending on site conditions and plant maturity and density. Follow-up treatments, which are less intensive than the initial grinding, are typically required to address re-sprouts that regenerate from rhizome fragments remaining in the soil.

An alternative to grinding is tilling, where a mini-tiller may be used to macerate rhizomes. Mini-tillers, if utilized, are most advantageous when invasive plant cover is less than 50 percent.

Herbicide Use

Herbicide, in conjunction with mechanical treatments (i.e., mowing, grinding), could be used to control invasive plants where other methods have proven ineffective, or where treatment costs would be substantially reduced. Herbicide use would be limited to those approved for use under National Pollutant Discharge Elimination System General Permit No. CAG990005, registered for use as aquatic herbicide, and classified as practically nontoxic to freshwater and estuarine/marine fish and invertebrates, birds, and bees.

Herbicide applications would be performed by a Qualified Applicator or under the supervision of a Qualified Applicator in accordance with the manufacturer's recommendations for aquatic use and application. Herbicide would be applied by workers moving through the Project Area on foot using backpack sprayers or wick applicators, or from spray equipment mounted on trucks, drones, or amphibious tracked vehicles. Aerial applications of herbicide from helicopters or airplanes are not contemplated under the Project.

2.5 Construction Methods

Pending permit approval, construction would take place over the course of approximately a two-month construction period, beginning no sooner than May 1, 2024, and ending no later than October 1, 2024. If work is not completed in 2024, work would commence again the following year during the same time period (May 1 through October 1), or as funding is available. Construction activities would occur within standard

environmental constraints or permitted work windows to avoid impacts to special-status species like giant garter snake. Construction of the Project would involve excavating and relocating approximately 50,000 cubic yards of material within the Project Area to achieve a cut fill balance. Crushed rock would be imported for the topping of the proposed maintenance paths.

2.5.1 Access and Staging

The Project Area would be accessed via Twitchell Island Road and Twitchell Island Ferry Road (Figure 3). Construction equipment would be brought on site and staged in upland areas located in the northern portion of the Project Area outside of any sensitive habitat.

2.5.2 Draw Down and Site Preparation

Prior to the start of ground-disturbance work, the siphon would likely be turned off to allow for draw down of any irrigation waters within the Project Area. If any remaining ponded water is encountered in the Project Area, portable pumps could be used to discharge water to adjacent agricultural fields, drainage ditches, or wetland units where the water can percolate into the soil. After water has been removed from the Project Area, existing herbaceous vegetation (mostly ruderal upland grasses and forbs) in areas that would be disturbed would be cleared and grubbed.

2.5.3 Construction Sequencing

The following summarizes the anticipated general sequence of construction. Outside of measures to establish the boundary of work areas and to install necessary best management practices (BMPs), these steps are not intended to be comprehensive or prescriptive. The construction contractor may elect to install components in a different order or concurrently based on site conditions, available equipment and operators, and Project schedule.

1. Stop water intake from the existing siphon and draw down any excess water from the Project Area via agricultural ditches or pumped discharge to agricultural fields, drainage ditches or wetland units.
2. Prepare access and staging areas and mobilize equipment.
3. Clear/grub work areas.
4. Replace siphon infrastructure.
5. Excavate pipeline trench, install pipeline, and backfill.
6. Grade proposed wetland units, including excavation of wetland interior, swales, and potholes.
7. Place and compact excavated material along the footprint of the new berm and island footprints.
8. Install water control structures along the newly contoured berms.
9. De-compact soils and recontour areas temporarily disturbed during construction.
10. Plant native vegetation.
11. Demobilize and remove construction material from the Project Area.

2.5.4 Construction Equipment

Construction equipment likely to be used for the Project would include:

1. Tractors with disk attachments for disking and pull scraper attachments for transporting soils.
2. Dozers to shape berm side slopes and move material.

3. Backhoes for trenching, pipe installation/removal, and moving smaller objects.
4. Water trucks for dust control and moisture conditioning.

2.5.5 Best Management Practices

The Project would implement BMPs to reduce impacts on the environment. Representative BMPs include:

1. Ground-disturbing activities would be conducted between May 1 and October 1 to minimize impacts on giant garter snake.
2. Plant management treatments would occur between September 1 and January 31, outside the avian nesting window, when possible, considering the applicable growing season.
3. A site-specific Stormwater Pollution Prevention Plan (SWPPP) would be developed for the Project prior to construction. All measures identified within the SWPPP would be implemented during construction.
4. Work would occur when work areas are dry/dewatered.
5. Although work would occur interior of berms separating the Project Area from Sevenmile Slough, stormwater BMPs would be utilized to reduce erosion and minimize potential to discharge of materials into waters.
6. Any spills of hazardous materials would be cleaned up immediately and reported to the responsible resource agencies within 24 hours. Any such spills, and the success of the cleanup efforts, would also be reported in post-construction compliance reports.
7. Staging areas would be located in upland areas to the extent possible and at least 100 feet from bodies of water unless site-specific circumstances do not provide such a setback or would result in further damage to sensitive resources, in which case the maximum setback possible will be used.
8. Incoming vehicles and equipment would be checked for leaking oil and fluids (including delivery trucks and employee and subcontractor vehicles). Leaking vehicles or equipment would not be allowed on-site.
9. Vehicle and equipment washing would occur at an appropriate wash station or off-site.
10. Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
11. Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
12. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
13. Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated. Check that tires are correctly inflated when equipment arrives on site and every two weeks for equipment that remains on site.
14. To the extent practicable, implement the following to reduce construction related emissions:
    a. Encourage the construction contractor to use repowered engines, electric drive trains, or high-efficiency technologies, as well as trucks equipped with on-road engines for on-site material hauling.

b. Encourage the construction contractor to use alternative fuel generators.
c. Limit deliveries of materials and equipment to off peak traffic congestion hours.
d. Recycle construction waste (e.g., concrete, metal).

15. Avoid tillage and maintain vegetation on levees/berms to the extent possible to maximize carbon sequestration and minimize negative air quality impacts associated with erosion of bare soils.
16. Seed or plant native grasses and wildflowers in disturbed areas where feasible because those species will be best adapted to local conditions (drought, periodic inundation) and will often require minimal maintenance once established.
17. Mow vegetation, if necessary, rather than applying herbicides. The application of herbicides on a large scale requires fuel consumption for repeated treatments and entails risks to wildlife and water quality.
18. If mowing is conducted, use fuel efficient mowers in proper working condition and minimize idling time by requiring that equipment be shut down after five minutes when not in use.
19. If herbicides are to be applied, use spot applications (preferably by hand) rather than broadcast spraying where feasible to reduce impacts to native vegetation, wildlife, and water quality.
20. Control nonnative weed species as soon as populations are found to prevent the need for more future extensive eradication efforts.
21. Carefully plan and schedule vegetation maintenance activities to minimize driving time and return trips to a site.
22. When feasible, include requirements in landscaping contracts specifying the use of manual techniques such as rakes and weed removal by hand to the extent possible to reduce the use of gas-powered equipment and herbicides.

2.6 Required Permits and Project Approvals

Table 2 lists the authorizations required to support implementation of the proposed Project. The Project proponent would secure all required permits prior to Project implementation.

Table 2. Required Permits

Regulating Agency	Required Permit
U.S. Army Corps of Engineers	Clean Water Act, Section 404 (Nationwide Permit 27)
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 401, Water Quality Certification and Porter Cologne Water Quality Control Act, Waste Discharge Requirement
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 402, NPDES Permit for Residual Aquatic Pesticide Discharges to Waters of the U.S. from Algae and Aquatic Weed Control Applications
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 402, NPDES Construction General Permit
California Department of Fish and Wildlife	California Endangered Species Act, Memorandum of Agreement
U.S. Fish and Wildlife Service and National Marine Fisheries Service	Federal Endangered Species Act, Section 7 Consultation
State Historic Preservation Officer	National Historic Preservation Act, Section 106 Consultation
Delta Stewardship Council	Delta Plan Consistency Certification

Source: Ducks Unlimited 2023.

0 0.5 1 2 Miles

Figure 1. Project Vicinity

Twitchell Island Wetland Enhancement and Restoration Project

Project Proponent: Department of Water Resources
Location: Sacramento County, CA
Sections 08, 09 / Township 3N / Range 3E
Latitude/Longitude: 38.114785, -121.657261
Prepared by: Ducks Unlimited
Date Prepared: September 2023

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0 500 1,000 Feet

Figure 2. Project Area

Twitchell Island Wetland Enhancement and Restoration Project

Project Proponent: Department of Water Resources
Location: Sacramento County, CA
Sections 08, 09 / Township 3N / Range 3E
Latitude/Longitude: 38.114785, -121.657261
Prepared by: Ducks Unlimited
Date Prepared: September 2023

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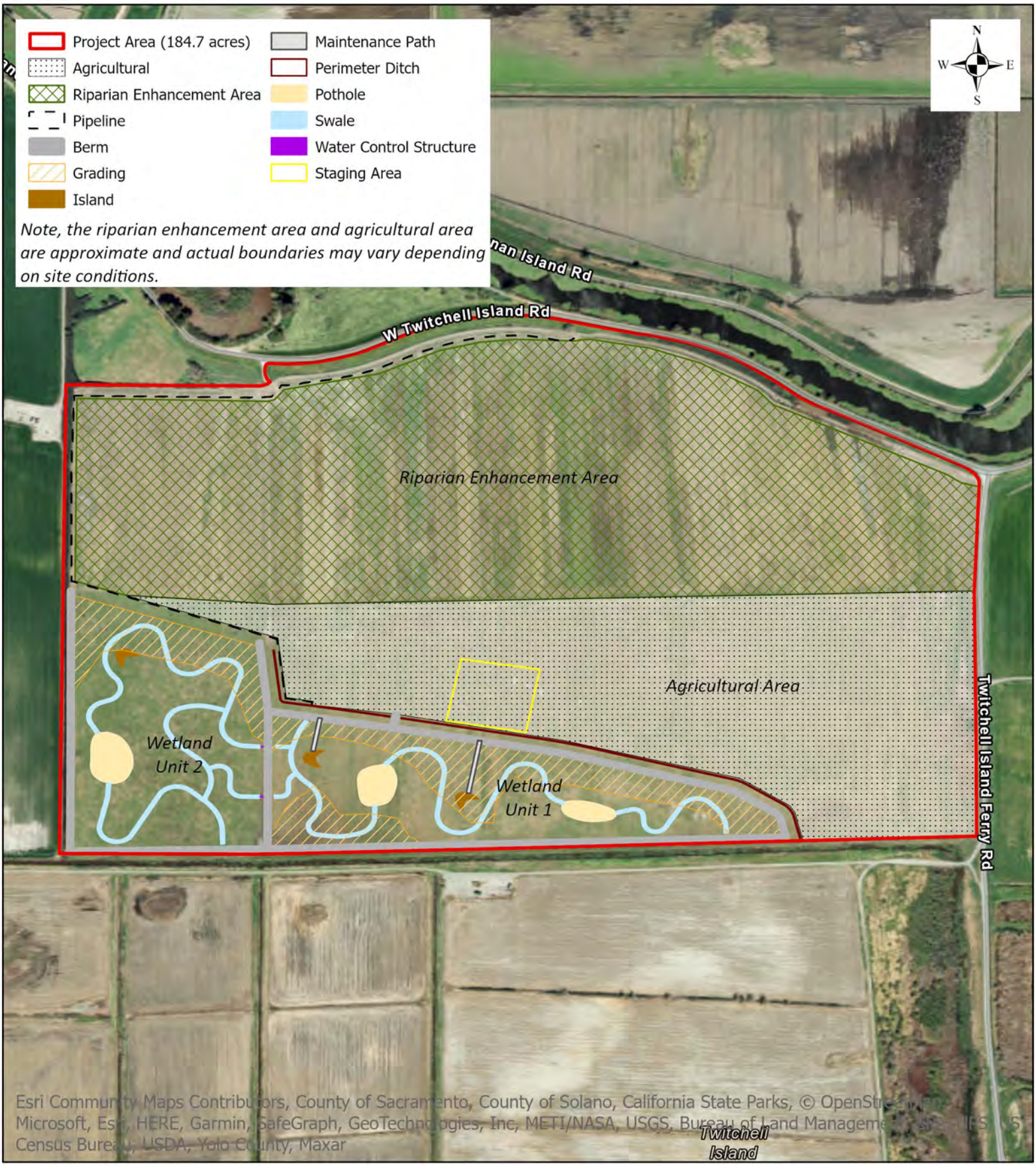

0 500 1,000 Feet

Figure 3. Preliminary Design

Twitchell Island Wetland Enhancement and Restoration Project

Project Proponent: Department of Water Resources
Location: Sacramento County, CA
Sections 08, 09 / Township 3N / Range 3E
Latitude/Longitude: 38.114785, -121.657261
Prepared by: Ducks Unlimited
Date Prepared: November 2023

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3.0 ENVIRONMENTAL CHECKLIST

3.1 Project Information

Project title: Twitchell Island Wetland Enhancement and Restoration Project

Lead agency name and address:

Reclamation District 1601
306 Second Street
Isleton, CA 95641

Contact person and phone number: Jesse Barton; Phone (916) 444-2880

Project location: The Project Area is located on Twitchell Island in the southwestern portion of Sacramento County.

Project sponsor's name and address:

California Department of Water Resources
Delta Ecosystem Enhancement Section
715 P Street
Sacramento, CA 95814

General Plan Designation: Agricultural Cropland

Zoning: Agricultural – 80 acres

Description of the Project: The Project proposes to enhance and restore approximately 40 acres of wetland and approximately 80 acres of riparian and scrub-shrub habitat within a 185-acre Project Area footprint on Twitchell Island. See Chapter 2, "Project Description," For more detailed information.

Surrounding Land Uses and Setting: The Project Area is within the Sacramento-San Joaquin Delta. It is surrounded by Sevenmile Slough to the north and agricultural land to the east, west, and south.

Other public agencies whose approval is required: See public agencies and required permits listed in Table 2.

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Letters notifying tribes of the Project were sent on October 20, 2022, and March 30, 2023, by or on behalf of Reclamation District 1601. A representative from the United Auburn Indian Community of the Auburn Rancheria responded on October 20, 2022, stating they would defer tribal consultation to the Wilton Rancheria, or other local tribes. On April 17, 2023, a representative from Wilton Rancheria responded requesting formal consultation. The Lead Agency and Project proponent met with Wilton Rancheria on June 9, 2023. Consultation between the Lead Agency and Wilton Rancheria is ongoing.

3.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the evaluation in Chapter 4.

☐ Aesthetics	☐ Agriculture and Forest Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources / Tribal Cultural Resources	☐ Energy
☐ Greenhouse Gas Emissions	☐ Geology / Soils	☐ Hazards / Hazardous Materials
☐ Hydrology / Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Utilities / Service Systems
☐ Wildfire	☐ Mandatory Findings of Significance	☒ None with Mitigation Incorporated

3.3 Lead Agency Determination

On the basis of this evaluation:

☐ I find that the proposed Project could not have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

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

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

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

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

Signature _____ Date _____

4.0 EVALUATION OF ENVIRONMENTAL IMAPCTS

4.1 Aesthetics

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?				X
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

4.1.1 Environmental Setting

Visual resources consist of the natural and manmade features that give a particular environment its aesthetic qualities. The primary areas of concern generally are associated with changes to prominent topographic features, changes in the character of an area with high visual sensitivity, removal of vegetation, or blockage of public views of a visually sensitive landscape.

Visibility of the Project Area is limited due to area elevations of approximately 3 to 22 feet below mean sea level. Twitchell Island Road, directly adjacent to the Project Area, provides views of the Project Area but the road is not well trafficked. Viewers of the Project Area are primarily limited to agricultural workers, landowners, and some public traffickers along Twitchell Island Road. There is no public access to the Project Area itself. The Project Area is not visible from nearby highways, including Highway 160 and Highway 12. Visual characteristics of the Project Area include wide vistas of agricultural fields and open space. Siphons, fence lines, and access roadways can be seen across the site.

At a regional level, the Sacramento-San Joaquin Delta is characterized by meandering waterways and islands, some of which consist of marshland, while others have been diked and leveed for agricultural use. Three two-lane highways cross through the Sacramento-San Joaquin Delta, Highway 160, Highway 12, and Highway 4. The remaining roadway network consists primarily of small one- to two-lane rural local roads. Highway 160 is a designated state scenic highway.

4.1.2 Impact Discussion

Would the project:

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

Due to the site elevation, views of the Project Area are limited to the adjacent Twitchell Island Road and neighboring parcels. Visual resources (i.e., open space and agricultural fields) at the Project Area provide limited contributions to the aesthetic value of the Sacramento-San Joaquin Delta region. Construction of the Project would involve large construction equipment and grading activities that may temporarily degrade visual resources on the site. However, due to the limited visibility of the Project Area, these temporary activities would not result in a substantial adverse effect on a scenic vista. In addition, native planting proposed as part of the Project would enhance riparian and wetland habitats in the Project Area, thereby improving the quality of visual resources in the Project Area, to the extent they are viewed by the public or other sensitive viewers. The Project would result in **no impact** to scenic vistas.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The nearest state designated scenic highway is Highway 160, which is located more than 5,000 feet to the west of the Project Area. The Project Area is not visible from the highway and the Project would not substantially damage trees, rock outcroppings, historic buildings, or other scenic resources. As such, the Project would have **no impact** on scenic resources within a state scenic highway.

c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Construction of the Project would involve the temporary use of large construction equipment (e.g., dozers, excavators) and grading activities that could affect the existing visual character of the Project Area. However, public views of the site are limited to travelers along Twitchell Island Road and nearby agricultural workers or landowners. In addition, the Project Area would be recontoured and planted with native grasses and riparian plants upon construction completion. The Project would enhance the long-term visual character and quality of Twitchell Island. As such, Project impacts on the visual character and public views would be **less than significant**.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The Project would not create a new source of light or glare. Construction activities would be conducted during daylight hours and no artificial light would be used. No reflective building materials or structures would be used or constructed. As such, **no impact** related to light or glare would occur.

4.2 Agriculture and Forestry Resources

Environmental Issue	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			X	
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	
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))?				X
d. Result in the loss of forest land or conversion of forest land to non-forest use?				X
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

4.2.1 Environmental Setting

Islands within the Sacramento-San Joaquin Delta originally were surrounded by natural levees formed by sediments deposited during spring floods that were stabilized by vegetation. The peat soils were formed from accretion of tules and reed vegetation over thousands of years. Beginning in the late 1850s, the natural vegetation was cleared and levees were built to create farmland. Semi-continuous pumps were used to remove agricultural water drainage and maintain a low water table. Over the years, the highly organic peat soils dried and impacted by wind erosion, compaction, and oxidation (conversion to carbon dioxide). As peat soils decompose, the land subsides (Fleck et al. 2007). As a result of nearly 150 years of farming practices, sub-surface irrigation, and exposure of soils to air, the Project Area has subsided approximately 3 to 22 feet below sea level.

Most of Twitchell Island, including the Project Area, is designated as Prime Farmland by the Department of Conservation (DLRP 2023). The majority of the Project Area is currently used as pastureland for grazing while some is cultivated for alfalfa production.

4.2.2 Impact Discussion

Would the project:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

While the proposed Project Area is designated prime farmland, agricultural practices over the last 150 years have substantially degraded soil conditions on the site. Because Twitchell Island is located in the Western Delta, at the confluence of the Sacramento-San Joaquin Rivers, it is strategically important for protecting the water quality of the Delta. Hence it is imperative to end land subsiding practices – including, in some cases, conventional agriculture such as grazing – and implement land use practices which accrete soil and reverse subsidence. The proposed Project would accomplish those goals. Habitat restoration activities proposed on the remaining portion of the Project Area would improve soil conditions by enhancing wetland habitats to create additional peat soils and reverse subsidence. Accretion of soil on the interior of Twitchell Island may (over several years) in turn reduce the risk of flooding and reverse subsidence. This subsidence reversal may support some ongoing, appropriate agricultural activities.

The majority of the Project Area is currently used as pasture grazing land. However, the heavily subsided location and high-water table makes the Project Area unsustainable for long-term agricultural crop production. In other words, agricultural use of the Project Area is only feasible in the short term and any impacts are temporary in nature. Thus, most of the Project is managed for grazing or agriculture on short-term leases. The Project would not convert prime farmland to a conflicting use such as urban development. Habitat restoration activities proposed by the Project do not conflict with, but rather

enhance farming practices in the Delta due to their role in subsidence reversal. Further, approximately 50 acres of the Project Area would not be disturbed and would be preserved as pastureland and/or farmland for alfalfa production. As such, impacts related to farmland would be **less than significant**.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Project Area is comprised of two parcels. The west parcel, APN 157-0130-022-0000, is fully encompassed by the Project Area boundary and is not under a Williamson Act contract. A portion of the eastern parcel, APN 157-0130-006-0000, is within the Project Area (approximately 140 acres of 358 acres) and is under Williamson Act contract 72-AP-092. On November 30, 2015, DWR contacted the Department of Conservation and was advised that the eastern parcel could be planted as riparian habitat and reported as a different land use – i.e., the wildlife habitat land use proposed by the Project would be compatible as an open space category under the Williamson Act. In addition, DWR filed a non-renewal notice for the eastern parcel in 2020 and the Williamson Act contract is scheduled to expire in 2030. Both parcels are zoned AG-80(F) under the Sacramento County Zoning Ordinance with a minimum parcel size of 80 gross acres. Wildlife habitat is an allowable land use under the AG-80(F) zoning designation. As such, impacts related to existing zoning for agricultural use or a Williamson Act contract would be **less than significant**.

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))?

The Project is not zoned for forest land or timberland. Therefore, **no impact** related to zoning for forest land or timberland would occur.

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

The Project is not located within forest land. As such, **no impact** related to the loss or conversion of forest land would occur.

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

The Project would enhance existing degraded farmland by restoring riparian and wetland habitat that would improve soil conditions and reverse subsidence. The Project would not conflict with an existing agricultural use and is not located near or in forest land. As such, **no impact** related to the conversion of farmland or forest land would occur.

4.3 Air Quality

Environmental Issue	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?				X
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?			X	
c. Expose sensitive receptors to substantial pollutant concentrations?			X	
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

4.3.1 Environmental Setting

The Project Area is in the Sacramento-San Joaquin Delta region, in rural southwestern Sacramento County, which is part of the Sacramento Valley Air Basin. Just across the San Joaquin River, which follows the southern boundary of the Project Area, is Contra Costa County in the San Francisco Bay Area Air Basin. The Delta is a climatological transition zone between the two air basins. It is the major gap in the mountains mostly surrounding the Sacramento/San Joaquin Valley. The mountains create a barrier to airflow, which can trap air pollutants in the valley when meteorological conditions are right, particularly in the autumn and early winter when surface wind speeds are low and vertical mixing is inhibited by temperature inversions (i.e., colder air near the ground, capped by warmer air aloft, which limits the vertical dispersion of air pollutants). The major air pollutants of concern for their widespread adverse health effects include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter. Two types of particulate matter are of particular concern: particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Sacramento County is designated a "severe" nonattainment area for the federal eight-hour ozone standard, a "serious" nonattainment area for the state one-hour ozone standard, and nonattainment for the state PM_{10} and $PM_{2.5}$ standards. It is in attainment for all other major pollutants.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) maintains a number of air quality monitoring stations that continually measure the ambient concentrations of major air pollutants in

Sacramento County; the Bay Area Air Quality Management District (BAAQMD) plays a similar role for monitoring stations in its jurisdiction beginning just west/south of the Project Area. The closest monitoring station to the Project Area is the BAAQMD station on Bethel Island, about 7 miles south. The Bethel Island BAAQMD station is also located in the Delta, which makes it likely to experiences similar ambient pollutant levels as the Project Area. Violations of the ozone standard have been recorded at this monitoring station over the last three years, as shown in Table 3.

Table 3. Local Air Quality Monitoring Data Summary (Bethel Island Station)

Pollutant	Air Quality Standard	Maximum Concentrations/Number of Days Standards Exceeded		
		2020	2021	2022
Ozone				
Maximum 8 hour concentration (ppb)	70 ppb	85	85	79
# Days 8 hour federal/state standard exceeded		2	4	1
Nitrogen Dioxide				
Maximum 1 hour concentration (ppb)	100 ppb	29.8	31.7	28.2
# Days 8 hour federal standard exceeded		0	0	0
Suspended Inhalable Particulates (PM10)				
Maximum 24 hour concentration (µg/m3)	50 µg/m3	40.0	----	----
# Days state 24 hour standard exceeded		0	----	----

Notes:
µg/m3 = micrograms per cubic meter ppb = parts per billion.
na = insufficient data to determine the value

Source: CARB 2023a.

There are many other chemical compounds that are commonly emitted into the air and are regulated as toxic air contaminants (TACs). In California, most estimated carcinogenic/chronic health risk can be attributed to relatively few TACs, the most important being particulate matter from diesel-fueled engines (DPM, which is also a form of $PM_{2.5}$). The CARB has identified DPM as being responsible for about 70 percent of the cumulative cancer risk from all airborne TAC exposures statewide (CARB 2023b).

This air quality analysis was performed using the methodologies recommended in the SMAQMD's *Guide to Air Quality Assessment in Sacramento County (CEQA Guide)* (SMAQMD 2020a). The air pollutants evaluated in this Initial Study are reactive organic compounds (ROG) and nitrogen dioxide (NO_2) (both being precursors to ozone formation), inhalable particulates (PM_{10}), and fine particulates ($PM_{2.5}$).

According to the *CEQA Guide*, any project would have a significant potential for causing/contributing to a local air quality standard violation or making a cumulatively considerable contribution to a regional air quality problem if its criteria pollutant emissions would exceed any the following thresholds during construction or operation as presented in Table 4 (SMAQMD 2020b).

Table 4. CEQA Air Quality Significance Thresholds for Air Pollutant Emissions

Pollutant	Construction Daily/ Annual Emissions (lbs./tons)	Operational Daily/ Annual Emissions (lbs./tons)
Reactive Organic Gases (ROG)	----/----	65/----
Oxides of Nitrogen (NO_x)	85/----	65/----
Inhalable Particulate Matter (PM_{10})	80/14.6	80/14.6
Fine Inhalable Particulate Matter ($PM_{2.5}$)	82/15.0	82/15.0

4.3.2 Impact Discussion

Would the project:

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

The regional air districts of the Sacramento ozone planning region (i.e., all of Sacramento and Yolo counties and portions of Placer, El Dorado, Solano, and Sutter counties) developed the *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (SMAQMD 2017) to address how the region would attain the federal 8-hour ozone standard. The Sacramento PM2.5 planning region (i.e., all of Sacramento County, the eastern portion of Yolo County, the western portions of El Dorado and Placer counties, and the northeast portion of Solano County) was previously classified as nonattainment for the federal 24-hour PM2.5 standard. The associated regional air districts prepared the *$PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area $PM_{2.5}$ Maintenance Plan and Redesignation Request* (SMAQMD 2013) to address how the region attained and would maintain the federal 24-hour $PM_{2.5}$ standard.

The regional air quality plans are based on regional air pollutant emission inventories and projections of the effects that regional changes in population, transportation, housing, employment, etc., would have on future emissions with consequent impacts on ambient air quality. The Project would enhance/restore wetlands and riparian/scrub-shrub habitat on a portion of Twitchell Island, with the remaining area continuing under agriculture use. This would have no effect on the above-mentioned parameters that underlie the regional air quality plans' projections of air quality improvements with the control strategies they would implement. Also, Project compliance with SMAQMD CEQA significance thresholds is a test of consistency with plan air quality control strategies and noninterference with the attainment of plan goals. As the analysis below demonstrates, the Project would meet all SMAQMD CEQA thresholds, and **no impact** would occur.

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?

Project Wetland Enhancement/Restoration Impacts

Project would enhance/restore wetlands and riparian/scrub-shrub habitat on Twitchell Island over a period of about 2 months in the summer of 2024. It would generate temporary emissions of air pollutants in equipment exhaust and from fugitive dust caused by equipment and earth movement. The *CEQA Guide* recommends quantification of construction-related exhaust emissions and comparison of those emissions to the CEQA significance thresholds. Thus, the California Emissions Estimator Model (CAPCOA 2022) was used to quantify construction-related emissions of criteria pollutants (see Appendix A).

Table 5 provides the estimated short-term Project emissions from off-road equipment and worker commute vehicles; no haul trucks would be required for the Project because no fill from external sources will be hauled to the site or spoil hauled for off-site disposal. The average daily/total annual emissions were compared to the CEQA significance thresholds. All restoration-related emissions would be well below the thresholds.

Table 5. Twitchell Island Wetland Enhancement and Restoration Project Air Pollutant Emissions

Project Emission Source	**Highest Average Daily Emissions** (lbs.)			
	ROG	**NOx**	**PM_{10}** (Exhaust)	**$PM_{2.5}$** (Exhaust)
Off-Road Construction Equipment	2.08	17.11	0.73	0.68
Fill/Debris/Supply Haul Trucks	----	----	----	----
Worker Commute Vehicles	0.002	0.007	0.001	0.001
Total	**2.08**	**17.12**	**0.74**	**0.68**
SMAQMD Construction Threshold	----	85	80	82
Significant Impact?	**No**	**No**	**No**	**No**
	Total Annual Emissions (tons)			
Project Emission Source	**ROG**	**NOx**	**PM_{10}** (Exhaust)	**$PM_{2.5}$** (Exhaust)
Off-Road Construction Equipment	0.02	0.20	0.01	0.01
Fill/Debris/Supply Haul Trucks	----	----	----	----
Worker Commute Vehicles	< 0.001	< 0.001	< 0.001	< 0.001
Total	**0.02**	**0.20**	**0.01**	**0.01**
SMAQMD Construction Threshold	----	----	14.6	15
Significant Impact?	**No**	**No**	**No**	**No**

The CalEEMod (Version 2022.1) User's Guide, Appendix G lists all the numerical values in the model database used to calculate project criteria and greenhouse gas pollutant emissions. Diesel-powered construction equipment emission factors from the OFFROAD model and on-road motor vehicle emission rates from EMFAC2021 (the CARB's EPA-approved motor vehicle emission model) for haul trucks and worker commute vehicles were used along with project-specific equipment type/number and truck/worker commute trips to estimate project construction emissions by Excel spreadsheet.

Further, the Project would implement the following Emission Control Processes (ECPs) identified in the *CEQA Guide* to control fugitive dust and BMPs identified in DWR's Climate Action Plan Phase I. Control of fugitive dust is required by SMAQMD's Rule 403 and enforced by District staff.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.
- To the extent practicable, implement the following to reduce construction related emissions:
    - Encourage the construction contractor to use repowered engines, electric drive trains, or high-efficiency technologies, as well as trucks equipped with on-road engines for on-site material hauling.
    - Encourage the construction contractor to use alternative fuel generators.
    - Limit deliveries of materials and equipment to off peak traffic congestion hours.
    - Recycle construction waste (e.g., concrete, metal).

The project would not exceed CEQA significance thresholds and would implement all applicable ECPs identified in the *CEQA Guide*. Projects related to construction air pollutant emissions would be **less than significant**.

Project Operational Impacts

The Project would enhance/restore wetlands and riparian/scrub-shrub habitat on a portion of Twitchell Island, with the remaining area continuing under agriculture. After the proposed habitat enhancement/restoration improvements are in place, the operational air pollutant emissions associated with agriculture on Twitchell Island would be reduced. Thus, the Project's operational air pollutant emissions would be **less than significant**.

c. Expose sensitive receptors to substantial pollutant concentrations?

Cancer risk is the lifetime probability of developing cancer from exposure to carcinogenic substances. Following health risk assessment (HRA) guidelines established by the Office of Environmental Health Hazard Assessment (OEHHA), incremental cancer risks are estimated by applying established toxicity factors to modeled TAC concentrations. Adverse health impacts unrelated to cancer are measured using a hazard index (HI), which is defined as the ratio of a project's incremental TAC exposure concentration to a published annual average reference exposure level (REL) as determined by OEHHA. If the HI is greater than 1.0, then the impact is considered to be significant (OEHHA 2015).

Ambient DPM produced by off-road diesel-powered equipment could substantially affect nearby sensitive receptors near the locus of project activity if such emissions were high enough and lasted long enough. However, the CEQA significance thresholds for TACs are based on assumptions of exposure duration of a year or longer (i.e., at least a year for chronic non-cancer health impacts, a full 70 years for cancer risk). Given that all Project phases would be completed quickly (i.e., over 2 months in the Summer 2024), the TAC exposure period for any local residential receptors would be very short in comparison to the exposure times needed to threaten adverse health impacts. Further, TAC emissions from Project restoration activities would be dispersed over about 40 acres of wetland and about 80 acres of riparian and scrub-shrub habitat within the 185-acre Project Area footprint on Twitchell Island. Finally, the Project Area and vicinity is agricultural and sparsely populated; the nearest existing residential use is more than 1000 feet from its north boundary. Thus, Project-related TAC health risks would be substantially below the CEQA health-risk significance thresholds and TAC impacts from Project emissions would be **less than significant**.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The SMAQMD's Rule 402 (Nuisance) prohibits any person or source from emitting air contaminants that cause detriment, nuisance, or annoyance to a considerable number of persons or the public. Odiferous compounds can be generated from a variety of source types including a substantial number of diesel-fueled equipment and heavy-duty trucks.

The construction fleet required for Project restoration work would be relatively small (i.e., on any given day, a backhoe, a dozer, at most 3 tractors, and a water truck). This equipment would be operating for a relatively brief time (i.e., 2 months), the odiferous compounds would be dispersed over about 40 acres of wetland and about 80 acres of riparian and scrub-shrub habitat, and on a site that is 1000 feet or more from the nearest existing residence. Thus, any perceptible odor impacts from equipment exhaust to the few local residents would be transitory. Project impacts related to odors would be **less than significant**.

4.4 Biological Resources

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?		X		
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?				X
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?			X	
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?			X	
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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?				X

4.4.1 Environmental Setting

The Project Area is surrounded by agricultural land to the east, west, and south; riparian habitat to the southeast; and Sevenmile Slough to the north. Dominant habitat types within the Project Area include ruderal/disturbed, nonnative annual grassland, agricultural grassland, and freshwater emergent wetland.

Biological communities are defined by species composition and relative abundance. Table 6 and Figure 4 present the biological communities identified within the Project Area. A wetland delineation report prepared by DWR in 2014 further describes water and wetland resources within the Project Area (DWR 2014).

Table 6. Biological Communities within the Project Area

Biological Community	Approximate Acreage
Agricultural Grassland	135.8
Nonnative Annual Grassland	44.2
Freshwater Emergent Wetland	2.5
Ruderal	2.1
Total	**184.7**

Source: DWR 2016.

Agricultural Grassland

The majority of the Project Area (135.8 acres) is currently managed as an agricultural grassland that is flood-irrigated for cattle grazing. These areas are dominated by non-native vegetation typical of long-term grazing practices in the Sacramento-San Joaquin Delta including Bermuda grass (*Cynodon dactylon*), meadow barley (*Hordeum murinum*), spiny cocklebur (*Xanthium spinosum*), bird's foot trefoil (*Lotus corniculatus*), and bull thistle (*Circium vulgare*). Himalayan blackberry brambles (*Rubus armeniacus*) are common along the margins of this habitat type. Agricultural grassland communities may support low-quality habitat for several special-status plant species known to occur in the Project vicinity. This habitat type does not correspond to any vegetation classification described in *A Manual of California Vegetation, Second Edition* (CNPS 2023).

Nonnative Annual Grassland

Portions of the Project Area (44.2 acres) do not receive high levels of irrigation and have taken on the characteristics of nonnative annual grassland common in the Central Valley region. These non-native annual grassland communities are comprised primarily of non-native grasses and weeds, annual herbaceous species such as meadow barley, soft chess (*Bromus hordeaceous*), yellow star thistle (*Centaurea solstitialis*), and Italian thistle (*Carduus pycnocephalus*). This habitat type is unlikely to support special-status plant species and does not correspond to any vegetation classification described in *A Manual of California Vegetation, Second Edition* (CNPS 2023).

Freshwater Emergent Wetland

Freshwater emergent wetland habitats comprise about 2.5 acres of the Project Area. This community is associated with depressions and margins of irrigation ditches subject to inundation for extended periods during the growing season and are dominated by emergent vegetation. Plants adapted to wet conditions common in this habitat include tall flatsedge (*Cyperus eragrostis*), pale smartweed (*Persicaria lapathifolia*), spotted lady's thumb (*Persicaria maculosa*), Italian ryegrass (*Festuca perennis*), knotgrass (*Paspalum distichum*), rabbit's-foot grass (*Polypogon monspeliensis*), and cursed buttercup (*Ranunculus sceleratus*).

This habitat type could support several special-status plant species known to occur in the vicinity of the Project Area. This habitat type most closely corresponds to the *Polygonum lapathifolium – Xanthium strumarium* Provisional Herbaceous Alliance (Smartweed – cocklebur patches) described in *A Manual of California Vegetation, Second Edition* (CNPS 2023).

Ruderal

Highly disturbed portions of the Project Area (2.1 acres) are characterized by invasive weedy vegetation including nonnative Bermuda grass, foxtail (*Hordeum murinum ssp. glaucum*), Johnsonsgrass (*Sorghum halapense*) and native bluegrass (*Poa secunda*), milk thistles (*Silybum murianum*), yellow star thistles, Italian thistles, bull thistles, clovers (*Trifolium* spp.), red-stemmed filaree (*Erodium cicutarium*), dock (*Rumex* spp.) and knotweeds (*Persicaria* spp.). This habitat type does not correspond to any vegetation classification described in *A Manual of California Vegetation, Second Edition* (CNPS 2023).

4.4.2 Impact Discussion

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?

A query of the California Natural Diversity Database for the nine U.S. Geological Survey (USGS) 7.5-minute quadrangles containing and surrounding the Project Area (CDFW 2023) and a query of the Information for Planning and Consultation system (USFWS 2023) identified 48 special-status plant species and 62 special-status animal species that are documented to occur within the search area. Appendix B lists the scientific names, common names, status, habitats, and likelihood of occurrence within the Project Area of the special-status species identified. Of the species identified, 9 special-status plant species and 15 special-status animal species have potential to occur within the Project Area or could be affected by the Project. As described below, impacts related to special-status species would be l**ess than significant with mitigation incorporated**.

Birds

Based on recorded occurrences and habitat requirements, the following 12 special-status bird species may occur within the Project Area: tricolored blackbird (*Agelaius tricolor*; State Threatened [ST], California Species of Special Concern [SCC]), lesser sandhill crane (*Antigone canadensis canadensis*; SCC), greater sandhill crane (*Antigone canadensis tabida*; Fully Protected [FP]), burrowing owl (*Athene cunicularia*; SCC), Swainson's hawk (*Buteo swainsoni;* ST), northern harrier (*Circus hudsonius*; SSC), mountain plover (*Charadrius montanus*; SSC), white-tailed kite (*Elanus leucurus*; FP), loggerhead shrike (*Lanius ludovicianus;* SSC), Modesto song sparrow (*Melospiza melodia*; SCC), bank swallow (*Riparia riparia;* ST), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*; SCC). As summarized in Appendix B, all of these species may use the Project Area for foraging; in addition, the Project Area (or immediate vicinity) may provide nesting habitat for tricolored blackbird, burrowing owl, Swainson's hawk, and northern harrier. Implementation

of Mitigation Measures BIO-1 through BIO-4, listed below, would reduce potential impacts to special-status bird species during construction by providing environmental awareness training; prescribing oversight by a qualified biologist for encounters with special-status species; avoiding work during the nesting season and/or providing nest buffers where appropriate; and requiring pre-construction surveys for burrowing owls prior to earthwork and implementing appropriate avoidance measures if burrows are identified near work areas. Upon Project completion, restored and enhanced riparian areas and wetlands would provide improved and increased habitat for special-status birds. No permanent impacts are expected with this restoration project. Any impacts would be temporary associated with construction and maintenance of this restoration project. As such, impacts related to special-status bird species would be **less than significant with mitigation incorporated.**

Migratory Birds & Birds of Prey

As noted above, the treeless and low vegetation characteristics of the Project Area provide marginal potential nesting habitat for some birds of prey and birds protected under the Migratory Bird Treaty Act (MBTA). The nesting season is generally from February 1 through August 31. An active nest is one which contains eggs or unfledged young. A potentially significant impact would occur if an active nest were removed during construction or if construction disturbance caused nest abandonment prior to fledging of the young birds. The Project Area also provides foraging habitat for MBTA protected species and birds of prey, including Swainson's hawk, white-tailed kite, and northern harrier. Mitigation Measures BIO-1, BIO-2, and BIO-4, listed below, would minimize the temporary effects on migratory birds and birds of prey during construction or maintenance activities. No permanent impacts are expected with this restoration project. Impacts related to migratory birds and birds of prey would be **less than significant with mitigation incorporated.**

Fish

Water is conveyed to the Project Area via an unscreened siphon located in a 3.2-mile section of Sevenmile Slough. This siphon would be improved as part of the Project and would be utilized to deliver water to the Project Area after construction. Sevenmile Slough is a backwater slough with extremely restricted access to adjacent waterways of the Sacramento and San Joaquin Rivers (see Figure 2). At the western end of this section of Sevenmile Slough, Brannan Road crosses and blocks the slough, 2,200 feet from Three-Mile Slough. At the eastern end, West Twitchell Road crosses and blocks the slough at the junction of Jackson Slough Road and West Brannan Road near Owl Harbor. This point is 1.20 miles up Sevenmile Slough from the San Joaquin River. At each of these roadway berms are two 48-inch culverts with flapper check valves that allow water to flow one direction, east from Owl Harbor, west, to empty at Brannan State Park. Water flows tidally through the flapper check valves into this section of Sevenmile Slough.

Although the San Joaquin River, bordering the south and southeast side of Twitchell Island, is designated as critical habitat for several special-status fish species, the presence of migrating or pelagic fish within the restricted section of Sevenmile Slough is extremely unlikely. An evaluation conducted by fish biologist Randall Mager, Ph.D., describes that in order to reach the siphon, fish would have to actively leave the river current, swim through 1.2 miles of slow-moving water, past an existing marina, through an existing

dark culvert, and under 2,000 to 5,000 feet of solid water hyacinth, and another mile through standing water (Randall Mager, pers. comm., 2016). Alternatively, in the rare occurrence that fish are in Three-Mile Slough, they would have to actively swim for approximately 0.5 mile through standing water, through an existing dark culvert that is only open on an ongoing tide, and through an additional 1.7 miles of standing water. According to Dr. Mager, chinook salmon, steelhead, longfin smelt, and delta smelt do not exhibit the kind of swimming behaviors required to reach the restricted section of Sevenmile Slough that delivers water to the Project Area via the existing siphon. These conclusions were discussed with representatives from CDFW, National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS) during an on-site visit (Randall Mager, pers. comm., 2016). Based on this evaluation, **no impact** would occur to special-status fish species by use of the existing siphon for the proposed Project, or otherwise during Project construction.

Mammals

One special-status mammal species – western red bat (*Lasiurus frantzii*; SSC) – has the potential to occur in the Project Area (Appendix B). Western red bat occurs throughout the Central Valley and is primarily associated with lowland riparian areas. Roosting habitat includes forests and woodlands from lowlands up through mixed conifer forests of mountains; foraging habitat includes grasslands, shrublands, open woodlands and forests, and croplands (Harris 1999). Two occurrences of western red bat were reported in 1999 on Brannan Island in grassland areas near riparian corridors approximately 1.5 to 2 miles east and north of the Project Area, respectively (CDFW 2023).

The Project Area provides grassland foraging habitat and riparian corridors north of the Project Area along Sevenmile Slough may provide roosting habitat. Project construction would not disturb roosting habitat. Once complete, the proposed Project would increase suitable roosting and foraging habitat for western red bat. Implementation of Mitigation Measures BIO-1 and BIO-2, listed below, would reduce potential impacts to special-status mammal species during construction by providing environmental awareness training and prescribing oversight by a qualified biologist for encounters with special-status species. No permanent impacts are expected with this restoration project. Impacts related to special-status mammal species would be **less than significant with mitigation incorporated.**

Reptiles

Two special-status reptile species – western pond turtle (*Emys marmorata*; Federal Proposed [FP], SCC) and giant garter snake (*Thamnophis gigas*; FT, ST) – have the potential to occur in the Project Area (Appendix B).

Western Pond Turtle

Western pond turtle is uncommon to common in aquatic habitats throughout California. This species is normally associated with permanent ponds, lakes, streams, irrigation ditches, and permanent pools on ephemeral streams. It requires basking sites, such as submerged logs, rocks, or muddy banks, and quickly retreats underwater when humans or predators approach. During spring, females move overland usually within 325 feet of the water to find suitable sites for laying eggs, but occasionally they nest up to 1,300 feet away.

Western pond turtle may occur within the Project Area. The small patches of freshwater wetlands and annual grassland on and adjacent to the Project Area could provide suitable nesting habitat. Eggs and hatchlings would likely be preyed on by wading birds, bullfrogs, snakes, and mammals. While it is unlikely that western pond turtle will be impacted by Project activities, potential impacts would be reduced with incorporation of Mitigation Measures BIO-1, BIO-2, and BIO-5. Once complete, the proposed Project would increase and improve suitable habitat for western pond turtle through the creation of wetland and riparian habitat. No permanent impacts are expected with this restoration project. Impacts related to western pond turtle would be **less than significant with mitigation incorporated.**

Giant Garter Snake

Giant garter snake is federally and state-listed as threatened. Giant garter snakes are endemic to the Central Valley and adjacent foothills up to an elevation of approximately 300 feet above mean sea level. Although the boundaries of its original distribution are uncertain, records coincide with the historical distribution of the large flood basins, freshwater marshes, and tributary streams of the Central Valley (Hansen and Brode 1980). Giant garter snakes inhabit natural and artificial wetlands, including irrigation and drainage canals, ricelands, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands within their historical range. Habitat requirements consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.

Twitchell Island lies in the White Slough management area of the Delta Basin Recovery Unit designated in the USFWS's (2017) Final Recovery Plan. The existing 2.5 acres of freshwater wetlands within the Project Area likely do not meet the specific habitat needs of giant garter snakes because they lack the emergent vegetative cover and adequate forage opportunities required by the species. The irrigation ditches and ruderal wetlands in the Project Area likely do not provide adequate water for food (primarily small fishes) during the snakes' active season.

DWR conducted habitat assessments and trapping surveys for giant garter snake on Twitchell and Sherman Islands in 2009 as part of ongoing planning activities. Methods employed were designed to assess habitat quality and detect self-sustaining subpopulations of giant garter snake on the islands. The total trapping effort amounted to approximately 14,000 trap days, 2,800 of which were conducted at four sites on central Twitchell Island out of twenty total sites. Halstead and others (USGS 2011) subsequently published recommendations for detection of giant garter snake presence in low-density areas. Although DWR's methodology was not as robust as the 2011 recommendations, no giant garter snakes were observed or captured as a result of the 2009 effort.

However, three recent observations in April 2016 of giant garter snake on Sherman and Twitchell Islands suggest the potential for giant garter snake to occur in the Project Area. The occurrence on Twitchell Island was just south of the Eastend Subsidence Reversal Wetlands on the levee crown road. Considering the potential for giant garter snakes to be in the Project Area, the Project would implement Mitigation Measures BIO-1, BIO-2, and BIO-5, to reduce potential impacts during construction. Once complete,

the proposed Project would increase and improve suitable habitat for giant garter snake through the creation of 40 acres of freshwater wetland habitat. No permanent impacts are expected with this restoration project. Impacts related to giant garter snake would be **less than significant with mitigation incorporated.**

Plants

A total of 48 special-status plant species are known to occur within the nine USGS 7.5-minute topographic quad search area around the Jersey Island Quadrangle (see Appendix B). Based on available data on soils, habitats, and species-specific requirements, it was determined that the following 9 special-status plant species have potential to occur within the Project Area: watershield (*Brasenia schreberi*), bristly sedge (*Carex comosa*), woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Delta mudwort (*Limosella australis*), eel-grass pondweed (P*otamogeton zosteriformis*), Sanfords arrowhead (*Sagittaria sanfordii*), side-flowering skullcap (*Scutellaria galericulata*), and Suisun Marsh aster (*Symphyotrichum lentum*).

A DWR botanist conducted two site visits throughout the growing season on May 30, and July 3, 2014 (DWR 2015). The surveys were conducted in accordance with California Native Plant Society's (CNPS) Botanical Survey Guidelines, CDFW Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities, and USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. Land cover types and vegetative communities were characterized by referencing commonly used vegetation classification systems including *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation* (CNPS 2023). The survey was floristic in nature, and all observed plant species were noted. Plant species identification and nomenclature follows *The Jepson Manual; Vascular Plants of California* (Baldwin, ed. 2012).

No special-status plant species were identified during the survey (DWR 2015). However, plant species composition may have changed since the surveys were conducted and, based on suitable habitat, it is possible that special-status plants may occur within the Project Area. If they do occur onsite, they could be disturbed during Project construction. Implementation of Mitigation Measure BIO-6 would reduce this impact by requiring pre-construction surveys and revegetation. No permanent impacts are expected with this restoration project. As such, impacts to special-status species plants would be **less than significant with mitigation measures incorporated.**

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?

No riparian habitat or other identified sensitive natural community is present in the Project Area. Upon completion, the Project would benefit natural communities by enhancing and restoring wetland and riparian habitat. As such, **no impact** to existing riparian habitat or other sensitive natural community would occur.

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?

A preliminary jurisdictional determination was issued for the Project in 2016 and identified approximately 2.5 acres of federally protected wetlands within the Project Area (USACE 2016). Although, a recent ruling issued by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers in 2023 amended the definition of "waters of the United States" to conform with the recent Supreme Court decision in Sackett v. EPA and resulted in revisions to federally protected wetlands, previous jurisdictional determinations, including the one issued for the Project, are still honored. As such, wetlands within the Project are federally protected. In addition, wetlands within the Project Area are also state-protected, per the state wetland definition issued by the State Water Resources Control Board in April 2019.

Project construction would require ground-disturbing activities within existing identified wetlands. Prior to Project implementation, all required state and federal permits required for work in wetlands would be secured. Such authorizations would include avoidance and minimization measures to reduce Project-related impacts on wetlands. Moreover, once complete, the Project would result in a net increase of approximately 40 acres of wetlands on site, including an increase in aquatic resource functions and services (including those related to wildlife habitat and water quality). No permanent impacts are expected with this restoration project. As such, impacts related to protected wetlands would be **less than significant.**

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?

The Project would not impact the movement of any native resident or migratory fish or wildlife species. No new diversions or levee alternations are proposed. An existing siphon would provide water to the Project Area from Sevenmile Slough. Sevenmile Slough is a restricted backwater channel and does not provide habitat for native resident or migratory fish species (Randall Mager, pers. comm., 2016). Further, in order to reach Sevenmile Slough, fish would need to actively leave the Sacramento River current, actively swim through standing water, dark culverts, and water hyacinth. According to Dr. Mager, chinook salmon, steelhead, longfin smelt, and delta smelt do not exhibit the kind of swimming behaviors required to reach the restricted section of Sevenmile Slough, and as such, it is highly unlikely for fish to be present in Sevenmile Slough (Randall Mager, pers. comm., 2016). The Project would not involve activities within Sevenmile Slough. The Project would restore and enhance wetland and riparian habitat that would benefit migratory waterfowl and other wildlife species. As such impacts related to migratory species, wildlife corridors, and nursery sites would be **less than significant**.

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

The Project is proposed on land owned by DWR. Local policies or ordinances (e.g., Sacramento County Tree Preservation Ordinance) are not applicable to the Project. As such, **no impact** related to a local policy or ordinance protecting biological resources would occur.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local habitat conservation plan applicable to the Project Area or its vicinity has been adopted. The Project is located within the Sacramento-San Joaquin Delta and is within the Delta Stewardship Council jurisdictional boundary. A certificate of consistency with the Delta Plan would be prepared prior to Project implementation. As such, the Project would not conflict with an adopted local, regional or state habitat conservation plan. **No impact** would occur.

4.4.3 Mitigation Measures

Mitigation Measure BIO-1: Environmental Awareness Training

All construction personnel shall participate in a Worker Environmental Awareness Training Program conducted by a qualified biologist or resource specialist prior to engaging in construction or invasive plant management activities. The program shall consist of a presentation made by a qualified biologist that includes information regarding the identification, potential presence, legal protections, avoidance and minimization measures, and applicable mitigation measures for all biological resources with the potential to occur within or immediately adjacent to the Project Area. Construction personnel shall be informed of the procedures to follow should a biological resource be disturbed during Project activities.

Mitigation Measure BIO-2: Special-Status Animal Species Observations and Encounters

If a special-status animal species is encountered during Project construction or maintenance activities, all activities in the surrounding area that have the potential to result in the harm, injury, or death of the animal shall be suspended until otherwise approved to proceed by a qualified biologist. A qualified biologist shall determine if the animal should be avoided or relocated; to the extent possible, the animal should be allowed to leave the work area on its own volition. The appropriate agencies (i.e., CDFW, USFWS, and/or NMFS) shall be notified of all observations of any special-status animal species in or adjacent to the Project Area within one week of the occurrence and a record submitted to the California Natural Diversity Database.

Mitigation Measure BIO-3: Burrowing Owl Protection Measures

Preconstruction surveys shall be conducted for burrowing owl no less than 14 days and no more than 30 days prior to the start of construction or invasive plant management activities. If an active burrow is found during the breeding season (February 1 through August 31), markers shall be used to clearly demarcate an avoidance buffer zone so that vehicles and workers avoid disturbing the area. Buffer zones shall be implemented following recommendations in the CDFW Staff Report on burrowing owl mitigation (CDFW 2012). Any active burrows shall be monitored by a qualified biologist throughout construction to determine the

effectiveness of buffers, visual screens, or other measures, and to determine if the activity is jeopardizing an active nest. The Project proponents shall consult with CDFW for assistance in developing site-specific solutions, as needed.

Mitigation Measure BIO-4: Measures to Protect Migratory Birds and Birds of Prey

If construction or invasive plant management activities is scheduled to begin during the avian nesting season between February 1 and August 31, then a qualified biologist shall conduct a preconstruction survey for active bird nests in and within 1/4 mile of the Project Area within 3 days prior to the start of activities. In addition, if there is a break in construction or invasive plant management activities of more than 2 weeks then subsequent surveys will be conducted. If no active nest of a bird of prey or bird protected under the Migratory Bird Treaty Act (MBTA) or Fish and Game Code 3503 or 3.503.5, 3511, 3513 is found, then no further mitigation measures are necessary.

If an active nest of a protected bird is found, then the biologist shall flag a minimum 250-foot Environmentally Sensitive Area (ESA) around the nest in the proposed work area if the nest is of a bird of prey, a 1/4-mile ESA (1,320 feet) for Swainson's hawk, and a minimum 100-foot ESA around the nest tree if the nest is of an MBTA bird other than a bird of prey. Should activities cause the nesting bird to vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the qualified biologist should increase the exclusionary buffer such that activities are far enough from the nest to stop this agitated behavior by the bird. If there is a change in the type of activity that is conducted, a qualified biological monitor shall be present to determine if the change in activity affects the nesting behavior (i.e., clearing of vegetation to earthmoving). The exclusionary buffer should remain in place until the chicks have fledged or as otherwise determined by a qualified biologist. No Project activity shall be allowed in the buffer until the biologist determines that the nest is no longer active, or unless monitoring determines that a smaller buffer will protect the active nest. The buffer may be reduced if the biologist monitors the Project activities and determines that no disturbance to the active nest is occurring. The size of suitable buffers depends on the species of bird, the location of the nest relative to Project activities, the type of Project activities during the time the nest is active, and other Project-specific requirements.

Mitigation Measure BIO-5: Special-status Reptile Species Protection Measures

The following protection measures shall be implemented to avoid impacts to western pond turtle and giant garter snake during construction or invasive plant management activities.

- All activities proposed within giant garter snake habitat (i.e., aquatic and upland habitat within 200 feet of aquatic margins) shall be conducted during the species active period, (i.e., between May 1 and October 1) when snakes are expected to be able to actively move and avoid danger. If activities are anticipated to go beyond October 1, the Project proponents shall contact USFWS and CDFW as soon as possible, but not later than September 15 of the year in question to determine if additional measures are necessary to minimize impacts. Project activities within 200 feet of aquatic habitat shall be avoided during the snake's inactive season.
- Inundated areas proposed for ground disturbing activities shall be dewatered 15 days prior to the initiation of construction or plant management activities. If complete dewatering is not possible, potential prey (e.g.,

fish and tadpoles) shall be removed so that special-status reptile species are not attracted to the Project Area.

- A qualified biologist shall conduct preconstruction surveys for western pond turtle and giant garter snake within 72 hours prior to any initial ground disturbance within 200 feet of all suitable habitat, to identify locations where special-status reptiles may be present, evaluate current activity status in the Project Area, and protect the species and its habitat from avoidable construction-related disturbance. The Project Area shall be re-inspected by a qualified biologist whenever a lapse in construction activity of 5 days or greater has occurred.
- The Project proponent shall prohibit use of erosion control materials potentially harmful to western pond turtle, giant garter snake, and other species, such as mono-filament netting (erosion control matting) or similar material, in potential habitat. Tightly woven fiber netting or similar material shall be used for erosion control to ensure that species do not get trapped and become entangled.
- Access routes and staging areas shall be located in previously disturbed areas, to the extent possible. The number and size of access routes and staging areas, and the total area of ground disturbance shall be limited to the minimum necessary. Routes and boundaries shall be clearly demarcated. Movement of heavy equipment to and from the Project Area shall be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 15-mile-per-hour speed limit within the Project Area.

Mitigation Measure BIO-6: Pre-construction Special-Status Plant Species Surveys

Pre-construction surveys for special-status plant species shall be performed by a qualified botanist familiar with plant species in the region during the appropriate blooming period(s).

If special-status plants are located in the Project Area, the botanist shall stake out consolidated populations (i.e., more than 10 plants in a grouping); annual plant species shall only be identified with flagging if work is proposed during their blooming period. If plant species cannot be avoided and are at risk of being adversely affected, a qualified botanist shall collect seeds, bulbs, and cuttings for propagation and planting in specific Project revegetation efforts.

Figure 4. Biological Communities within the Project Area

Twitchell Island Wetland Enhancement and Restoration Project

Project Proponent: Department of Water Resources
Location: Sacramento County, CA
Sections 08, 09 / Township 3N / Range 3E
Latitude/Longitude: 38.114785, -121.657261
Prepared by: Ducks Unlimited
Date Prepared: September 2023

Path: C:\Users\kuntermoser\OneDrive - Ducks Unlimited Incorporated\ECT_GIS_PROJECT FILES\CA\CA-437-6_TIMES\CA-437-6_TIMES.aprx

4.5 Cultural Resources

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?		X		
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c. Disturb any human remains, including those interred outside of dedicated cemeteries?		X		

4.5.1 Environmental Setting

The Project Area is located on reclaimed marshland used primarily as pasture and cropland. Soils in the Project Area are composed of Delta Mud derived from sediment deposits at or near sea level in the tidal marshes of the Sacramento-San Joaquin Delta dating to the Holocene Epoch (11,700 years ago to present).

When European settlers came to the region, the Project Area was within the Plains Miwok territory (Kroeber 1925; Levy 1978 as cited in Tom Origer & Associates 2023). From the late 18th and early 19th centuries, Spanish missionaries, tradesman, and ranchers visited the region. In 1850, the Swamp and Overflowed Land Act allowed the government to sell swamp and overflowed lands, including the tidal marshlands of the Sacramento-San Joaquin Delta, to the public to incentivize the draining of wetlands for agriculture. In 1869, levees were constructed on Twitchell Island from peat blocks, and later from dredged materials. The island has been under agricultural use since its reclamation.

As described below, a Tribal Cultural Landscape eligible for listing in the National and California Registers of Historic Resources was previously identified in the Project Area. No other Native American, historic, or archaeological resources are known to the Project Area (Tom Origer & Associates 2023).

4.5.2 Impact Discussion

Would the project:

a. Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

A cultural resource assessment was conducted for the Project by Tom Origer and Associates in 2023. One historic resource eligible for inclusion on both the National Register and the California Register of

Historic Resources was previously identified within the Project Area: the Sacramento River Tribal Cultural Landscape (P-34-005225). The Tribal Cultural Landscape is approximately 55 miles in length and roughly encompasses the Lower Sacramento River environment. The primary character defining elements of this landscape are the waterways, tule habitat, fisheries, and other wildlife. However, since the Project Area is composed of pastureland used for grazing by sheep and cattle, it does not include any defining characteristics of the resource (Tom Origer & Associates 2023). As such, Project-related modification would not adversely affect this resource. Rather, the restoration of wetland and riparian habitats within the Project Area would contribute to and improve the quality and integrity of this resource. No other historical resources were identified within the Project Area. However, the possibility of discovering previously unidentified resources still remains. Implementation of Mitigation Measure CUL-1 would ensure that if accidental discovery of a previously unknown resource were to occur during Project construction, ground-disturbing activities would be halted and the impacts to the resource would be avoided or minimized. As such, impacts related to historical resources would be **less than significant with mitigation incorporated**.

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

No archeological resources pursuant to CEQA Guidelines § 15064.5 were identified within the Project Area (Tom Origer & Associates 2023). Although the likelihood of encountering archeological resources during Project construction is low, the possibility still remains. Implementation of Mitigation Measure CUL-1 would ensure that if accidental discovery of a previously unknown resource were to occur during Project construction, ground-disturbing activities would be halted and the impacts to the resource would be avoided or minimized. As such, impacts related to an archeological resource would be **less than significant with mitigation incorporated**.

c. Disturb any human remains, including those interred outside of dedicated cemeteries?

No known human remains or burial sites were identified within the Project Area (Tom Origer & Associates 2023). However, there is potential for previously unknown human remains to be encountered during ground-disturbing Project construction activities. As such, Mitigation Measure CUL-2 would be implemented to protect previously unknown human remains. Impacts related to human remains would be **less than significant with mitigation incorporated.**

4.5.3 Mitigation Measures

Mitigation Measure CUL-1: Accidental Discovery of Cultural Resources

If buried cultural resource materials are encountered, all soil disturbing work shall be halted at the location of the discovery until a qualified archeologist completes a significance evaluation of the find(s) pursuant to CEQA Guidelines § 15064.5 and Section 106 of the National Historic Preservation Act. Prehistoric archeological site indicators that may be found within the general area include chipped chert and obsidian tools and tool manufacture waste flakes; grinding and hammering implements that look like fist-size, river-tumbled stones; and for some rare sites, locally darkened soil that generally contains abundant archaeological specimens. Historical remains that have been found in the general area commonly include items of ceramic,

glass, and metal. Features that might be present include structure remains (e.g., cabins or their foundations) and pits containing historical artifacts.

Mitigation Measure CUL-2: Accidental Discovery of Human Remains

If human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the county coroner contacted. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission. The Native American Heritage Commission will identify the person or persons believed to be most likely descendent of the deceased Native American. The most likely descendent will make recommendations regarding the treatment of the remains with appropriate dignity.

4.6 Energy

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?			X	
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

4.6.1 Environmental Setting

Energy resources include petroleum, natural gas, renewables (e,g., solar, wind, hydroelectric power), and alternative fuels such as biodiesel and hydrogen. Two gas wells previously existed in the Project Area. However, both were relocated outside of the Project Area in 2018 and were previously idle or plugged for over 20 years. No energy resources exist within the Project Area.

4.6.2 Impact Discussion

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?

The consumption of energy resources would primarily occur during Project construction. Specifically, petroleum products such as gasoline and diesel would be used to operate heavy construction equipment. Once operational, no ongoing energy source would be required, as all water control structures would be manually operated, and no electric pumps would be installed. Some energy consumption would be required for the operation of heavy equipment during invasive plant management activities (i.e., mowing, grinding/tilling, or excavating). However, construction and invasive plant management activity energy consumption would be temporary and would be limited to the level of consumption needed to complete the Project and maintain site conditions. As such, the Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Project impacts related to energy consumption would be **less than significant.**

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

As discussed above, energy consumption would be limited to Project construction activities and invasive plant management activities. Heavy equipment used would meet current vehicle efficiency standards. The Project would not conflict with a plan for renewable energy or energy efficiency. **No impact** would occur.

4.7 Geology and Soils

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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? Refer to Division of Mines and Geology Special Publication 42.			X	
ii. Strong seismic ground shaking?				
iii. Seismic-related ground failure, including liquefaction?				
iv. Landslides?				
b. Result in substantial soil erosion or the loss of topsoil?			X	
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?				X
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?				X
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?				X
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X

4.7.1 Environmental Setting

Geologically, the Sacramento-San Joaquin Delta is part of the Central Valley geomorphic province and consists of 3- to 6-mile-deep alluvial deposits on top of sedimentary bedrock that accumulated about 175

million to 25 million years ago (CALFED 2000). Several faults run along the intersection of the North American and Pacific tectonic plates under the Coast Ranges, including the Midland and Rio Vista faults which underlie the Sacramento-San Joaquin Delta (CGS 2023). The Midland fault runs north to south under Twitchell Island less than 1,000 feet east of the Project Area and the Rio Vista fault runs under the Sacramento River, approximately 10,000 feet west of the Project Area. For this fault, the likelihood of a magnitude 6.7 earthquake or greater in the next 29 years is about 0.1 percent (USGS 2015). The Project Area is not within a mapped Alquist-Priolo Earthquake Fault Zone, liquefaction zone, or landslide zone (CGS 2021).

4.7.2 Impact Discussion

Would the project:

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

ii. Strong seismic ground shaking?

iii. Seismic-related ground failure, including liquefaction?

iv. Landslides?

While the Project Area is not within a Alquist-Priolo Earthquake Fault Zone, potential for seismic activity exists within the region and an earthquake occurring in a nearby seismically active area could make the site vulnerable to levee failure and flooding by liquefaction and settling. The western Sacramento-San Joaquin Delta islands are considered to be the most vulnerable to seismic levee failure and would have the greatest salinity intrusion impact on the water supply if they failed.

The Project would not involve or promote the development of structures for human occupancy and, therefore, would, not expose people or structures to risk of loss, injury, or death due to seismic related activity or landslides. Habitat restoration efforts proposed as part of the Project would reverse subsidence, thereby reducing risk of levee failure in the event of an earthquake, seismic ground shaking, or ground failure. In addition, the Project Area is relatively flat and is not prone to landslides. As such, impacts related to seismic activity would be **less than significant**.

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

The Project would involve grading activities necessary to install an underground pipeline and create wetland units in the southern portion of the Project Area. However, the Project is designed to achieve a cut fill balance and areas of disturbance would be recontoured to minimize erosion. In addition,

vegetation planting proposed by the Project would further reduce the potential for soil erosion or loss of topsoil. Once the Project is complete, the restored wetlands would promote peat soil creation through the decomposition of plant matters (i.e., tules and cattails). Thus, Project impacts related to soil erosion and the loss of topsoil would be **less than significant**.

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

The Project Area is relatively flat and is not located on a geologic unit or soil that is unstable. The proposed Project does not include structural development and the proposed grading would not result in soils becoming unstable. The Project would reverse subsidence through the creation of wetland habitat, thereby enhancing soil stability. As such, **no impact** related to soil stability would occur.

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?

The Project does not propose the construction of buildings or structures and is not located on expansive soil. **No impact** related to expansive soils would occur.

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?

The Project does not involve the use of septic tanks or wastewater disposal systems. **No impact** would occur.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Geology within the Project Area is composed of Delta Mud, a geologic deposit that dates to the Holocene Epoch (11,700 years ago to present) (Tom Origer & Associates 2023). This geologic context is too young and not of the right type to contain paleontological resources. Project activities would not extend beyond the Holocene geologic units into older sediments. Thus, there is no possibility of the presence of paleontological resources. **No impacts** related to paleontological resources would occur.

4.8 Greenhouse Gas Emissions

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?			X	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

4.8.1 Environmental Setting

Greenhouse gases (GHGs) are atmospheric gases that capture and retain a portion of the heat radiated from the earth after it has been heated by the sun. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), ozone, and water vapor. While GHGs are natural components of the atmosphere, CO_2, CH_4, and N_2O, are also emitted from human activities and their accumulation in the atmosphere over the past 200 years has substantially increased their concentrations. This accumulation of GHGs has been implicated as the driving force behind global climate change.

Human emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with organic decay processes in agriculture, landfills, etc. The global warming potential of GHGs are typically reported in comparison to that of CO_2, the most common and influential GHG, in units of "carbon dioxide-equivalents" (CO_2e).[1]

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snowpack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The California Air Resources Board (CARB) estimated that in 2020 California produced about 369 million gross metric tons (MMT) of CO_2e. Transportation sources produce about 38 percent of the state's GHG emissions, followed by industrial sources at about 23 percent, electricity generation (both in-state and out-of-state sources) at about 16 percent, and agriculture/forestry at about 9 percent (CARB 2023c).

[1] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

4.8.2 Regulatory Setting

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act (2006), required the CARB to lower State GHG emissions to 1990 levels by 2020—a 25 percent reduction statewide with mandatory caps for significant GHG emission sources. AB 32 directed CARB to develop discrete early actions to reduce GHG while preparing the Climate Change Scoping Plan to identify how best to reach the 2020 goal. (CARB 2023d)

Statewide strategies to reduce GHG emissions to attain the 2020 goal include the Low Carbon Fuel Standard (LCFS), the California Appliance Energy Efficiency regulations, the California Renewable Energy Portfolio standard, changes in the motor vehicle corporate average fuel economy (CAFE) standards, and other early action measures that would support achievement of the GHG emissions reduction goals of AB 32.

To attain the longer-range GHG emissions reductions required by AB 32 (i.e., reducing GHG emissions to 40% below 1990 levels by 2030), several additional climate change strategies were introduced in 2015: (1) reducing present petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent the share of California's electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived GHGs; (5) managing farm and rangelands, forests and wetlands to more efficiently store carbon; and (6) periodically updating the State's climate adaptation strategy.

In its most recent revision, California's *2022 Climate Change Scoping Plan* lays out the sector-by-sector strategies for achieving carbon neutrality (i.e., GHGs 85% below 1990 levels) by 2045 or earlier. An important aspect of this Scoping Plan includes reducing further the remaining emissions by ensuring that California's natural and working lands — forests, shrub-lands/chaparral, croplands, wetlands, etc. — incorporate and store more carbon in the trees, plants, and soil of those lands that cover 90 percent of the state (CARB 2022a; CARB 2022b).

The SMAQMD *CEQA Guide* specifies 1100 metric tons of CO_2e per year as significance thresholds for both construction and operational GHG emissions from land use projects, which is also considered the definition of a cumulatively considerable contribution to the global GHG burden and, therefore, of a significant cumulative impact. The *CEQA Guide* methodology and thresholds of significance have been used in this Initial Study's analysis of potential GHG impacts associated with the Project.

4.8.2 Impact Discussion

Would the project:

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

The CalEEMod (California Emissions Estimator Model, Version 2016.3.1) model was used to quantify GHG emissions associated with Project construction activities. The Project's estimated construction GHG emissions are 37.7 metric tons of CO_2e, which is below the CEQA significance threshold. In addition, several GHG emissions reduction measures consistent with DWR's Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan (2020 Update) would be implemented (see Section 2.5.5).

The Project would have no net new GHG operational emissions. By reducing agricultural activity on Twitchell Island, the project would reduce the repeated seasonal emissions of GHG from off-road equipment engaged in cultivation/harvesting activity there, and from on-road trucks hauling agricultural produce to markets off site. As such, project impacts related to GHG generation would be **less than significant**.

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

Wetlands have high carbon sequestration rates and can store carbon for decades (CDFW 2023). The Project's restoration of wetlands and riparian/scrub-shrub habitat on a portion of Twitchell Island would be in accord with the strategies of the 2020 Scoping Plan and the ultimate carbon neutrality goals of AB 32. In addition, the Project would be consistent with DWR's Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan (2020 Update) and would implement GHG reduction measures as shown in Appendix C. Thus, the Project would not conflict with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and, thus, would have a **less than significant impact**.

4.9 Hazards and Hazardous Materials

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?			X	
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?			X	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
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?				X
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

4.9.1 Environmental Setting

The Project Area has historically encompassed open space and agricultural uses. No hazardous materials sites are listed in the Department of Toxic Substances Control (DTSC) EnviroStor or State Water Resources Control Board GeoTracker databases. The nearest school is located approximately 3 miles northwest in Rio Vista and the nearest airport is located approximately 7 miles north in Rio Vista. A Phase I Site Assessment

completed by DWR's Division of Environmental Services staff in 2014 found no known hazardous materials on site (DWR 2014).

4.9.2 Impact Discussion

Would the project:

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

Project construction would involve limited transport, storage, use, or disposal of hazardous materials. Hazardous materials would include fueling and servicing construction equipment on-site, and the transport of fuels, lubricating fluids, and solvents. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials is regulated by the DTSC, U.S. Environmental Protection Agency, California Environmental Protection Agency, and the Occupational Safety & Health Administration. All hazardous materials would be stored and used in accordance with applicable federal, state, and local regulations. In addition, proper spill management, including response plans and spill kits, would be implemented and maintained onsite, as required by DWR. The proposed Project would not require extensive or on-going use of acutely hazardous materials or substances.

The Project would also include herbicide applications prior to construction to control for non-native, invasive weeds to increase the chance of survival of native vegetation, as well as ongoing herbicide use post construction to manage invasive plants. All herbicides proposed for the Project would be categorized as low toxicity, subject to National Pollutant Discharge Elimination System General Permit No. CAG990005, and would be applied by a Qualified Applicator. The transport, use and disposal of herbicides would follow manufacturers' guidelines (the label and safety data sheets) and the California Department of Pesticide Regulation's laws and regulations, and would not create a significant hazard to the public or environment. As such, Project impacts related to the routine transport, use, or disposal of hazardous materials would be **less than significant.**

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

No known hazardous materials have been identified on site that would require remediation before the Project could be initiated. The Project would not discharge any hazardous material into the environment. As described above, DWR would follow standard procedures for handling hazardous materials, including implementing spill management and response plans, and precautions would be taken to prevent conditions which would potentially release hazardous materials such as fuels, lubricating fluids, and solvents into the environment. For example, equipment would be checked for leaks prior to use and fueling would be conducted in upland areas away from water sources. As such,

Project impacts related to the release of hazardous materials into the environment would be **less than significant.**

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

No existing or proposed schools are located within one-quarter mile of the Project Area. Thus, no hazardous emissions would be emitted, and no hazardous materials would be handled, near a school. **No impact** would occur.

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

No hazardous material sites are listed in the Project Area or on Twitchell Island (DTSC 2023, SWRCB 2023). The Project would not affect any listed sites and would not create a significant hazard to the public or the environment. **No impact** would occur.

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?

The Project Area is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The closest airport, Rio Vista Municipal Airport, is located approximately 7 miles north of the Project Area. **No impact** related to airport safety hazards or excessive noise would occur.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No road closures would be required during Project construction and the Project would not impair implementation of or physically interfere with any emergency response or evacuation plans. **No impact** would occur.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The Project Area consists of vegetated open space and is not located within an identified area of high fire risk. The Project would transition ruderal grasses to wetland and riparian vegetation. Restored wetland and riparian habitats are anticipated to remain relatively wetter over a longer period, and, as such, would not increase risk of wildland fires. In addition, the Project would not result in an increase of people or structures within the Sacramento-San Joaquin Delta region or otherwise expose people to wildfire risk. Given the Project Area currently consists of vegetated open space and post-Project conditions would be relatively similar (i.e., open space), the Project would not expose people or

structures to wildland fire risk. Therefore, Project impacts related to wildland fires would be **less than significant**.

4.10 Hydrology and Water Quality

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

4.10.1 Environmental Setting

The Project Area is located within the Sacramento San Joaquin River Delta which has been leveed and diked to maintain a low water table necessary for agriculture production. The Sacramento-San Joaquin Delta serves as a vast drainage area for agricultural and urban runoff containing a variety of surplus and residual pesticides

and nutrients, in addition to contaminants leached from the soils of specific regions. Drainage from within the Sacramento-San Joaquin Delta contains dissolved organic compounds released by peat soils, which increase downstream water treatment costs and drinking water quality risks. In addition, Sacramento Valley drainage includes mercury and other wastes from historic mining activities and San Joaquin Valley drainage includes salts originating in the soils and found in irrigation water (Lund et al. 2007). The Project Area is located within Sacramento Hydrologic Basin Planning Area Unit 10 and is subject to applicable water quality standards listed in the Fifth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (CVRWQCB 2019).

The Project Area is located within the 100-year floodplain (i.e., Flood Zone AE) (FEMA 2023). Similar to most Sacramento-San Joaquin Delta islands, Twitchell Island has subsided, approximately 3 to 22 feet below sea level, and contains a network of siphons and pumps to manually deliver and drawdown water as needed. Within the Project Area, water is delivered to the site from Sevenmile Slough through a siphon. It then sheet flows across the site before coalescing in a ditch on the southern end of the Project Area. From that ditch, water flows to the southern end of Twitchell Island and is pumped off the island into the San Joaquin River.

4.10.2 Impact Discussion

Would the project:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

All ground disturbing activities proposed by the Project would occur when work areas are dry or dewatered to protect water quality. A SWPPP would be required for the Project and appropriate BMPs would be employed to reduce stormwater run-off. Once the Project is complete, water from Sevenmile Slough (delivered through an existing siphon) would be utilized to irrigate riparian plantings and inundate the wetland units. Water would then be gravity fed throughout the wetland units and collected in the existing ditch in the southern edge of the Project Area and pumped off the island into the San Joaquin River, similar to current hydrologic patterns. The proposed Project would not generate wastes that would be intentionally discharged to surface waters. In addition, as wetland vegetation establishes, the root systems would hold soil and filter pollutants, naturally improving water quality (EPA 2023). As such, Project impacts related to surface or ground water quality would be **less than significant.**

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The Project would not affect groundwater supplies or interfere with groundwater recharge because the Project would not withdraw groundwater. **No impact** would occur.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. result in a substantial erosion or siltation on- or off-site;

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

iv. impede or redirect flood flows?

By design, existing drainage patterns would be altered under the Project to restore riparian and wetland habitats. Specifically, the Project would utilize a pipeline extension from Sevenmile Slough to deliver water to the southern wetland units and to irrigate riparian plantings in the north. Restored wetland units would be completely enclosed by perimeter berms and water control structures would be installed to manage water levels. In addition, suspended sediment would be allowed to settle within the wetland units before water is discharged to the ditch and pumped off the island into the San Joaquin River. As such, changes to drainage patterns would not result in substantial erosion or siltation on- or off-site.

The Project would not increase the rate or amount of surface runoff. Existing surface runoff would collect within the wetland units, enclosed by perimeter berms, where reduced flows would allow nutrients and other sediment to settle. Water control structures would be installed to manage water levels within the wetland units and facilitate drawdown events necessary to manage vegetation on site. Drawdown events would be timed appropriately to ensure runoff water would not exceed the existing capacity of the adjacent ditch and pump station. In addition, sediment would settle within the wetland units before water is discharged into the adjacent ditch. Therefore, the Project would not provide substantial additional sources of polluted runoff.

The Project would not alter flood protection levees, construct structures within a floodplain, or impede or increase flood flows. The wetland habitat restoration proposed by the Project would help to reverse subsidence on Twitchell Island. Continued subsidence of Sacramento-San Joaquin Delta islands combined with a rise in sea level caused by global warming, significantly threatens levee stability in the Delta (Mount and Twiss 2005). By reversing subsidence and relieving pressure on island levees, the Project would help reduce the risk of levee failure and flood damage.

Project impacts related to altered drainage patterns would be **less than significant.**

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The Project is located within a flood hazard zone but is not located within a tsunami or seiche zone. Wetlands proposed by the Project may contain dissolved organic compounds. However, with appropriate management and wetland design, the presence of dissolved organic compounds within wetlands occurs at similar concentration to agricultural areas currently present in the Project Area. Methylmercury is also often present within wetland habitats. However, several portions of the proposed wetland units would be permanently inundated, thereby limiting methylmercury production. In addition, the Project would reverse subsidence, stabilize levees, and reduce the risk of flood inundation. As such, impacts related to the release of pollutants in a flood hazard, tsunami, or seiche zone would be **less than significant**.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Project would obtain all required authorizations from the Central Valley Regional Water Quality Control Board and would comply with all permit conditions to protect water quality, consistent with the Sacramento River and San Joaquin River Basin Plan. A SWPPP would also be prepared including BMPs to minimize effects on water quality. As such, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan and Project impacts would be **less than significant**.

4.11 Land Use and Planning

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

4.11.1 Environmental Setting

The Project Area is located on Twitchell Island in the southwestern portion of Sacramento County. The Project Area is designated as agricultural cropland and zoned Agricultural – 80 acres (Sacramento County 2013; Sacramento County 2023). Areas surrounding the Project Area primarily consist of livestock pasture and cropland. Approximately five residences are located northwest of the Project along Twitchell Island Road.

4.11.2 Impact Discussion

Would the project:

a. Physically divide an established community?

The Project is not located within an established community. As such, the Project would not physically divide a community and **no impact** would occur.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Riparian and wetland habitat restoration as well as continued agricultural use are consistent with the Sacramento County General Plan and Zoning. The Project would also obtain a certification of consistency with the Delta Plan from the Delta Stewardship Council prior to implementation. The Project would not conflict with any land use plan, policy, or regulation and **no impact** would occur.

4.12 Mineral Resources

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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 a value to the region and the residents of the state?				X
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?				X

4.12.1 Environmental Setting

Mineral resources in Sacramento County include natural gas, petroleum, sand, gravel, clay, gold, silver, peat, topsoil, and lignite. The primary natural gas production areas of Sacramento County are located approximately three miles northeast of the Project Area (Sacramento County 2011). Peat is not commercially mined in Sacramento County and no other mineral resources are found in or immediately adjacent to the Project Area.

4.12.2 Impact Discussion

Would the project:

a. Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No known mineral resources exist within the Project Area. Two prior gas wells located in the Project Area were previously removed by the gas company. **No impact** related to the availability of a known mineral resource would occur.

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?

No mineral resources are identified near the Project Area. The Project would generate peat soil production. However, peat is not commercially mined in Sacramento County. **No impact** related to locally important mineral resources would occur.

4.13 Noise

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?			X	
b. Generation of excessive groundborne vibration or groundborne noise levels?			X	
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?				X

4.13.1 Environmental Setting

Noise generation within the Project Area is limited to agricultural activities and vehicle traffic along Twitchell Island Road. The Project Area is in a rural area with the nearest homes located approximately 750 feet north of the Project Area.

4.13.2 Impact Discussion

Would the project:

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?

The Project is located on state-owned land and is not subject to local policies or regulations. Project construction would include the temporary use of heavy equipment, such as excavators and dozers. Although the majority of earthwork would occur in the southern portion of the Project Area, at least 1,700 feet from the nearest residence, some earthwork would be required along the northern Project Area boundary, approximately 750 feet from the nearest residence, to install the proposed pipeline. Project construction activities would be limited to daytime hours (i.e., 6 a.m. to 8 p.m.).

Once complete, the Project would not generate substantial noise. Noise sources would be limited to vehicle use associated with operation of water control structures and vegetation management activities,

such as mowing, grinding/tilling, or excavation. These activities would be temporary and would only occur during daytime hours. As such, post-Project ambient noise levels would be similar to those of existing agricultural activities. Project impacts related to increases in noise levels would be **less than significant.**

b. Generation of excessive groundborne vibration or groundborne noise levels?

Project construction would involve the use of heavy construction equipment including excavators, dozers, tractors, backhoes, and graders. No pile driving or blasting would be required. Once the Project is complete, the use of heavy equipment would be limited to temporary excavator use for focused invasive plant management activities. The nearest structures are located 750 feet north of the Project Area. Considering the Project location and limited temporary use of heavy equipment, the Project would not generate excessive groundborne vibration or groundborne noise levels. Project impacts would be **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 located over 5 miles from the nearest airstrip or airport and is not within the vicinity of an airport land use plan. In addition, the Project does not propose new residential or employment uses that would attract people to the area, beyond the temporary construction period. As such, **no impact** related to airport noise levels would occur.

4.14 Population and Housing

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

4.14.1 Environmental Setting

The Project is located in rural agricultural land in southwestern Sacramento County, with the Project Area primarily grazed or in crop production. Five residences are located approximately 750 feet north of the Project Area. The nearest residential community, Rio Vista, is located over 2.5 miles north of the Project Area.

4.14.2 Impact Discussion

Would the project:

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

The Project would restore wetland and riparian habitats and does not propose new residences, businesses, or any extension of roads or infrastructure. As such, **no impact** related to unplanned population growth would occur.

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No housing is located in the Project Area and nearby residences would not be affected or displaced by the Project. **No impact** related to people or housing displacement would occur.

4.15 Public Services

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

4.15.1 Environmental Setting

The Project Area is located in a rural area with limited public services. Fire protection is provided by Delta Fire Protection District who contracts with Rio Vista Fire Department for paramedic, fire and rescue, and prevention services. The nearest fire station is located in Rio Vista, over 6 miles from the Project Area. Police protection is provided by the Sacramento County Sheriff's Office. The nearest community service center is located approximately 15 miles northeast of the Project Area in the community of Walnut Grove. The nearest schools, parks, and other public facilities are located in Rio Vista, approximately 2.5 miles north of the Project Area. Brannan Island State Recreation Area is located approximately 3 miles west of the Project Area.

4.15.2 Impact Discussion

Would the project:

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the

construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Fire protection?

Police protection?

Schools?

Parks?

Other public facilities?

The Project proposes to convert some agricultural uses in the Project Area to riparian and wetland habitat. Emergency access to the site would be maintained during Project construction activities and response times would not be impacted. No new residential or employment services that would increase demand for public services are proposed. The Project would not result in the need for expanded service areas or new or expanded facilities. As such, **no impact** related to public services would occur.

4.16 Recreation

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?				X
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?				X

4.16.1 Environmental Setting

The Project Area is located in the Sacramento-San Joaquin Delta which provides various recreational uses, including boating, nature viewing, fishing, waterfowl hunting, and picnicking. No public access is currently provided to or within the Project Area. The nearest public recreation areas are Owl Harbor, a marina located approximately 1 mile east of the Project Area on Twitchell Island, and Brannan Island State Recreation Area, 2.5 miles west of the Project Area.

4.16.2 Impact Discussion

Would the project:

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 does not propose residential, employment, or recreational uses, and therefore, would not generate an increase in park or other recreational facility use or demand. **No impact** related to park or recreational facility use would occur.

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. As such, **no impact** related to the construction or expansion of recreational facilities would occur.

4.17 Transportation

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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?				X
b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?			X	
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d. Result in inadequate emergency access?				X

4.17.1 Environmental Setting

The Project is located on state-owned land on Twitchell Island, in a rural area of Sacramento County within the Sacramento-San Joaquin Delta. The transportation network within the Project Area is limited to dirt roads along berms separating fields. Twitchell Island Road provides access to the Project Area along a two-lane levee road. The nearest highways are Highway 12 to the north and Highway 160 to the east, both of which are two-lane roads. There are no transit, pedestrian, or bicycle facilities within the Project Area or along Twitchell Island Road.

4.17.2 Impact Discussion

Would the project:

a. **Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

Transportation associated with the Project would be limited to worker commute trips and equipment delivery during Project construction. Truck trips would be spread out throughout the workday and no road closures or obstructions to standard roadway flow (including bicyclists and pedestrians) would occur. No public transit facilities exist within the Project vicinity. The Project would not result in any long-term effects on the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Therefore, the Project would not result in conflicts with a program, plan, ordinance, or policy addressing the circulation system and **no impact** would occur.

b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

CEQA Guidelines § 15064.3, subdivision (b) requires that the analysis of transportation impacts be based on vehicle miles traveled. The Technical Advisory on Evaluating Transportation Impacts notes that small projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact, absent substantial evidence indicating otherwise (OPR 2018). Trips generated by the Project would be limited to Project construction and periodic on-going management once the Project is complete. Management of the Project Area would only require a handful of maintenance workers on site at any given time. Trips would not exceed the 110 trip per day threshold identified in the Technical Advisory on Evaluating Transportation Impacts. As such, the Project would not conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) and impacts related to vehicle miles travelled would be **less than significant**.

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

The proposed Project would not result in any new road construction or a change in roadway design. Trucks used for Project construction and ongoing management would be compatible with the existing transportation network. As such, the Project would not present hazards due to a design feature or incompatible uses. **No impact** would occur.

d. Result in inadequate emergency access?

The proposed Project would not require any road or lane closures. Emergency access to the site as it currently exists (through locked gates) would be maintained at all times. **No impact** related to inadequate emergency access would occur.

4.18 Tribal Cultural Resources

Environmental Issue	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or		X		
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

4.18.1 Environmental Setting

The Project Area is located within the Sacramento-San Joaquin Delta. Prior to European settlement, the area was comprised of waterways and marshlands. Starting in 1869, levees were built on Twitchell Island, reclaiming the island for agricultural use. Levee construction material was sourced from Delta peat soils and dredged materials from adjacent waterways.

As part of the cultural resource assessment conducted for the project, a request was sent to the Native American Heritage Commission (NAHC) for information from the sacred land files and appropriate Native American individual and group contacts. Letters describing the Project were sent to Native American tribes on October 20, 2022, and December 5, 2022. Additionally, notification letters were sent to Native American tribes by the lead agency, Reclamation District 1601, on March 30, 2023, inviting the tribes to participate in formal consultation, consistent with Assembly Bill 52.

A representative from the United Auburn Indian Community of the Auburn Rancheria responded on October 20, 2022, stating that they are deferring tribal consultation to the Wilton Rancheria, or other local tribes. On April 17, 2023, a representative from Wilton Rancheria responded requesting formal consultation. The Lead Agency and Project proponent met with Wilton Rancheria on June 9, 2023. Consultation between the Lead Agency and the tribe is ongoing.

4.18.2 Impact Discussion

Would the project:

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

In response to a request seeking information from the sacred lands files, the NAHC advised that the results of their Sacred Lands File review were negative and did not suggest the presence of sacred sites within the Project Area. One cultural resource, the Sacramento River Tribal Cultural Landscape (P-34-005225) was previously identified within the Project Area. The Tribal Cultural Landscape is approximately 55 miles in length and roughly encompasses the Lower Sacramento River environment. The primary character defining elements of this landscape are the waterways, tule habitat, fisheries, and other wildlife. The Tribal Cultural Landscape was evaluated and found eligible for inclusion on both the National Register and the California Register of Historical Resources (Tom Origer & Associates 2023). The Project Area is composed of pastureland used for grazing by sheep and cattle and does not include any defining characteristics of the resource. The Project would restore wetland and riparian habitats thereby positively contributing to the resource. No other tribal cultural resources have been identified in the Project Area. However, there is a possibility for accidental discovery during ground-disturbing construction activities. Implementation of Mitigation Measure CUL-1 and CUL-2 would reduce potential effects and impacts related to tribal cultural resources would be **less than significant with mitigation incorporated**.

4.19 Utilities and Service Systems

Environmental Issue	Potentially Significant Impact	Less than Significant Impact 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 storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				X
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c. Result in a determination by the waste water 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?				X
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?				X
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

4.19.1 Environmental Setting

The Project Area consists of agriculture and open space uses in a rural area of Sacramento County. No public utilities (i.e., potable water, wastewater, electricity, natural gas, telecommunication) are located on the site. The Project Area is located within a Pacific Gas & Electric electricity and natural gas service area.

4.19.2 Impact Discussion

Would the project:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The proposed Project would not require the relocation, construction, or expansion of public utility facilities. Project construction would utilize diesel engines and/or generators to power equipment. Once complete, the Project Area would consist of a mix of agricultural land and restored wetland and riparian habitat. Water control structures proposed by the Project would be manually operated and water would be gravity fed throughout the Project Area. No electrically powered pump stations would be required. As such the Project would not cause significant environmental effects from the construction or relocation of public utility facilities. **No impact** would occur.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

The Project would involve improvements to an existing siphon, construction of a new pipeline, and the installation of new water control structures (e.g., gates, culverts) to convey water from Sevenmile Slough, through the Project Area, for irrigation of riparian plantings during the establishment period, and the flood up of wetland units. All water used to serve the Project is within the existing water right and would not substantially exceed baseline conditions (i.e., agricultural practices). As such, available water supplies would be sufficient to serve the Project during normal, dry, and multiple dry years. **No impact** would occur.

c. Result in a determination by the waste water 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 would not require wastewater treatment. **No impact** would occur.

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?

Project construction does not require demolition of existing structures or removal of on-site material. Limited to no solid waste would be generated during Project construction. Once complete, the Project Area would consist of a mix of agricultural uses and restored wetland and riparian habitat and would not generate solid waste. **No impact** would occur.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Although unlikely to occur, any solid waste generated during Project construction would be disposed offsite, consistent with management and reduction statutes and regulations. No soild waste would be generated after Project construction is complete. **No impact** would occur.

4.20 Wildfire

Environmental Issue	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

4.20.1 Environmental Setting

The Project Area is located within a Local Responsibility Area and is not located within an identified area of high fire risk (CAL FIRE 2023). The Sacramento County General Plan identifies peat fires as one of the main wildland fires threatening the county. Due to its location in the Sacramento-San Joaquin Delta, the Project would support the generation of peat soils. Peat is subject to spontaneous combustion and can become very difficult to control. (Sacramento County 2017). The Sacramento County Local Hazard Mitigation Plan (LHMP) assessed wildfire risks on Twitchell Island within Reclamation District 1601. The LHMP determined that wildfire risk on the island is unlikely to occur (less than 1 percent chance over 100 years); would be limited to less than 10 percent of the island; and would have negligible severity (Sacramento County 2021). This is primarily due to the open space/agricultural nature of the island and limited potential risks to human life or property.

4.20.2 Impact Discussion

Would the project:

a. Substantially impair an adopted emergency response plan or emergency evacuation plan?

The Project would not substantially change existing land use patterns (i.e., open space and agricultural uses) or evacuation routes within the Project Area. As such, the Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. **No impact** would occur.

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Project area topography is relatively flat and does not present high wildfire hazard risks. Prevailing winds and peat soils occur in the Sacramento-San Joaquin Delta, including the Project Area, and may provide wildlife risks. However, the Project would not involve the construction of new structures, employment centers, or residences, and would not attract people to the area. As such, exposure to pollutant concentrations or the uncontrolled spread of wildfire would not be increased as a result of the Project. **No impact** would occur.

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The Project would not require the installation or maintenance of infrastructure which may exacerbate fire risk. The only infrastructure associated with the Project would consist of water control structures, pipelines, or siphon improvements, none of which would exacerbate fire risk. **No impact** would occur.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The Project would not involve the construction or expansion of commercial or residential structures. In addition, the Project Area is topographically flat. Wetlands created as part of the Project would slow water conveyance, including runoff and drainage, within units enclosed by berms. Therefore, the Project would not result in the exposure of people or structures to risks associated with runoff, post-fire slope instability, or drainage changes. **No impact** would occur.

4.21 Mandatory Findings of Significance

Environmental Issue	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below selfsustaining levels, threaten to eliminate a plant or animal community, substantially 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?		X		
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.)				X
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

4.21.1 Impact Discussion

Would the project:

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below selfsustaining levels, threaten to eliminate a plant or animal community, substantially 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 proposed Project would not substantially degrade the environment or substantially reduce fish or wildlife habitat. Although the Project could have potential construction-related adverse effects on special-status species as described in the Biological Resources section, implementation of mitigation measures would reduce impacts to a less-than-significant level. Overall, the Project would provide a net increase in

wetland quantity and quality, an increase in riparian habitat, and an overall benefit to the environment. Any potential construction related impacts would be temporary and localized. Therefore, Project impacts would be **less than significant with mitigation incorporated.**

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.)

Project construction would result in temporary impacts, primarily limited to the Project Area. While impacts to resource areas such as air quality would contribute to more regional impacts, these impacts, when combined with other past, present, and reasonably foreseeable projects in the vicinity, would not be cumulatively considerable because of the relative size and scope of the Project. Also, construction-generated air pollution and greenhouse gas emissions would not exceed applicable thresholds established by SMAQMD.

As discussed in this Initial Study, the proposed Project would result in less-than-significant impacts or no impacts to the following areas: aesthetics, agriculture resources, air quality, energy, geology/soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and service system and wildfire. The proposed Project would not contribute to cumulative adverse impacts to these resource areas.

Project impacts to biological resources, cultural resources, and tribal cultural resources would be mitigated to levels that are less-than-significant. The Project would provide a net increase in function of wetlands and an overall benefit to the environment; any potential construction-related impacts would be less-than-significant with mitigation incorporated. The analyses completed in this Initial Study support the Lead Agency determination that the proposed Project would not have any individually limited or cumulatively considerable impacts. **No impact** would occur.

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

No potentially substantial adverse effects on human beings would occur as a result of the Project either directly or indirectly. The proposed Project aims to restore wetland, riparian, and scrub-shrub habitats that would benefit the environment and would likely be beneficial to human beings. **No impact** would occur.

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6.0 LIST OF PREPARERS

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Appendix A. Air Pollutant Calculations

Twitchell Island Wetland Restoration Emissions (Year 2024)

Pollutant: CO2

Clear/grub work areas

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	3	10	work days	8.00	hours/day	395288	3952876					395288	3952876	
Dozer	367	0.40	532.2030	0	10	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	0	10	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	527.7630	0	10	work days	8.00	hours/day	0	0					0	0	3.95 MT
Haul Truck	1	1		0	10	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				4	10	work days	2	trips/day	0	0	0.0052	11.1	0	2	0	2	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			395,288	3,952,876			0	2	395,288	3,952,879	3.95 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			871.5	8714.5			0.0	0.0	871.5	8714.5	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			871.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Improve siphon

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	532.2030	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	1	5	work days	8.00	hours/day	131763	658813					131763	658813	
Water Truck	376	0.38	527.7630	0	5	work days	8.00	hours/day	0	0					0	0	0.66 MT
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			131,763	658,813			0	1	131,763	658,813	0.66 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			290.5	1452.4			0.0	0.0	290.5	1452.4	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			290.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Pipeline

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	532.2030	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	1	5	work days	8.00	hours/day	131763	658813					131763	658813	
Water Truck	376	0.38	527.7630	0	5	work days	8.00	hours/day	0	0					0	0	0.66 MT
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			131,763	658,813			0	1	131,763	658,813	0.66 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			290.5	1452.4			0.0	0.0	290.5	1452.4	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			290.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Wetland grading

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	3	20	work days	8.00	hours/day	395288	7905752					395288	7905752	
Dozer	367	0.40	532.2030	0	20	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	527.7630	0	20	work days	8.00	hours/day	0	0					0	0	7.91 MT
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				4	20	work days	2	trips/day	0	0	0.0052	11.1	0	5	0	5	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			395,288	7,905,752			0	5	395,288	7,905,757	7.91 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			871.5	17429.0			0.0	0.0	871.5	17429.0	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			871.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Fill placement (berms, islands)

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	3	20	work days	8.00	hours/day	395288	7905752					395288	7905752	
Dozer	367	0.40	532.2030	1	20	work days	8.00	hours/day	625019	12500384					625019	12500384	
Backhoe	84	0.37	529.9330	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	527.7630	1	20	work days	8.00	hours/day	603254	12065084					603254	12065084	32.47 MT
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				6	20	work days	2	trips/day	0	0	0.0052	11.1	0	7	0	7	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			1,623,561	32,471,221			0	7	1,623,561	32,471,228	32.47 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			3579.3	71586.1			0.0	0.0	3579.3	71586.1	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			3579.3	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Water control structures

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	532.2030	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	1	5	work days	8.00	hours/day	131763	658813					131763	658813	
Water Truck	376	0.38	527.7630	0	5	work days	8.00	hours/day	0	0					0	0	0.66 MT
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			131,763	658,813			0	1	131,763	658,813	0.66 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			290.5	1452.4			0.0	0.0	290.5	1452.4	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			290.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Recontour

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	3	5	work days	8.00	hours/day	395288	1976438					395288	1976438	
Dozer	367	0.40	532.2030	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	0	5	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	527.7630	0	5	work days	8.00	hours/day	0	0					0	0	1.98 MT
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				4	5	work days	2	trips/day	0	0	0.0052	10.8	0	1	0	1	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			395,288	1,976,438			0	1	395,288	1,976,439	1.98 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			871.5	4357.3			0.0	0.0	871.5	4357.3	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			871.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				

Plantings

EQUIPMENT	hp*	LoadFac*	CO2Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	529.9330	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	532.2030	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	529.9330	1	5	work days	8.00	hours/day	131763	658813					131763	658813	
Water Truck	376	0.38	527.7630	0	5	work days	8.00	hours/day	0	0					0	0	0.66 MT
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.00 MT
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.00 MT
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			131,763	658,813			0	1	131,763	658,813	0.66 MT
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			290.5	1452.4			0.0	0.0	290.5	1452.4	
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			290.5	
													Worker Commute: EMFAC2021 LDT2 35 mph				37.74 MT tota

Twitchell Island Wetland Restoration Emissions (Year 2024)

Pollutant: PM10

Clear/grub work areas

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	3	10	work days	8.00	hours/day	72	724					72	724	
Dozer	367	0.40	0.1790	0	10	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	0	10	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0440	0	10	work days	8.00	hours/day	0	0					0	0	0.2
Haul Truck	1	1		0	10	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	10	work days	2	trips/day	0	0	0.0054	11.1	0	2	0	2	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			72	724			0	2	73	726	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.2	1.6			0.0	0.0	0.2	1.6	0.00 tons
						Avg. Day (lbs)										0.2	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Improve siphon

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1790	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	1	5	work days	8.00	hours/day	24	121					24	121	
Water Truck	376	0.38	0.0440	0	5	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0054	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			24	121			0	1	24	121	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	0.3			0.0	0.0	0.1	0.3	0.00 tons
						Avg. Day (lbs)										0.1	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Pipeline

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1790	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	1	5	work days	8.00	hours/day	24	121					24	121	
Water Truck	376	0.38	0.0440	0	5	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0054	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			24	121			0	1	24	121	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	0.3			0.0	0.0	0.1	0.3	0.00 tons
						Avg. Day (lbs)										0.1	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Wetland grading

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	3	20	work days	8.00	hours/day	72	1447					72	1447	
Dozer	367	0.40	0.1790	0	20	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0440	0	20	work days	8.00	hours/day	0	0					0	0	0.2
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	20	work days	2	trips/day	0	0	0.0054	11.1	0	5	0	5	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			72	1,447			0	5	73	1,452	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.2	3.2			0.0	0.0	0.2	3.2	0.00 tons
						Avg. Day (lbs)										0.2	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Fill placement (berms, islands)

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	3	20	work days	8.00	hours/day	72	1447					72	1447	
Dozer	367	0.40	0.1790	1	20	work days	8.00	hours/day	210	4204					210	4204	
Backhoe	84	0.37	0.0970	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0440	1	20	work days	8.00	hours/day	50	1006					50	1006	0.7
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				6	20	work days	2	trips/day	0	0	0.0054	11.1	0	7	0	7	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			333	6,657			0	7	333	6,665	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.7	14.7			0.0	0.0	0.7	14.7	0.01 tons
						Avg. Day (lbs)										0.7	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Water control structures

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1790	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	1	5	work days	8.00	hours/day	24	121					24	121	
Water Truck	376	0.38	0.0440	0	5	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0054	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			24	121			0	1	24	121	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	0.3			0.0	0.0	0.1	0.3	0.00 tons
						Avg. Day (lbs)										0.1	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Recontour

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	3	5	work days	8.00	hours/day	72	362					72	362	
Dozer	367	0.40	0.1790	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	0	5	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0440	0	5	work days	8.00	hours/day	0	0					0	0	0.2
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	5	work days	2	trips/day	0	0	0.0054	10.8	0	1	0	1	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			72	362			0	1	73	363	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.2	0.8			0.0	0.0	0.2	0.8	0.00 tons
						Avg. Day (lbs)										0.2	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

Plantings

EQUIPMENT	hp*	LoadFac*	PM10Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	On-Site DayEmis	On-Site TotEmis	Emfac	Off-Site Length	Off-Site DayEmis	Off-Site TotEmis	Total DayEmis	Total TotEmis	
Tractor	84	0.37	0.0970	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1790	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0970	1	5	work days	8.00	hours/day	24	121					24	121	
Water Truck	376	0.38	0.0440	0	5	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0054	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			24	121			0	1	24	121	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	0.3			0.0	0.0	0.1	0.3	0.00 tons
						Avg. Day (lbs)										0.1	
																	Haul Truck: EMFAC2021 HHDT 35 mph
																	Worker Commute: EMFAC2021 LDT2 35 mph

	16.8	0.01 total tons
Commute		0.000 total tons

Twitchell Island Wetland Restoration Emissions (Year 2024)

Pollutant: PM25

Clear/grub work areas

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	3	10	work days	8.00	hours/day	66	664					66	664	
Dozer	367	0.40	0.1640	0	10	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	0	10	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0410	0	10	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	10	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	10	work days	2	trips/day	0	0	0.0052	11.1	0	2	0	2	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			66	664			0	2	67	666	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	1.5			0.0	0.0	0.1	1.5	0.00 tons
						Avg. Day (lbs)										0.1	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Improve siphon

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1640	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	1	5	work days	8.00	hours/day	22	111					22	111	
Water Truck	376	0.38	0.0410	0	5	work days	8.00	hours/day	0	0					0	0	0.0
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			22	111			0	1	22	111	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.0	0.2			0.0	0.0	0.0	0.2	0.00 tons
						Avg. Day (lbs)										0.0	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Pipeline

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1640	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	1	5	work days	8.00	hours/day	22	111					22	111	
Water Truck	376	0.38	0.0410	0	5	work days	8.00	hours/day	0	0					0	0	0.0
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			22	111			0	1	22	111	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.0	0.2			0.0	0.0	0.0	0.2	0.00 tons
						Avg. Day (lbs)										0.0	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Wetland grading

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	3	20	work days	8.00	hours/day	66	1328					66	1328	
Dozer	367	0.40	0.1640	0	20	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0410	0	20	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	20	work days	2	trips/day	0	0	0.0052	11.1	0	5	0	5	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			66	1,328			0	5	67	1,332	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	2.9			0.0	0.0	0.1	2.9	0.00 tons
						Avg. Day (lbs)										0.1	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Fill placement (berms, islands)

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	3	20	work days	8.00	hours/day	66	1328					66	1328	
Dozer	367	0.40	0.1640	1	20	work days	8.00	hours/day	193	3852					193	3852	
Backhoe	84	0.37	0.0890	0	20	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0410	1	20	work days	8.00	hours/day	47	937					47	937	0.7
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				6	20	work days	2	trips/day	0	0	0.0052	11.1	0	7	0	7	0.001
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			306	6,117			0	7	306	6,124	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.7	13.5			0.0	0.0	0.7	13.5	0.01 tons
						Avg. Day (lbs)										0.7	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Water control structures

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1640	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	1	5	work days	8.00	hours/day	22	111					22	111	
Water Truck	376	0.38	0.0410	0	5	work days	8.00	hours/day	0	0					0	0	0.0
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			22	111			0	1	22	111	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.0	0.2			0.0	0.0	0.0	0.2	0.00 tons
						Avg. Day (lbs)										0.0	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Raccontour

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	3	5	work days	8.00	hours/day	66	332					66	332	
Dozer	367	0.40	0.1640	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	0	5	work days	8.00	hours/day	0	0					0	0	
Water Truck	376	0.38	0.0410	0	5	work days	8.00	hours/day	0	0					0	0	0.1
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				4	5	work days	2	trips/day	0	0	0.0052	10.8	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			66	332			0	1	67	333	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.1	0.7			0.0	0.0	0.1	0.7	0.00 tons
						Avg. Day (lbs)										0.1	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph				

Plantings

									On-Site				Off-Site		Total		
EQUIPMENT	hp*	LoadFac*	PM25Fac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis	
Tractor	84	0.37	0.0890	0	5	work days	8.00	hours/day	0	0					0	0	
Dozer	367	0.40	0.1640	0	5	work days	8.00	hours/day	0	0					0	0	
Backhoe	84	0.37	0.0890	1	5	work days	8.00	hours/day	22	111					22	111	
Water Truck	376	0.38	0.0410	0	5	work days	8.00	hours/day	0	0					0	0	0.0
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0 0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0052	11.1	0	1	0	1	0.000
			* Equipment: CalEEMod 2022.1.1.3 Appendix G			Tot (grams)			22	111			0	1	22	111	
			Haul Truck: EMFAC 2021 HHD Idle			Tot (lbs)			0.0	0.2			0.0	0.0	0.0	0.2	0.00 tons
						Avg. Day (lbs)										0.0	
													Haul Truck: EMFAC2021 HHDT 35 mph				
													Worker Commute: EMFAC2021 LDT2 35 mph			15.5	0.01 total tons
															Commute	6.669	total tons

Twitchell Island Wetland Restoration Emissions (Year 2024)

Pollutant: ROG

Clear/grub work areas

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	3	10	work days	8.00	hours/day	160	1604					160	1504		
Dozer	357	0.40	0.4860	0	10	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	0	10	work days	8.00	hours/day	0	0					0	0		
Water Truck	376	0.38	0.1830	0	10	work days	8.00	hours/day	0	0					0	0	0.4	
Haul Truck	1	1		0	10	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				4	10	work days	2	trips/day	0	0	0.0148	11.1	1	7	1	7	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			160	1,604			1	7	161	1,610		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.4	3.5			0.0	0.0	0.4	3.6	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.4		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Improve siphon

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	0	5	work days	8.00	hours/day	0	0					0	0		
Dozer	357	0.40	0.4860	0	5	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	1	5	work days	8.00	hours/day	53	267					53	267		
Water Truck	376	0.38	0.1830	0	5	work days	8.00	hours/day	0	0					0	0	0.1	
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0148	11.1	0	2	0	2	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			53	267			0	2	54	269		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.1	0.6			0.0	0.0	0.1	0.6	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.1		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Pipeline

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	0	5	work days	8.00	hours/day	0	0					0	0		
Dozer	357	0.40	0.4860	0	5	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	1	5	work days	8.00	hours/day	53	267					53	257		
Water Truck	376	0.38	0.1830	0	5	work days	8.00	hours/day	0	0					0	0	0.1	
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0148	11.1	0	2	0	2	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			53	267			0	2	54	269		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.1	0.6			0.0	0.0	0.1	0.6	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.1		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Wetland grading

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	3	20	work days	8.00	hours/day	160	3207					160	3207		
Dozer	357	0.40	0.4860	0	20	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	0	20	work days	8.00	hours/day	0	0					0	0		
Water Truck	376	0.38	0.1830	0	20	work days	8.00	hours/day	0	0					0	0	0.4	
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				4	20	work days	2	trips/day	0	0	0.0148	11.1	1	13	1	13	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			160	3,207			1	13	161	3,221		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.4	7.1			0.0	0.0	0.4	7.1	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.4		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Fill placement (berms, islands)

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	3	20	work days	8.00	hours/day	160	3207					160	3207		
Dozer	357	0.40	0.4860	1	20	work days	8.00	hours/day	571	11415					571	11415		
Backhoe	84	0.37	0.2150	0	20	work days	8.00	hours/day	0	0					0	0		
Water Truck	376	0.38	0.1830	1	20	work days	8.00	hours/day	209	4184					209	4184	2.1	
Haul Truck	1	1		0	20	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				6	20	work days	2	trips/day	0	0	0.0148	11.1	1	20	1	20	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			940	18,806			1	20	941	18,826		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			2.1	41.5			0.0	0.0	2.1	41.5	0.02	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			2.1		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Water control structures

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	0	5	work days	8.00	hours/day	0	0					0	0		
Dozer	357	0.40	0.4860	0	5	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	1	5	work days	8.00	hours/day	53	267					53	257		
Water Truck	376	0.38	0.1830	0	5	work days	8.00	hours/day	0	0					0	0	0.1	
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0148	11.1	0	2	0	2	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			53	267			0	2	54	269		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.1	0.6			0.0	0.0	0.1	0.6	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.1		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Recontour

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	3	5	work days	8.00	hours/day	160	802					160	802		
Dozer	357	0.40	0.4860	0	5	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	0	5	work days	8.00	hours/day	0	0					0	0		
Water Truck	376	0.38	0.1830	0	5	work days	8.00	hours/day	0	0					0	0	0.4	
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				4	5	work days	2	trips/day	0	0	0.0148	10.8	1	3	1	3	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			160	802			1	3	161	805		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.4	1.8			0.0	0.0	0.4	1.8	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.4		
													Worker Commute: EMFAC2021 LDT2 35 mph					

Plantings

										On- Site		Off-Site				Total		
EQUIPMENT	hp*	LoadFac*	ROGFac*	Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis		
Tractor	84	0.37	0.2150	0	5	work days	8.00	hours/day	0	0					0	0		
Dozer	357	0.40	0.4860	0	5	work days	8.00	hours/day	0	0					0	0		
Backhoe	84	0.37	0.2150	1	5	work days	8.00	hours/day	53	267					53	267		
Water Truck	376	0.38	0.1830	0	5	work days	8.00	hours/day	0	0					0	0	0.1	
Haul Truck	1	1		0	5	work days	1	day	0	0	0.0000	60.0	0	0	0	0	0.0	0.0%
Worker Commute				2	5	work days	2	trips/day	0	0	0.0148	11.1	0	2	0	2	0.0	
	* Equipment: CalEEMod 2022.1.1.3 Appendix G					Tot (grams)			53	267			0	2	54	269		
	Haul Truck: EMFAC 2021 HHD Idle					Tot (lbs)			0.1	0.6			0.0	0.0	0.1	0.6	0.00	tons
						Avg. Day (lbs)							Haul Truck: EMFAC2021 HHDT 35 mph			0.1		
													Worker Commute: EMFAC2021 LDT2 35 mph			46.2	0.02	total tons
																Commute	0.000	total tons

Appendix B. Special Status Species List

TWITCHELL ISLAND WETLAND ENHANCEMENT AND RESTORATION PROJECT

SPECIAL STATUS SPECIES LIST

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Amphibians					
Ambystoma californiense pop.1	California tiger salamander - central California DPS	CNDDB, IPaC	FT, ST	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. Breeds mainly from December to February when precipitation fills pools and ponds.	**Not expected.** Marginally suitable habitat is present proximate to wetter portions of the Project Area and within mammal burrows. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Rana boylii pop.4	Foothill yellow-legged frog - central coast DPS	CNDDB	P-FT, SE	Inhabits partially shaded, rocky streams at low to moderate elevations (30 to 1,000 meters), in areas of chaparral, open woodland, and forest. Takes cover and breeds in pools of streams. Typically breeds from mid-March to early June.	**Not present.** No suitable habitat present in Project Area.
Rana draytonii	California red-legged frog	CNDDB, IPaC	FT, SSC	Breeding period associated with large rainfall events in late winter or early spring. 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.	**Not expected.** Marginally suitable habitat is present proximate to wetter portions of the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Spea hammondii	Western spadefoot	CNDDB	SCC	Lowlands to foothills, grasslands, open chaparral, pine-oak woodlands. Prefers shortgrass plains, sandy or gravelly soil (e.g., alkali flats, washes, alluvial fans). Fossorial and breeds in temporary rain pools and slow-moving streams (e.g., areas flooded by intermittent streams).	**Not expected.** Marginally suitable habitat present in grasslands and wetter portions of the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Birds					
Agelaius tricolor	Tricolored blackbird	CNDDB	ST, SSC	Nests in emergent weltand vegetation and thorny vegetation (e.g., Himalyan blackberry [*Rubus armeniacus*]). Nesting habitat must be large enough to support minimum colony of 50 pairs. Forages in croplands, grassy fields, flooded land, and pond edges.	**May occur.** Marginal nesting habitat is provided in blackberry dominated portions of the Project Area. Suitable foraging habitat is present in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Antigone canadensis canadensis	Lesser sandhill crane	CNDDB	SSC	Breed and forage in open prairies, grasslands, and wetlands. Often roost in deeper water of ponds or lakes, where they are safe from predators.	**May occur.** Suitable foraging habitat is present in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Antigone canadensis tabida	Greater sandhill crane	CNDDB	ST, FP	Open prairies, grasslands, and wetlands. Often roost in deeper water of ponds or lakes, where they are safe from predators.	**May occur.** Suitable foraging habitat is present in the Project Area. No suitable roosting habitat in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Aquila chrysaetos	Golden eagle	CNDDB	FP	Occurs in rolling foothills, mountain areas, deserts, and other open habitats. Typically nests on cliff ledges or large trees in open areas in canyons.	**Not expected.** Marginal foraging habitat present in the Project Area. No recorded occurrences

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					within 5 miles of the Project Area (CDFW 2023).
Athene cunicularia	Burrowing owl	CNDDB	SSC	Forages in grasslands, agricultural fields, and disturbed places. Nests in burrows, and other refuge sites.	**May occur.** Suitable foraging and nesting habitat is present. Several occurrences have been documented near the Project Area. The closest occurrence was recorded on Brannan Island within 1.5 miles of the Project Area in 1989 (CDFW 2023).
Buteo swainsoni	Swainsons hawk	CNDDB	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. Breeds in California and winters in Mexico and South America. Swainson's hawks usually arrive in the Central Valley between March 1 and April 1 and migrate south between September and October.	**Likely to occur.** Suitable nesting and foraging habitat is present in the Project Area. One isolated tree in the northern Project Area and utility poles could provide nesting habitat. There are several reported occurrences for this species within the Project vicinity and the species is well documented as nesting and foraging in the region. In 2017, a pair was recorded nesting directly adjacent to the Project Area along Sevenmile Slough (CDFW 2023).
Circus hudsonius	Northern harrier	CNDDB	SSC	Inhabits wetlands, lake margins, grasslands, croplands, desert sinks, and sagebrush flats. Builds nests on large mounds of vegetation between March and August.	**May occur.** Suitable nesting and foraging habitat is present in the Project Area. No recorded occurrences within 5 miles

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					of the Project Area (CDFW 2023).
Charadrius montanus	Mountain plover	CNDDB	SSC	Occupies open plains or rolling hills with sparse, low-growing vegetation; nearby bodies of water are not needed. May use newly plowed or sprouting grain fields. Does not breed in California.	**May occur.** Species is a winter migrant and may forage in or near the Project Area. No nesting habitat present. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Charadrius nivosus nivosus	Western snowy plover	CNDDB	FT, SSC	Beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds. Breeds primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries.	**Not present.** No suitable habitat present in the Project Area.
Elanus leucurus	White-tailed kite	CNDDB	FP	Inhabits rolling foothills and valley margins with scattered oaks and marshes near deciduous woodland. Nests in isolated, dense-topped trees in open areas.	**May occur.** Marginal foraging habitat is present. Species may occur in flight or forage in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Geothlypis trichas sinuosa	Saltmarsh common yellowthroat	CNDDB	SSC	Occurs in salt marsh and adjacent riparian habitats. Nests in tall herbaceous vegetation, typically within one meter of the ground. Ranges from the San Pablo and San Francisco Bay west along the coast of California.	**Not present.** No suitable salt marsh habitat present. The Project Area is outside of the species known range. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Haliaeetus leucocephalus	Bald eagle	CNDDB	SE, FP	Breeds close to (within 4 kilometers) coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water which are used for food sources. Nests in tall trees, pinnacles, or cliffs. Overwinters in areas with abundant dead fish or where upland food sources are readily available (e.g., rabbit, livestock afterbirths, deer carrion).	**Not expected.** Marginal foraging habitat is present in the Project Area. Marginal nesting habitat may be present to the north of the Project Area, along Sevenmile Slough. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Icteria virens	Yellow-breasted chat	CNDDB	SSC	Second growth, shrubby old pastures, thickets, bushy areas, scrub, woodland undergrowth, and fence rows, including low wet places near streams, pond edges, or swamps; thickets with few tall trees; early successional stages of forest regeneration. Commonly in sites close to human habitation.	**Not expected.** Marginal foraging habitat is present in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Lanius ludovicianus	Loggerhead shrike	CNDDB	SSC	Open habitats with perches (e.g., scattered shrubs, trees, posts). Often found in open cropland but nests in dense shrubs and small trees.	**May occur.** Suitable foraging habitat is present in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Laterallus jamaicensis coturniculus	California black rail	CNDDB	ST, FP	Inhabits brackish marsh dominated by alkali heath, cattail, and rush. Typically associated with perennial wetlands with flowing water (e.g., irrigation canals, perennial streams, and springs). Forages on the ground under cover of dense vegetation.	**Not expected.** Marginal foraging habitat is present in wetland portions of the Project Area. No brackish marsh habitat is present in the Project Area. Additional suitable habitat is located southeast of the Project Area in the Twitchell East End Wetland. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Melospiza melodia maxillaris	Suisun song sparrow	CNDDB	SSC	Tidal marshes. Requires dense vegetation for nesting sites and cover.	**Not expected.** No suitable tidal marsh habitat present. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Melospiza melodia pop. 1	Song sparrow (Modesto population)	CNDDB	SSC	Breeds in riparian thickets in shrubs or vines near wetlands. Nests are typically low to the ground or under dense riparian vegetation.	**May occur.** Marginal foraging habitat present in wetter blackberry dominant portions of the project area No suitable nesting habitat present. There are 10 recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Pelecanus erythrorhynchos	American white pelican	CNDDB	SSC	Lakes, reservoirs, estuaries, bays, and open marshes, sometimes inshore marine habitats. Pelicans rest/roost on islands and peninsulas.	**Not present.** No suitable habitat present.
Rallus longirostris obsoletus	California clapper rail	IPaC	FE	Occur almost exclusively in tidal and brackish marshes. Current range is restricted to San Francisco Bay.	**Not present.** No suitable nesting or foraging habitat present. Outside of the species' known range.
Riparia riparia	Bank swallow	CNDDB	ST	Primarily in riparian and lowland habitat. Nests along cliffs or steep riverbanks, often along the Sacramento River and the Feather River.	**May occur.** No suitable nesting habitat present. The species may occur in flight or forage in or near the Project Area. One occurrence has been recorded within 5 miles of the Project Area (CDFW 2023).
Sternula antillarum browni	California least tern	CNDDB	FE, SE, FP	Nests in breeding colonies along marine and estuarine shore habitat. Feeds in shallow waters on small fish.	**Not present;** Suitable marine or estuarine habitat is not present in the Project Area. No

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Xanthocephalus xanthocephalus	Yellow-headed blackbird	CNDDB	SSC	Breed in freshwater cattail and tule marshes. Forage in open cultivated lands, pastures and fields.	**May occur.** Suitable foraging habitat is present in the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Crustaceans					
Branchinecta conservatio	Conservancy fairy shrimp	CNDDB	FE	Occupies large, freshwater, clay-bottomed vernal pools to vernal lakes with turbid water in grasslands.	**Not present.** No suitable habitat present in the Project Area.
Branchinecta lynchi	Vernal pool fairy shrimp	CNDDB, IPaC	FT	Vernal pools and sandstone rock outcrop pools.	**Not present. N**o suitable habitat present in the Project Area.
Lepidurus packardi	Vernal pool tadpole shrimp	CNDDB, IPaC	FE	Vernal pools and ephemeral stock ponds.	**Not present.** No suitable habitat present in the Project Area.
Fish					
Acipenser medirostris pop. 1	Green sturgeon - southern DPS	CNDDB	FT	Spawns in pools of large freshwater river mainstems with cool water and cobble, clean sand, or bedrock. In San Francisco Bay adults tend to utilize water depths less than 10 meters (33 feet) to swim near the surface or forage along the sea floor.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Acipenser transmontanus	White sturgeon	CNDDB	SSC	Spawns in the San Joaquin River and its tributaries. Adults migrate from the estuary into the river in winter, spawn from February to June, and return to the Delta after spawning.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Archoplites interruptus	Sacramento perch	CNDDB	SSC	Primarily in stocked farm ponds, reservoirs, and recreational lakes. Historically found throughout the Central Valley but have been displaced.	**Not present.** No habitat (ponds, reservoirs, lakes) within the project vicinity. In addition, barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Entosphenus tridentatus	Pacific lamprey	CNDDB	SSC	Occurs throughout the Central Valley including the San Joaquin and Sacramento Rivers. Shares many habitat requirements with Pacific salmonids including cold, clear water for spawning and incubation.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Hypomesus transpacificus	Delta smelt	CNDDB, IPaC	FT, SE	Estuarine or brackish waters up to 18 parts per thousand (ppt) salinity; spawn in shallow brackish water upstream of the mixing zone (zone of saltwater-freshwater interface) where salinity is around 2 ppt.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Lampetra ayresii	Western river lamprey	CNDDB	SSC	Require clean, gravelly riffles in permanent streams for spawning, and sandy to silty backwaters or stream edges for ammocoete larva cover, where water quality is continuously high and temperatures do not exceed 25°C. Previously recorded migrating through the Sacramento and San Joaquin Delta.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Lavinia exilicauda exilicauda	Sacramento hitch	CNDDB	SSC	Inhabit warm, lowland, waters including clear streams, turbid sloughs, lakes and reservoirs. In streams, they are generally found in pools or runs among aquatic vegetation, although small individuals will also use riffles. Historically found throughout the Central Valley but today they are absent from the San Joaquin River.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016). Outside of species current known range.
Mylopharodon conocephalus	Hardhead	CNDDB	SSC	Widely distributed in streams at low to mid-elevations in the Sacramento-San Joaquin and Russian River drainages. Only rarely found in the valley reaches of the San Joaquin River.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Oncorhynchus kisutch pop. 4	Coho salmon - central California coast ESU	CNDDB	FE, SE	Inhabit small coastal streams, as well as larger rivers. Typically spawn and rear within low gradient reaches of tributary streams.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Oncorhynchus mykiss irideus pop. 8	Steelhead - central California coast DPS	CNDDB	FT	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.	**Not present. B**arriers on both ends of Sevenmile Slough block passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Oncorhynchus mykiss irideus pop. 11	Steelhead - Central Valley DPS	CNDDB	FT	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.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Oncorhynchus tshawytscha pop. 7	Chinook salmon - Sacramento River winter-run ESU	CNDDB	FE, SE	Mainstem river reaches with cool water and available spawning gravel; rear five to ten months in the river and estuary; migrate to the ocean to feed and grow until sexually mature.	**Not present.** No suitable spawning habitat, barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Oncorhynchus tshawytscha pop. 11	Chinook salmon - Central Valley spring-run ESU	CNDDB	FT, ST	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.	**Not present. B**arriers on both ends of Sevenmile Slough block passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Oncorhynchus tshawytscha pop. 13	Chinook salmon - Central Valley fall / late fall-run ESU	CNDDB	SSC	Extinct in its native range, all known populations of this species are the result of introductions. The species is adapted for life in sloughs, slow moving rivers, and large lakes in the Central Valley, and can tolerate high temperatures and salinities as well as high pH (alkalinity). Extant populations are in reservoirs; the species has been replaced in its native range by introduced game fishes (Crain and Moyle 2011).	**Not present.** No suitable habitat present in the Project Area.
Pogonichthys macrolepidotus	Sacramento splittail	CNDDB	SSC	Endemic to California's Central Valley and was once distributed in lakes and rivers throughout the Central Valley. Spawning still occurs on a regular basis in the lower San Joaquin River.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento Rivers (R. Mager, pers. comm. 2016).
Spirinchus thaleichthys	Longfin smelt	CNDDB	FC, ST	Adults in large bays, estuaries, and nearshore coastal areas; migrate into freshwater rivers to spawn; salinities of 15–30 ppt.	**Not present.** Barriers on both ends of Sevenmile Slough block fish passage from the Delta/San Joaquin and Sacramento

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					Rivers (R. Mager, pers. comm. 2016).
Insects					
Apodemia mormo langei	Langes metalmark butterfly	CNDDB	FE	Closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is used as a nectar source, to lay eggs, and as larval food plant. Typically found along rivers and is associated with Antioch Dunes.	**Not present.** No suitable habitat in the Project Area.
Bombus crotchii	Crotch bumble bee	CNDDB	SCE	Occurs in arid grassland and scrub habitats with a very limited climatic range, much hotter and drier than most bumble bees (NatureServe 2023). New colonies are typically established in abandoned rodent burrows. Generalists, foraging on a wide variety of flowering plants.	**Not expected.** Marginal habitat present in the Project Area. No recorded occurrences within 5 miles of the Project Area. The closest recorded occurrence was documented in 1926 approximately 9.5 miles southwest of the Project Area (CDFW 2023).
Bombus occidentalis	Western bumble bee	CNDDB	SCE	Occurs in meadows and grasslands with an abundance of floral resources. New colonies are typically established in abandoned rodent burrows. Generalists, foraging on a wide variety of flowering plants.	**Not expected.** Marginal habitat present in the Project Area. No recorded occurrences within 5 miles of the Project Area. The closest recorded occurrences are documented in 1936 near the City of Oakley, approximately 7.5 miles southwest of the Project Area, and in 1972 approximately 12 miles northwest of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Danaus plexippus	Monarch butterfly	IPaC	FC	Roost in wind protected tree groves, typically Eucalyptus sp., and species of pine or cypress with nectar and water sources nearby. As caterpillars, monarchs feed exclusively on the leaves of milkweed.	**Not present.** Suitable overwintering habitat (eucalyptus groves) or larval food plants (milkweed) are not present in the Project Area.
Desmorcerus californicus dimorphus	Valley elderberry longhorn beetle	IPaC	FT	Riparian and oak savanna habitats with host plant, elderberry (*Sambucus* sp).	**Not present.** No suitable habitat present in the Project Area.
Elaphrus viridis	Delta green ground beetle	CNDDB	FT	Margins of vernal pools, typically within 1.5 meters of the water where the sandy mud substrate slopes gently into the water, and where there is very low-growing vegetation.	**Not present.** No suitable habitat present in the Project Area.
Mammals					
Antrozous pallidus	Pallid bat	CNDDB	SSC	Occupies mountainous areas, intermontane basins, and lowland desert scrub; arid deserts and grasslands, often near rocky outcrops and water; in some areas, this species also inhabits open coniferous forest and woodland. Roosts include crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees.	**Not expected.** Marginal foraging habitat associated with grasslands present in the Project Area. Species tends to forage near roosting habitat. No roosting habitat is present within the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Lasiurus frantzii	Western red bat	CNDDB	SSC	Roosts in woodlands and forests. Forages in croplands, grasslands, and shrublands.	**May occur.** Marginal foraging habitat is present in the Project Area. No suitable roosting habitat is present. Two recorded occurrences have been documented within 5 miles of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Reithrodontomys raviventris	Salt-marsh harvest mouse	CNDDB	FE, SE, FP	Tidal salt marshes; depend on dense cover, preferring pickleweed (*Salicornia pacifica*) and saltgrass.	**Not present.** No suitable habitat present in the Project Area and outside species' known range.
Taxidea taxus	American badger	CNDDB	SSC	Drier open stages of shrub, forest, and herbaceous habitats. Considered to be extirpated from the Central Valley.	**Not present** No suitable habitat present in the Project Area.
Vulpes macrotis mutica	San Joaquin kit fox	CNDDB	FE, ST	Annual grasslands or open areas dominated by scattered brush, shrubs, and scrub. Primarily found in foothills at the margins of the Central Valley and interior Coast Ranges.	**Not present.** Outside of the species' known range.
Reptiles					
Anniella pulchra	Northern California legless lizard	CNDDB	SSC	Occupies loose friable (usually sandy) soil in dunes, coastal scrub, chaparral, and oak woodlands.	**Not present.** No suitable habitat present in the Project Area.
Arizona elegans occidentalis	California glossy snake	CNDDB	SSC	Barren to sparse shrubby desert, sagebrush flats, grassland, sandhills, coastal scrub, chaparral slopes, oak-hickory woodland. Generally occurs in open areas with sandy or loamy soil.	**Not present.** No suitable habitat present in the Project Area.
Emys marmorata	Western pond turtle	CNDDB, IPaC	PFT, SSC	Inhabits slow-moving water with dense submerged vegetation, abundant basking sites, gently sloping banks, and dry clay or silt soils in nearby uplands. Builds burrows in areas above the ordinary high-water mark for overwintering.	**May occur.** Marginal nesting habitat present in the Project Area. Three occurrences have been recorded within 5 miles of the Project Area (CDFW 2023).
Masticophis lateralis euryxanthus	Alameda whipsnake	CNDDB	FT, ST	Chaparral (northern coastal sage scrub and coastal sage) and rocky outcrops; may venture into adjacent habitats including grassland, oak savanna, and woodlands.	**Not present.** No suitable habitat present in the Project Area and outside species' known range.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Phrynosoma blainvillii	Coast horned lizard	CNDDB	SSC	Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil.	**Not present.** No suitable habitat present in the Project Area.
Thamnophis gigas	Giant gartersnake	CNDDB	FT, ST	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.	**May occur.** Suitable habitat is present within the Project Area. Six occurrences have been recorded within 5 miles of the Project Area (CDFW 2023).
Plants					
Amsinckia grandiflora	Large-flowered fiddleneck	CNDDB	FE, SE	Cismontane woodland, valley and foothill grassland. Elevation ranges from 885 to 1805 feet (270 to 550 meters). Blooms (March) April - May.	**Not present.** The Project Area does not contain woodland or high quality grassland habitat necessary to support this mainland species.
Arctostaphylos auriculata	Mt. Diablo manzanita	CNDDB	CNPS 1B.3	A perennial evergreen shrub found on sandstone in chaparral and cismontane woodlands from 135 – 650 meters elevation. Known only from Mt. Diablo. Blooms January – March (April).	**Not present.** Suitable habitat is not present within the Project Area. The Project Area is outside of this species known range.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	CNDDB	CNPS 1B.2	A native shrub found in rocky chapparal habitats at elevations from 430 – 1100 meters. Blooms January – March (April).	**Not present.** No suitable habitat present. Project Area is outside of elevational range.
Astragalus tener var. *tener*	Alkali milk-vetch	CNDDB	CNPS 1B.2	An annual herb found in alkaline mesic habitats in playas, valley and foothill grassland (adobe clay soils), and vernal pools in the Central Valley from 1 – 60 meters elevation. Blooms March – June.	**Not present.** No suitable adobe soils habitat within the Project Area.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Atriplex cordulata var. *cordulata*	Heartscale	CNDDB	CNPS 1B.2	An annual herb found on saline or alkaline soils in chenopod scrub, meadows, seeps, and sandy valley and foothill grasslands from 0 – 560 meters elevation. Blooms April – October.	**Not present.** No suitable saline or alkaline soils or chenopod scrub habitat in the Project Area.
Atriplex depressa	Brittlescale	CNDDB	CNPS 1B.2	An annual herb found on alkaline, clay soils in chenopod scrub, meadows, seeps, playas, vernal pools, and valley and foothill grasslands from 1 – 320 meters elevation. Blooms April – October.	**Not present.** No suitable saline or alkaline soils or chenopod scrub habitat within the Project Area.
Blepharizonia plumosa	Big tarplant	CNDDB	CNPS 1B.1	An annual herb found usually on clay soils in valley and foothill grassland on dry slopes from 30 – 505 meters elevation. Blooms July – October.	**Not present.** Suitable dry slope habitat is not present within the Project Area.
Brasenia schreberi	Watershield	CNDDB	CNPS 2B.3	A rhizomatous aquatic herb found in freshwater marshes and swamps in ponds and slow streams from 30 to 2,200 meters elevation. Blooms June to September.	**May occur.** Marginal habitat is present in seasonal wetlands and ditches within the Project Area. One occurrence has been recorded within 5 miles of the Project Area.
Calochortus pulchellus	Mt. Diablo fairy-lantern	CNDDB	CNPS 1B.2	A perennial bulbiferous herb found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland from 30 – 840 meters elevation. Currently known from the Mount Diablo area and Vaca Mountain in Solano County. Blooms April – June.	**Not present.** Suitable habitat is not present and the Project Area is outside of the known range of this species.
Carex comosa	Bristly sedge	CNDDB	CNPS 2B.1	A perennial rhizomatous herb found in coastal prairie, lake margins, and valley and foothill grassland in wet places from 0 – 625 meters elevation. Blooms May – September.	**May occur.** Suitable freshwater wetland habitat is present in the Project Area. One occurrence has been recorded within 5 miles of the Project Area (CDFW 2023).

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Centromadia parryi ssp. *parryi*	Pappose tarplant	CNDDB	CNPS 1B.2	An annual herb found in alkaline habitats in valley and foothill grassland and coastal salt marshes from 0 – 230 meters elevation. Blooms May – October (November).	**Not present.** There is no suitable alkaline grassland or saltmarsh habitats within the Project Area.
Chloropyron molle ssp. *molle*	Soft salty birds-beak	CNDDB, IPaC	FE, SR	Salt or brackish marshes and swamps (coastal salt with pannes and active tides). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms June - November.	**Not present.** No suitable salt or brackish marsh habitats within the Project Area. No recorded occurrences within 5 miles of the Project Area (CDFW 2023).
Cicuta maculata var. *bolanderi*	Bolanders water-hemlock	CNDDB	CNPS 2B.1	A perennial herb found in coastal freshwater and brackish marshes from 0 – 200 meters elevation. Blooms July – September.	**Not present**. No suitable habitat within the Project Area.
Cryptantha hooveri	Hoovers cryptantha	CNDDB	CNPS 1A	An annual herb found in inland dunes and valley and foothill grasslands (sandy) from 9 – 150 meters elevation. Bloms April – May.	**Not present.** No suitable habitat present. Project Area is outside of elevational range.
Downingia pusilla	Dwarf downingia	CNDDB	CNPS 2B.2	An annual herb found in vernal pools and mesic microsites in valley and foothill grassland from 1 – 445 meters elevation. Blooms March – May.	**Not present.** There is no suitable vernal pool or mesic grassland habitat within the Project Area.
Eriogonum nudum var. *psychicola*	Antioch Dunes buckwheat	CNDDB	CNPS 1B.1	A perennial herb found only at the Antioch Dunes. Blooms July – October.	**Not present.** No suitable dune habitat within the Project Area. This species is limited to the Antioch Dunes in Contra Costa County.
Eriogonum truncatum	Mt. Diablo buckwheat	CNDDB	CNPS 1B.1	An annual herb found on sandy soils in chaparral, coastal scrub, and valley and foothill grasslands from 3 – 350 meters elevation. Previously thought to be extinct; rediscovered in Mt. Diablo State Park in	**Not present.** Suitable habitat is not present in the Project Area. This species is currently only known from Mt. Diablo State Park.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
				2005. Blooms April – September (November – December).	
Eryngium jepsonii	Jepsons coyote-thistle	CNDDB	CNPS 1B.2	A perennial herb on clay soils in vernal pools and valley and foothill grassland from 3 – 300 meters elevation. Blooms April – August.	**Not present**. There is no suitable vernal pool or mesic microsite habitat over clay soil within the Project Area.
Eryngium racemosum	Delta button-celery	CNDDB	SE	Riparian scrub (vernally mesic clay depressions). Elevation ranges from 5 to 100 feet (3 to 30 meters). Blooms June - October.	**Not present.** The Project Area does not contain riparian scrub habitat.
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	CNDDB	FE, SE	Inland dunes. Elevation ranges from 5 to 65 feet (3 to 20 meters). Blooms March -July.	**Not present.** The Project Area does not contain interior dune habitat necessary to support this species.
Eschscholzia rhombipetala	Diamond-petaled California poppy	CNDDB	CNPS 1B.1	An annual herb found on alkaline clay soils in valley and foothill grassland from 0 – 975 meters elevation. Previously thought to be extinct; rediscovered in Carrizo Plain in 1992 and at Lawrence Livermore Laboratory in 1997. Blooms March – April.	**Not present.** Suitable habitat is not present for this species on the Project Area.
Extriplex joaquinana	San Joaquin spearscale	CNDDB	CNPS 1B.2	An annual herb found in alkaline habitats in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland from 1 – 835 meters elevation. Blooms April – October.	**Not present.** No suitable alkaline soil on chenopod scrub or suitable grassland habitat within the Project Area.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Fritillaria liliacea	Fragrant fritillary	CNDDB	CNPS 1B.2	A perennial bulbiferous herb found usually on serpentine soils in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland from 3 – 410 meters elevation. Blooms February – April.	**Not present.** Suitable habitat is not present within the Project Area.
Helianthella castanea	Diablo helianthella	CNDDB	CNPS 1B.2	A perennial herb found on rocky, azonal soils in partial shade, in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland from 60 – 1,300 meters elevation. Blooms March – June.	**Not present.** Suitable habitat is not present within the Project Area.
Hesperolinon *breweri*	Brewers western flax	CNDDB	CNPS 1B.2	An annual herb found usually on serpentine soils in chaparral, cismontane woodland, and valley and foothill grassland from 30 – 945 meters elevation. Blooms May – July.	**Not present.** Suitable habitat is not present within the project area.
Hibiscus lasiocarpos var. *occidentalis*	Woolly rose-mallow	CNDDB	CNPS 1B.2	A perennial rhizomatous emergent herb found in freshwater marshes and swamps from 0 – 120 meters elevation, often in riprap along levees. Blooms June – September.	**May occur.** Suitable habitat is present in freshwater wetlands and ditches in the Project Area. Eight occurrences have been recorded within a 5-mile radius of the Project Area (CDFW 2023).
Isocoma arguta	Carquinez goldenbush	CNDDB	CNPS 1B.1	A perennial shrub found in alkaline microsites in valley and foothill grassland from 1 – 20 meters elevation. Blooms August – December.	**Not present.** Suitable habitat is not present within the Project Area.
Lasthenia conjugens	Contra Costa goldfields	CNDDB	FE	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms March -June.	**Not present.** Suitable habitat is not present with the project area.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	CNDDB	CNPS 1B.2	A perennial herb found in freshwater and brackish marshes from 0 – 5 meters elevation. Blooms May – July (September).	**May occur.** Marginal freshwater marsh suitable habitat is present within the Project Area. Fourteen occurrences have been recorded within the Project Area (CDFW 2023).
Lilaeopsis masonii	Mason's lilaeopsis	CNDDB	SR	Tidal zones of marshes, swamps, and riparian scrub from 0 – 10 meters elevation. Range is restricted to the Delta, Suisun Bay, and San Pablo Bay. Typically occurs in muddy or silty soil formed through river deposition. Blooms April – November.	**Not present**. The Project Area does not contain tidal marsh.
Limosella australis	Delta mudwort	CNDDB	CNPS 2B.1	A perennial stoloniferous herb found in freshwater or brackish marshes and riparian scrub from 0 – 3 meters elevation, usually on muddy banks. Native status in California is uncertain; may be naturalized from the Eastern U.S. Blooms May – August.	**May occur.** Suitable habitat is present in wetlands and ditches in the Project Area. Fourteen occurrences have been recorded within 5 miles of the Project Area (CDFW 2023).
Lupinus albifrons var. *abramsii*	Abrams lupine	CNDDB	CNPS 3.2	A perennial herb found in broadleafed upland forest, chaparral, coastal scrub, lower montane coniferous forest, and valley and foothill grassland from 125 – 2,000 meters elevation, sometimes on serpentinite. Blooms April – June.	**Not present.** The project area is outside of the elevational range of this species.
Madia radiata	Showy golden madia	CNDDB	CNPS 1B.1	An annual herb found in cismontane woodland and valley and foothill grassland from 25 – 1,215 meters elevation. Blooms March – May.	**Not present.** Suitable habitat is not present within the Project Area.
Malacothamnus hallii	Halls bush-mallow	CNDDB	CNPS 1B.2	A perennial evergreen shrub found in chaparral and coastal scrub from 10 – 760 meters elevation. Blooms (April) May – September (October).	**Not present.** Suitable habitat is not present in the Project Area. The Project Area is outside of

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					this species known elevation range.
Myosurus minimus ssp. *apus*	Little mousetail	CNDDB	CNPS 3.1	An annual herb found in alkaline vernal pools in valley and foothill grassland from 20 – 640 meters elevation. Blooms March – June.	**Not present.** No suitable vernal pool or alkaline soil within the Project Area. The Project Area is outside of this species known elevational range.
Navarretia leucocephala ssp. *bakeri*	Bakers navarretia	CNDDB	CNPS 1B.1	An annual herb found in mesic meadows and vernal pools in cismontane woodland, lower montane coniferous forest, and valley and foothill grassland from 5 – 1,740 meters elevation. Blooms April – July.	**Not present.** No suitable vernal pool, woodland, or grassland habitat in the Project Area.
Navarretia nigelliformis ssp. *radians*	Shining navarretia	CNDDB	CNPS 1B.2	An annual herb found in vernal pools and on clay soils in cismontane woodland and valley and foothill grassland from 65 – 1,000 meters elevation. Blooms (March) April – July.	**Not present.** Outside of the species elevational range.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	CNDDB	FE, SE	Inland dunes. Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms March - September.	**Not present.** The Project Area does not contain interior dune habitat necessary to support this species.
Plagiobothrys hystriculus	Bearded popcornflower	CNDDB	CNPS 1B.1	An annual herb found in mesic valley and foothill grassland, and along the margins of vernal pools and vernal swales from 0 – 274 meters elevation. Blooms April – May.	**Not present.** There is no suitable vernal pool or mesic grassland habitat within the Project Area.
Potamogeton zosteriformis	Eel-grass pondweed	CNDDB	CNPS 2B.2	An annual aquatic herb found in assorted freshwater habitats throughout the Central Valley from 0 – 1,860 meters elevation. Blooms June – July.	**May occur.** Suitable freshwater habitat is present in wetlands located in the Project Area. One occurrence has been recorded within 5

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
					miles of the Project Area (CDFW 2023).
Sagittaria sanfordii	Sanfords arrowhead	CNDDB	CNPS 1B.2	A perennial rhizomatous herb found in marshes, swamps, and assorted shallow freshwater habitats that include ditches from 0 – 650 meters elevation. Blooms May – October (November).	**May occur**. Suitable habitat is present in seasonal wetlands and ditches within the Project Area. One occurrence has been recorded within 5 miles of the Project Area (CDFW 2023).
Scutellaria galericulata	Marsh skullcap	CNDDB	CNPS 2B.2	A perennial herb found in lower montane coniferous forest, mesic (wet) meadows and seeps, and marshes and swamps from 0 – 2,100 meters elevation. Blooms June – September.	**Not present.** No suitable forested wetland habitat in the Project Area.
Scutellaria lateriflora	Side-flowering skullcap	CNDDB	CNPS 2B.2	A perennial rhizomatous herb found in mesic meadows, seeps, marshes, and swamps from 0 – 500 meters elevation. Often found on logs. Blooms July – September.	**May occur.** Marginal freshwater marsh habitat is present within the Project Area. One occurrence has been recorded within 5 miles of the Project Area (CDFW 2023).
Senecio aphanactis	Chaparral ragwort	CNDDB	CNPS 2B.2	An annual herb found in chaparral, cismontane woodland, and coastal scrub from 15 – 800 meeters. Blooms January – April (May).	**Not present.** No suitable habitat present. Project Area is outside of elevational range.
Sidalcea keckii	Kecks checkerbloom	CNDDB	FE	Cismontane woodland, valley and foothill grassland. Elevation ranges from 245 to 2135 feet (75 to 650 meters). Blooms April - May (June).	**Not present.** The Project Area does not contain blue oak woodland habitat necessary to support this species.

Scientific Name	Common Name	Query Source	Special Status	Habitat	Likelihood of Occurrence
Symphyotrichum lentum	Suisun Marsh aster	CNDDB	CNPS 1B.2	A perennial rhizomatous herb found in freshwater and brackish marsh from 0 – 3 meters elevation. Blooms May – November.	**May occur.** Suitable habitat is present in seasonal wetlands and ditches within the Project Area. Thirty-five occurrences have been recorded within 5 miles of the Project Area (CDFW 2023).
Tropidocarpum capparideum	Caper-fruited tropidocarpum	CNDDB	CNPS 1B.1	An annual herb found on alkaline hills in valley and foothill grassland from 1 – 455 meters elevation. Formerly presumed extinct; rediscovered in 2000 on Fort Hunter Liggett in Monterey County. Currently known only from Monterey, San Luis Obispo, and Fresno Counties. Blooms March – April.	**Not present.** Project area is outside of species known range and alkaline hills habitat is absent.
Viburnum ellipticum	Oval-leaved viburnum	CNDDB	CNPS 2B.3	A native shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 215 – 1400 meters elevation. Blooms May – June.	**Not present/** No suitable habitat present. Project Area is outside of elevational range.

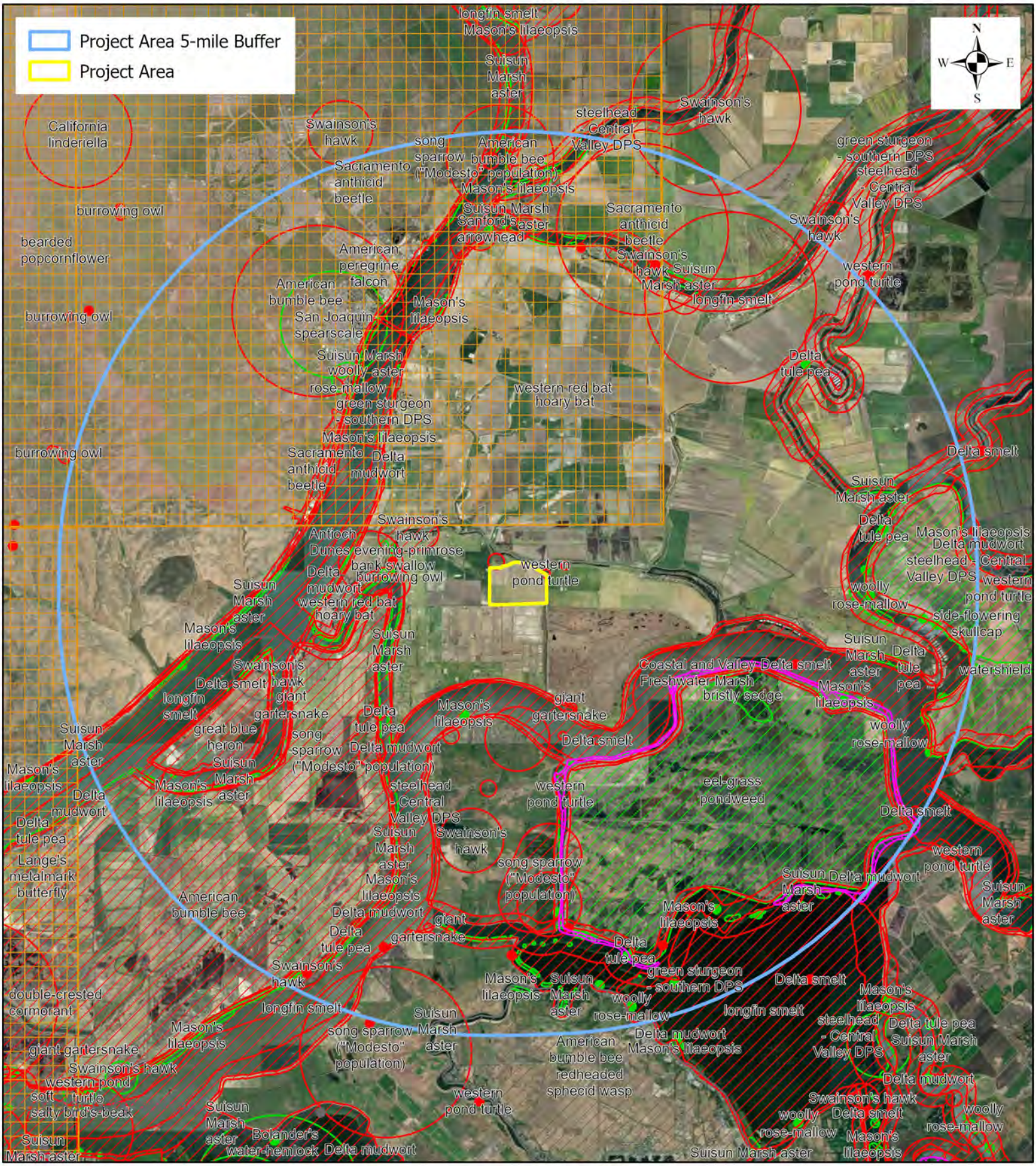
CNDDB – California Native Diversity Database
CNPS – California Native Plant Society
DPS – Distinct Population Segment
ESU – Evolutionarily Significant Unit
pop. - population

[1] Sensitive species reported in CNDDB or CNPS on the "*Jersey Island, Antioch North, Antioch South, Birds Landing, Rio Vista, Isleton, Bouldin Island, Woodward Island, and Brentwood*" USGS quads, or in USFWS lists for the project site.

[2] Status is as follows: Federal (ESA) listing/State (CESA) listing/other CDFW status or CRPR. F = Federal; S = State of California; E = Endangered; T = Threatened; C = Candidate; P = Proposed; FP = Fully Protected; SSC = Species of Special Concern; WL = Watch List.

[3] Potential to occur is assessed as follows. **Not Present**: Species is either sessile (i.e., plants); or so limited to a particular habitat that it cannot disperse on its own; and/or habitat suitable for its establishment and survival does not occur in the Project Area; or the site is outside of the species known range. **Not Expected**: Species moves freely and might disperse through or across the project site, but only marginal suitable habitat occurs in the Project Area, or there are no known occurrences within 5 miles of the Project Area; **May Occur**: Suitable habitat occurs in the Project Area and recorded occurrences of the species exist within 5 miles of the Project Area; **Likely to Occur**: Habitat suitable for residence and breeding occurs on the project site and the species has been recorded recently on or near the project site.

Sources: CDFW 2023; USFWS 2023; NatureServe Explorer 2023; The Cornell Lab 2023.



0 5,000 10,000 Feet

CNDDB Record Search

Twitchell Island Wetland Enhancement and Restoration Project

Project Proponent: Department of Water Resources
Location: Sacramento County, CA
Sections 08, 09 / Township 3N / Range 3E
Latitude/Longitude: 38.114785, -121.657261
Prepared by: Ducks Unlimited
Date Prepared: September 2023

Path: C:\Users\kuntermoser\OneDrive - Ducks Unlimited Incorporated\ECT_GIS_PROJECT FILES\CA\CA-437-6_TIMES\CA-437-6_TIMES.aprx

References

California Department of Fish and Wildlife (CDFW). 2023. California Natural Diversity Database. Available at: https://wildlife.ca.gov/Data/CNDDB. Accessed September 20, 2023.

California Native Plant Society (CNPS). 2023. Inventory of Rare and Endangered Plants (online edition, v8-03 0.39) For: Jersey Island, Antioch North, Antioch South, Birds Landing, Rio Vista, Isleton, Bouldin Island, Woodward Island, and Brentwood USGS 7.5-minute series quadrangles. Accessed September 21, 2023.

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U.S. Fish and Wildlife Service (USFWS). 2023. Information for Planning and Consultation (IPaC) Query for Twitchell Island. 20 September.

Personal Communications

Randall Mager, Ph.D. 2016. Memorandum from Randall Mager, Ph.D., to Jennifer Hogan regarding the risk of fish take at the siphon at Seven-Mile Slough for the planned mitigation and enhancement project. 19 February.

Appendix C. Project Consistency with Greenhouse Gas Emissions Reduction Plan

Appendix C. Assessment Form for Consistency with GHG Emissions Reduction Plan

For Projects Using Only Department of Water Resources (DWR) staff and Equipment[1]

This form is to be used by DWR project managers to document a DWR CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan (GGERP). This form is to be used only when DWR is the Lead Agency and when only DWR staff and equipment are used to implement the project.

Project Name: Twitchell Island Wetland Enhancement and Restoration Project

Environmental Document Type: Initial Study/Mitigated Negative Declaration

Manager's Name: Otome Lindsey

Manager's E-mail: Otome.Lindsey@water.ca.gov

Division: Division of Multi-benefit Initiative

Office, Branch, or Field Division: Delta Ecosystem Enhancement Section

Short Project Description:

The Project proposes to enhance and restore approximately 40 acres of wetland and approximately 80 acres of riparian and scrub-shrub habitat within a 180-acre Project Area footprint on Twitchell Island. The remaining portion of the Project Area (approximately 60 acres) would remain under agriculture use. Within the 120-acre restoration area, native riparian tree and shrub species would be planted and interspersed with native grasses and onsite soil would be redistributed to create a mosaic of shallow open-water habitat, habitat islands, and emergent wetland communities. Once complete, the Project would provide high-quality and cost-effective habitat to offset future ~~impacts associated with levee maintenance and improvement work implemented through the Delta Levees Program.~~

Project GHG Emissions Summary:

☑ All emissions from the project will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP. (This box must be checked if you are using this form. If you cannot check this box you must use a different form.)

[1] This form is recreated from form DWR 9785b.

Project GHG Reduction Plan Checklist:

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

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

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

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

☐ YES ☑ NO

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

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

☐ YES ☑ NO

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

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

Project Manager Signature: _____ Date: _____
C4 Approval Signature: _____ Date: _____

Attachments:

☑ List and Explanation of excluded Project Level GHG Emissions Reduction Measures.

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

Twitchell Island Wetland Enhancement and Restoration Project - GHG Emissions Reduction Measures

Measure	Implemented by the Project?	Explanation
CO-1 Construction BMPs and Regulations		
Construction BMPs		
BMP 1: Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether the specifications for the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.	Yes	All project equipment would meet current fuel efficiency and emission standards. To the extent practicable, the construction contractor would be encouraged to use repowered engines, electric drive trains, or high-efficiency technologies.
BMP 2: Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.	Yes	No mass material hauling would be required for the project. The project would use tractors, dozers, and backhoes for grading, pipeline trenching, and berm/island construction. Heavy equipment used on site would meet current fuel efficiency and emissions standards. To the extent practicable, DWR would encourage the contractor to use on-road engines.
BMP 3: Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.	Yes	The project would only require very limited power during construction. A generator would be used for limited activities such as powering a saw to cut a pipe to length, running a small pump to dewater a small specific work area, etc. Given the limited need use of temporary construction power, an electrical service drop would not be warranted. To the extent practicable, the construction contractor would be encouraged to use alternative fuel generators.
BMP 4: Evaluate the feasibility and efficacy of producing concrete on site and specify that batch plants be set up on site or as close to the site as possible.	Yes	Concrete would be produced on site in small batches (i.e., mixed in a wheelbarrow by hand).
BMP 5: Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.	Yes	The project would use the minimal amount of concrete and cement strength necessary to provide structural integrity of the pipeline.
BMP 6: Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.	Yes	Material delivery for the project would be limited to one day of mobilization, pipe delivery, water control structure

		delivery, and one day of demobilization. No importing or export of mass amounts of material would be required. To the extent practicable, the project would limit deliveries of materials and equipment to off peak traffic congestion hours.
BMP 7: Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [13 CCR Section 2485]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.	Yes	The project would require equipment to minimize idle time.
BMP 8: Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.	Yes	Construction equipment would be properly maintained in compliance with all manufacturer's recommendations.
BMP 9: Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on site and every two weeks for equipment that remains on site. Check vehicles used for hauling materials off site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.	Yes	Equipment tires would be correctly inflated, as part of construction equipment maintenance. No mass material hauling would be required for the project.
BMP 10: Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.	No	The project would require no more than 6 worker commutes per day. There is no transit service or bicycle access provided to the project area. Given the limited commutes required by the project and the remote location, a carpool or shuttle van is not proposed.
BMP 11: Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.	Not Applicable	The use of temporary construction offices is not anticipated for the project.
BMP 12: For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or	Not Applicable	The project does not require haul distances in excess of 100 miles.

53-foot or longer box type trailer is used for hauling, a SmartWay1 certified truck will be used to the maximum extent feasible		
BMP 13: Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.	Yes	The project would use the minimal amount of concrete and cement strength necessary to provide structural integrity of the pipeline.
BMP 14: Develop a project specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste.	No	The project would redistribute and reuse onsite material. Construction waste would be limited to concrete from old broken pipes, siphon plastic components, and metal fencing and would likely be less than two truckloads. The contractor would recycle recyclable materials (e.g., concrete, metal) but it is unclear as to how much waste would be recyclable and if a documented 50 percent diversion of construction waste can be achieved.
BMP 15: Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion.	Yes	Material delivery for the project would be limited to one day of mobilization, pipe delivery, water control structure delivery, and one day of demobilization. No importing or export of mass amounts of material would be required. To the extent practicable, the project would limit deliveries of materials and equipment to off peak traffic congestion hours. Given the limited material hauling anticipated for the project (less than 10 trips), the project would not increase traffic congestion.
Off-Road Diesel Vehicle Regulation	Yes	CARB Off-Road Diesel Vehicle Regulation would be implemented by the project.
See California Department of Water Resources Climate Action Plan Phase 1: Greenhouse Gas Emissions Reduction Plan Update 2020 for a full list of greenhouse gas reduction measures.		